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NOTES ON THE *AETHINA* COMPLEX (COLEOPTERA: NITIDULIDAE: NITIDULINAE), WITH A REVIEW OF *AETHINA* (*CLEIDORURA*) SUBGEN. NOV. AND *AETHINA* (*IDAETHINA*) GEMMINGER ET HAROLD

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Abstract. — The *Aethina* complex of genera is defined and delimited, a key is given to the included genera and subgenera, and comments are made on the evolution of anthophagy, carpophagy and leaf-mining in the group. Keys and species reviews are given for *Aethina* (*Cleidorura*) **subgen. nov.** and *Aethina* (*Idaethina*) Gemminger et Harold. The following **new species** are described: *A.* (*C.*) *malekulensis*, *A.* (*C.*) *sulawesiensis*, and *A.* (*C.*) *transfusa*. The following **new combinations** are proposed in *Aethina* (*Idaethina*): *abbreviata* (Fabricius) (*Nitidula*); *brunnescens* (Reitter) (*Macroura*); *concolor* (Macleay) (*Nitidula – Macroura*); *cuneata* (Grouvelle) (*Macroura*); *deceptor* (Blackburn) (*Macroura*); *inermis* (Blackburn) (*Macroura*); *lugens* (Grouvelle) (*Macroura*); *sobrina* (Olliff) (*Macroura*). The following **new synonymies** are proposed in *Aethina* (*Idaethina*): *abbreviata* (Fabricius) (= *Macroura nigra* Reitter, = *M. multilineata* Grouvelle, = *M. bicalcarata* Blackburn); *concolor* (Macleay) (= *M. lesnei* Grouvelle, = *M. bouvieri* Grouvelle, = *M. fauveli* Grouvelle, = *M. punctulata* Grouvelle); *punctata* (Reitter) (= *M. pascoei* Grouvelle); *sobrina* (Olliff) (= *M. atra* Grouvelle, = *Carpophilus ordinatus* Olliff); *subrugosa* (Grouvelle) (= *M. dubia* Grouvelle). The name *Australaethina* **nom. nov.** is proposed as a replacement for *Idaethina* Reitter, 1875 (not Gemminger et Harold, 1868). **Additional new combinations** are: *Lordyra americanus* (Reitter) (*Lasiodactylus*), *L. loretoensis* (Bruch) (*Neopocadius*), *L. villosus* (Blanchard in Brullé) (*Nitidula – Lasiodactylus*), *Psilonitidula longicollis* (Grouvelle) (*Trimenus*), *Australaethina pilistriata* (Macleay) (*Pocadius – Idaethina*), *A. froggatti* (Kirejtshuk et Lawrence) (*Idaethina*), *A. ursula* (Kirejtshuk et Lawrence) (*Idaethina*). Lectotypes are designated for *Psilonitidula grouvellei* Heller, *P. longicollis* (Grouvelle) and several species of *Aethina* (*Idaethina*).

Key words. — Coleoptera, Nitidulidae, Nitidulinae, Aethina complex, Aethina, taxonomy, Indo-Pacific Region.

INTRODUCTION

The *Aethina* complex was first proposed by Audisio and Kirejtshuk (1983) as an informal group of genera, including *Aethina* Erichson, *Macroura* Reitter (see *Aethina* (*Idaethina*) below), *Ithyra* Reitter and *Aethinopsis* Grouvelle. Kirejtshuk and Lawrence (1990) added *Idaethina* Reitter (not Gemminger et Harold), and Jelínek (1993) excluded *Aethinopsis*, which was shown to be more closely related to *Cychramus*. In 1986 Kirejtshuk reviewed the genus *Aethina* for the Palaearctic and Indo-Malayan regions, including *Circopes* Reitter and *Olliffura* Jelínek et Kirejtshuk (proposed in that paper as a replacement name for *Macroura* Reitter, not Meuschen) as subgenera. The *Circopes* of the Australian region were treated by Kirejtshuk (1987a). Kirejtshuk (1989, 1994, 1996a, 1997) added further genera and discussed the evolution of anthophagy and phyllophagy in the group.

The aim of the present paper is to (1) define and delimit the *Aethina* complex, (2) present a key to genera and subgenera for the world, and (3) review the subgenus *Idaethina* Gemminger et Harold (see below) and a new subgenus *Cleidorura* with keys to all known species.

Abbreviations:

ANIC – Australian National Insect Collection, C.S.I.R.O. Division of Entomology, Canberra;
AMS – Australian Museum, Sydney;
BMH – Bishop Museum, Honolulu;
CAS – California Academy of Sciences, San Francisco;
CNC – Canadian National Collections, Centre for Land and Biological Resources Research (formerly Biosystematics Research Institute), Agriculture Canada, Ottawa;
DEI – Deutsches Entomologisches Institut, Eberswalde-Finow;
DPIM – Queensland Department of Primary Industries, Mareeba;
FMC – Field Museum of Natural History, Chicago;
IRSN – Institut Royal des Sciences Naturelles, Bruxelles;
MCG – Museo Civico di Storia Naturale, Genova;
MNHN – Muséum National d'Histoire Naturelle, Paris;
NHML – Natural History Museum, [formerly British Museum (Natural History)], London;
NMW – Naturhistorisches Museum, Wien;
NRS – Naturhistoriska Riksmuseet, Stockholm;
RMNH – Rijkmuseum van Natuurlijke Historie, Leiden;
SAM – South Australian Museum, Adelaide;
SMNS – Staatliches Museum für Naturkunde, Stuttgart;
SMTD – Staatliches Museum für Tierkunde, Dresden;
TMB – Természettudományi Múzeum (Hungarian Natural History Museum), Budapest;
VRB – V. R. Bejsak Collection;
ZIN – Zoological Institute, Russian Academy of Sciences, Saint Petersburg;
ZMB – Museum für Naturkunde an der Humboldt-Universität, Berlin;
ZMK – Zoologisk Museum, Copenhagen;
ZSI – Zoological Survey of India, Calcutta;
ZSM – Zoologische Staatssammlung, Munich.

THE *AETHINA* COMPLEX OF GENERA

Composition and Distribution

AETHINA Erichson (s. str.)

Aethina Erichson, 1843; type species, by monotypy, *A. pubescens* Erichson.
Aethinopa Reitter, 1875; type species, by monotypy, *A. fulvovestiva* Reitter, 1875.
Pseudomystrops Grouvelle, 1913a; type species, *Idaethina humeralis* Grouvelle, 1890 (designated by Kirejtshuk 1986).
Meligethopsis Rebmann, 1944; type species, by monotypy, *M. singularis* Rebmann, 1944 (= *A. aeneipennis* Reitter, 1873).
Distribution: Mostly Indo-Malayan, with a few species in Africa, Madagascar and Mesoamerica.
Biology and Larvae: Lundie 1940, Hayashi 1978, Thomas 1999.
Composition: about 30 species (25 species from the Indo-Malayan region).
Kirejtshuk 1986, unpublished, Jelínek 1995, Sharp 1891.

AETHINA (CIRCOPES) Reitter

Circopes Reitter, 1873; type species, *Pocadius subquadratus* Motschulsky, 1858 (designated by Jelínek 1980).
Distribution: East Hemisphere (mostly in subtropical and tropical parts of Asia, Africa, Australia, New Guinea, the East Indies and Philippines), but absent from most of the Palaearctic region.
Composition: slightly more than 40 species (mainly in the Indo-Malayan, Papuan and Australian regions).
Kirejtshuk 1986, 1987a, 1988, 1996b.

AETHINA (CLEIDORURA) subgen. nov.

Cleidorura subgen. nov.; type species, *A. (C.) transfusa* sp. nov.
Distribution: Indo-Malayan and Australian regions.
Composition: 4 species (see p. 239).

AETHINA (ITHYRA) Reitter

Ithyra Reitter, 1873; type species, by monotypy, *I. hirsutula* Reitter, 1873.
Distribution: Subsaharan Africa and Madagascar.
Composition: 5 species.
Audisio and Kirejtshuk 1983, Spornraft 1988.

AETHINA (IDAETHINA) Gemminger et Harold

Idaethina Gemminger et Harold, 1868; type species, *Carpophilus longipennis* Motschulsky (designated by Olliff 1884); not *Idaethina* Reitter 1875.
Olliffura Jelínek et Kirejtshuk (in Kirejtshuk 1986), unnecessary replacement name for *Macroura*.
Macroura Reitter, 1873 (non Meuschen); type species, *M. meligethoides* Reitter, 1873 (designated by Kirejtshuk 1986).
Distribution: Indo-Malayan, Papuan and Australian regions.
Larvae: Kirejtshuk 1996a.
Composition: 13 species (see p. 243).

ANISTER Grouvelle

Anister Grouvelle, 1901; type species, by monotypy, *A. raffarayi* Grouvelle, 1901.
Oturavana Reitter, 1915; type species, by monotypy, *O. carpophiloides* Reitter, 1915 (synonymy by Jelínek 1979).
Distribution: Africa, eastern part of the Mediterranean and Southeast Asia.
Larvae: Alfieri 1924.
Composition: 3 species (including one from Africa and one from Vietnam).
Jelínek 1981, 1993, Kirejthsuk 1987b, 1996b, unpublished.

AUSTRALAETHINA **nom. nov.**

Idaethina Reitter, 1875 (not Gemminger et Harold 1868); type species, by monotypy, *I. deyrollei* Reitter, 1875 (= *Pocadius pilistriatus* Macleay, 1871).
Distribution: Australia (Queensland, New South Wales, Australian Capital Territory, South Australia).
Composition: 3 species: *A. frogatti* (Kirejtshuk et Lawrence), **comb. nov.**; *A. pilistriatus* (Macleay), **comb. nov.**; *A. ursula* (Kirejtshuk et Lawrence), **comb. nov.**
Notes: Although Reitter (1875) first provided a description of *Idaethina* based on *I. deyrollei*, the name previously had been included without description in the Gemminger and Harold catalogue (1868). Since two valid species names were listed as belonging to the genus, the generic name must be attributed to Gemminger and Harold, and

a new name must be given to *Idaethina* in Reitter's sense. Kirejtshuk and Lawrence (1990), unaware of this previous usage, followed Reitter's concept.

BROUNITHINA Kirejtshuk

Brounithina Kirejtshuk, 1997; type species, by monotypy, *B. aequilibris* Kirejtshuk, 1997.

Distribution: New Zealand.

Composition: *B. aequilabris* Kirejtshuk.

LASIODACTYLUS Perty

Lasiodactylus Perty, 1830; type species, by monotypy, *L. brunneus* Perty, 1830.

Lordites Erichson, 1843; type species, by subqequent designation, *L. procerus* Erichson (= *Lasiodactylus brunneus* Perty) (designated by Lacordaire 1854) (synonymy by Murray 1867).

Nitidulingen Gillogly, 1965; type species, by monotypy, *N. meridionalis* Gillogly, 1965 (synonymy by Kirejtshuk 1996a).

Distribution: Neotropical region.

Composition: 2 species (one undescribed from South America).

Notes. The name *Lasiodactylus* has been incorrectly used by Grouvelle (1913b) and others for a number of Old World species often placed in *Lordites* Erichson. Since the type species of *Lasiodactylus* and *Lordites* are synonymous, the latter cannot be used for these species which will require a new generic name. Murray (1867) automatically synonymized the two genera, when he synonymized their type species.

LORDYRA Gemminger et Harold

Lordyra Gemminger et Harold, 1868. Type species, by monotypy, *Nitidula villosa* Blanchard in Brullé, 1842.

Neopocadius Grouvelle, 1906; type species, by monotypy, *N. nitiduloides* Grouvelle, 1906.

Distribution: Argentina.

Larva: Bruch 1923.

Composition: *L. americanus* (Reitter, 1873), **comb. nov.** (*Lasiodactylus*); *L. loretoensis* (Bruch, 1938), **comb. nov.** (*Neopocadius*); *L. nitiduloides* (Grouvelle, 1906), **comb. nov.** (*Neopocadius*); *L. villosa* (Blanchard in Brullé, 1842), **comb. nov.** (*Nitidula*) (possibly synonymous with *americanus*).

Notes: *L. americanus* differs from *L. nitiduloides* [redescribed by Bruch (1923)] in its larger and more elongate body with subequal width of pronotum and elytra, widely explanate elytral sides, distinct and subparallel antennal grooves, non-squamose hairs and longitudinal rows of longer, suberect hairs on elytra, caudal marginal behind metacoxal cavities strongly arcuately deviating from central portion of hind edge of cavity and extending behind the middle of ventrite 1, and widely lobed tarsi. The two taxa are so different that a case could be made for placing them in different subgenera.

Material examined: 1 female, syntype (NHML) – "Catamarca".

PSILONITIDULA Heller

Psilonitidula Heller, 1916; type species, by monotypy, *P. grouvellei* Heller, 1916

Distribution: New Caledonia.

Composition: 2 species.

P. grouvellei Heller

Specimens examined: lectotype, male (SMTD), here designated and 8 paralectotypes (SMTD, ZIN) – "Drs. Sarasin & J. Roux, Neukaledonien, Mt. Karala, cr. 700 m, 3.11.1911": "1914.6"; 1 paralectotype (SMTD) – "Drs. Sarasin & J. Roux, Neukaledonien, Mt. Karala, cr. 800–1000 m (Wald), 4.11.1911", "1914.6" and some specimens from BMH recorded on "Freycinetia" and "Pandanus".

P. longicollis (Grouvelle), **comb. nov.**

Trimenus longicollis Grouvelle, 1903

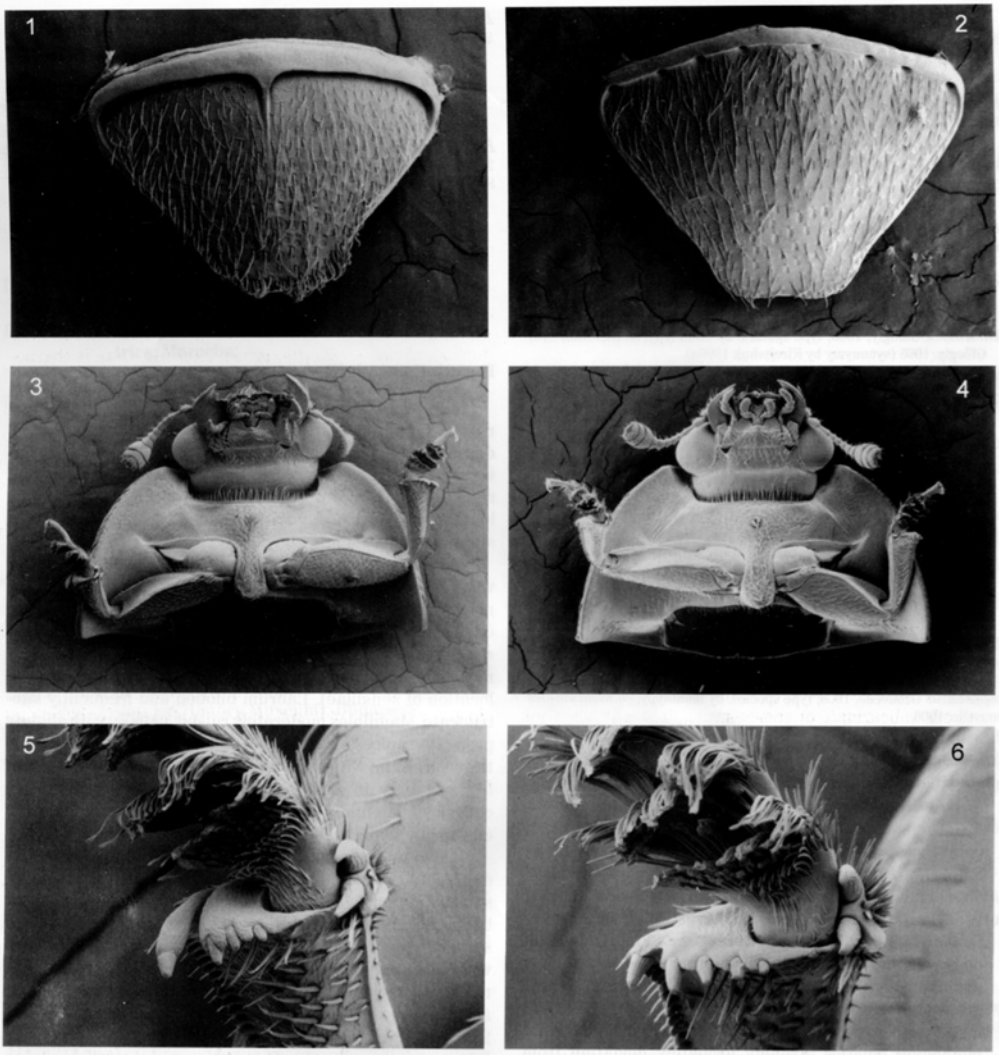
Specimens examined: lectotype, male (IRSN), here designated – "Trimenus longicollis sp.nov." (written by ? Grouvelle), "Nouvelle Caledonie, rec. Deplanche, Kanala, ex coll. Fauvel" (only with one of tibia and tarsus, detached from mid or hind legs); 1 paralectotype, male (IRSN) – "Nouvelle Caledonie, rec. Deplanche, Kanala, ex coll. Fauvel" (without head, prothoracic segment and right elytron, but with a part of left antenna and a left fore tibiae and tarsus); 1 male (NHML) – "Loc. Iquambi, 15.8.14, Sex, Coll. P.D. Montague, New Caledonia Exped.", "Trimenus longicollis Grouv."].

Description (Adult)

Body more or less elongate oval to semicircular or very rarely subparallel-sided, moderately to strongly convex dorsally and ventrally; distinctly punctured (elytral punctures sometimes partly reduced or arranged in longitudinal rows), with moderately long hairs, sometimes forming longitudinal rows on elytra and more or less raised ciliae at sides of pronotum and elytra.

Head transverse and flattened dorsally or with a rather weak depression between antennal insertions and slightly or moderately projecting frons. Eyes moderately large and comprised of very small facets. Antennae, as a rule, of usual structure, but sometimes outline of one or some of 3 segments of club somewhat modified (although with normal location of sensillae). Labrum bilobed and frequently subtruncate. Mandibles moderately raised, usually with slightly projecting apices. Apical labial palpomere elongate or rarely transverse and with various shapes (but strongly narrowed to apex only in *Lordyra*). Antennal grooves arcuately convergent, usually well developed and ridged at inner edges, but sometimes rather reduced to obsolete.

Pronotum margined laterally and basally, rarely subexplanate at sides (but never distinctly so), anterior edge somewhat emarginate or excised, base subtruncate or bisinuate. Scutellum semicircular to subtriangular or subpentagonal, sometimes with subtruncate apex. Elytra with sides very narrowly explanate and margined, usually rather shortened with separately rounded or subtruncate apices or forming a joint arc. Base of pygidium usually with 2 or more arc-like impressions (2 in *Australaethina*, Fig. 1, 8 in most groups, Fig. 2), 14 in *Psilonitidula*, and absent in *Lordyra* and *Brounithina*); apex of pygidium usually exposed, rounded in females, subtruncate or truncate in males, with apex of anal sclerite (tergite 8) slightly or moderately exposed; sometimes pygidial apex of the both sexes more or less excised at apex (*Cleidorura*) or widely rounded (*Ithyra*). Prosternal process moderately narrow or slightly curved between coxae and slightly projecting behind them, its apex vertically abrupt. Mesosternum frequently slightly excavate and subcarinate or somewhat vaulted medially. Metasternum moderately long, slightly convex or



Figures 1–6. 1–2. Pygidium (tergite 7), dorsal: (1) *Australaethina pilistriata* (Macleay); (2) *Aethina* (*Idaethina*) *concolor* (Macleay). 3–4. Head and prothorax, ventral: (3) *A.* (*I.*) *abbreviata* (Fabricius); (4) *A.* (*I.*) *concolor*. 5–6. Right protibial apex, ventral: (5) *A.* (*I.*) *abbreviata*; (6) *A.* (*I.*) *concolor*

flattened, somewhat depressed in distal half, its hind edge usually straight, but sometimes scarcely emarginate (*Australaethina*, *Lordyra*) or distinctly angularly excised (*Psilonitidula*, *Brounithina*). Caudal marginal behind mesocoxal cavities more or less deviating from hind edge of cavities at lateral corners of metasternum. Caudal marginal lines behind metacoxal cavities more or less deviating from hind edges of cavities along their mesal portions (not infrequently forming an angular configuration directed posteriorly) or rarely closely following hind edges of cavities.

Ventrite 1 nearly as long as pygidium or somewhat shorter. Epipleura moderately elevated outwardly (never sloped ventrally)

Fore tibiae subtriangular with more or less projecting outer subapical corner (sometimes viewed as simple or forked tooth, process or spine) and with regular crenulations along outer edge. Mid and hind tibiae usually with blunt subapical corner and with rows of stout setae along outer edge. All femora of usual shape and proportions. Tarsomeres 1 to 3 usually lobed and slightly prolonged, protarsomeres widest (especially in males), claws simple, toothed at base or split medially (*Ithyra*).

Aedeagus of the type found in *Pocadius* and related genera. Ovipositor variable, ranging from the normal nitidulid type to those which are highly modified, with pointed or forked apex and no styli.

Diagnosis and Relationships

This group of genera belong to the tribe Nitidulini s. str. and its members have some similarity to species of the *Pocadius* and *Thalycra* complexes, as delimited by Kirejtshuk (1997) and Kirejtshuk and Leschen (1998). In the *Aethina* complex the body is usually more elongate, often moderately convex or slightly flattened and dull or slightly shiny, the sides of pronotum and elytra are usually not explanate, the dorsal punctation is rather regular, moderately fine and dense, with very dense and rather conspicuous pubescence (except in *Anister*) and ciliae along the sides, the antennal grooves are arcuately convergent or obsolete, the elytral apices are usually rather shortened, the mesosternum is subcarinate or somewhat vaulted, and the base of the pygidium is usually provided with 2, 8 or 14 arc-like impressions. In constrast to the other two complexes, the antennae are not greatly modified (except in some species of *Aethina* s. str., Kirejtshuk 1986). In the *Thalycra* complex, the hind coxae are usually rather close to one another, while they are moderately to broadly separated in the *Aethina* complex; however members of the *Pocadius* complex are more or less intermediate with respect to this feature. Unlike those of the other two complexes, the legs in the present group are very stout but the tibiae and femora are not modified and the tarsi (especially the front ones) are very widely lobed and sexually dimorphic. The male genitalia are rather uniform and similar to those of many nitidulines, but the ovipositor exhibits a great deal of variation (very similar to variability shown in the *Pocadius* and *Thalycra*-complexes).

Variation within the Complex

The taxa under consideration may vary considerably with respect to many features, including the presence of interfacetal setae, nature of the pygidial base, form of the caudal marginal lines behind both mid and hind coxal cavities, hind edge of metasternum, distance between hind coxae, and structure of the male and female genitalia. The following features are considered to be archaic for the group: 1) body large, moderately convex from above and somewhat flattened below; 2) elytra nearly complete or slightly shortened with raised subsutural lines; 3) elytral punctation arranged in more or less raised longitudinal rows and with somewhat seriate pubescence; 4) pygidial apex rounded in both sexes with anal sclerite slightly exposed; 5) tarsomeres 1 to 3 more or less bilobed with those of fore tarsi dilated, especially in male; 6) ovipositor simple.

It is difficult to make decisions on the taxonomic rank of all the genera included in this complex. There is little doubt that *Australaethina*, *Lordyra*, *Brounithina*, *Lasiodactylus*, *Psilonitidula* and *Anister* are distinct at the generic level, but the hiatus between other taxa looks less significant, and they are here treated as subgenera of the *Aethina*. Among this latter group, *Aethina* s. str. is characterized by greater structural variability, exhibiting trends which reach their highest development in other subgenera. For example, the convex and comparatively small body are shared by representatives of *Ithyra*, *Circopes* and various species of *Aethina* s. str., such as *A. flavicollis* Reitter and *A. aeneipennis* Reitter. The species of *Idaethina* and *Cleidorura* all have a body shape rather similar to that in *A. pubescens* Fairmaire, *A. elongata* Reitter and *A. argus* Grouvelle. Species of *Idaethina*, *Circopes* and *Ithyra* are all floricolous, while many species of *Aethina s.str.* retain the apparently ancestral mycetophagous habits. The pairs of taxa *Circopes-Ithyra* and *Idaethina-Cleidorura* are considered to be classic sister-pairs with independent origins within the ancestral group which also included the ancestors of all the recent members of *Aethina* s. str. However in contrast to *Aethina* s. str., the species belonging to these two pairs of subgenera have deviated to a greater extent from the form and habits thought to be characteristic of the ancestor.

Notes on evolution and bionomics

The evolution of the subgenera of the genus *Aethina s. lat.* were considered in detail in a previous work (Kirejtshuk 1994). The *Aethina*-complex of genera is distributed mainly throughout the Eastern Hemisphere and their diversity is greatest in that part of globe. Some definite life style trends can be traced among different groups of the complex. The retention of mycetophagous habits occurs mainly in *Aethina* s. str., the development of imaginal anthophagy with larval mycetophagy is characteristic of *Lordyra*, *Aethina* s. str. and *Circopes*, complete anthophagy is known in *Circopes*, *Ithyra* and *Idaethina*, phyllophagy occurs only in *Anister*, and carpophagy only in *Australaethina*.

Aethina s. str. has the broadest distribution (being absent only from the main part of the Holarctic region and from Australia, New Guinea, Polynesia and the Patagonian region of South America). Many species associated as larvae and adults with decaying plant matter, including soft fruits of angiosperms, but some species visit blossoming plants, and others (e.g. *A. tumida* Murray and related forms in

Africa and Madagascar, breed in the stores of pollen and honey in nests of honey bees and may be pests in apiaries (Lundie 1940, Thomas 1999). Among species of the Australian genus *Australaethina*, *A. froggattii* (Kirejtshuk et Lawrence) breeds in the seed capsules of *Brachychiton* (Sterculiaceae), *A. ursula* (Kirejtshuk et Lawrence) is associated with the seeds of *Darlingia* and *Oreocallis* (Proteaceae) and larval *A. pilistriatus* (Macleay) have been found in numbers feeding on *Acacia* seeds (Kirejtshuk and Lawrence 1990, Lawrence unpublished). Both larvae and adults of the subgenus *Idaethina*, known only in the Indo-Malayan and Australian regions, live in flowers of the Malvaceae (mainly *Hibiscus*). The subgenus *Cleidorura*, with the same range has only four species, and at present there is no information on their biology. *Ithyra* species occur mainly in Africa and Madagascar, and one of them has been recorded from Yemen and Sicily; they are associated with flowers of Acantaceae. The subgenus *Circopes* is composed of species from different parts of the Eastern Hemisphere (including Australia), but the range of the genus does not extend far into the Palaearctic region. Adults of some *Circopes* visit the both flowers and tree fungi, some have been collected only on the blossoms of angiosperms, others show an adherence to inflorescences of monocotyledonous plants or the cones of cycads where their larvae develop, and one has been taken in a bird nest (Kirejtshuk 1986, 1987a). Members of the genus *Anister* from the Afrotropical and Mediterranean regions and Southeast Asia are exclusively anthophagous in the adult stage, while larvae are miners in the leaves of Brassicaceae. The leaf-mining larvae have obsolete tergal appendages and lack urogomphi (Alfieri 1924). This association with living plants appears to have evolved at least four times: in *Anister*, *Australaethina*, *Idaethina* and *Circopes-Ithyra*.

Key to genera and subgenera of the *Aethina*-complex

1. Hind edge of metasternum angularly excised; distance between mid coxae about as great as that between hind ones (except in *Lasiodactylus* where it is only half as great); base of pygidium with 14 arc-like impressions or without any; prosternal process forming flat plate and curved along coxae; body elongate, about 2 times or slightly more than 2 times as long as wide 2
–. Hind edge of metasternum straight or weakly emarginate (convex in *Anister*); distance between mid coxae much less than that between hind ones; base of pygidium with 2 or 8 arc-like impressions (Figs 1, 2); prosternal process rather high, with vertically abrupt and slightly widened apex; body generally shorter and broader (except in *Australaethina*) 5

2(1). Prosternal process strongly widened before apex; dorsum subflattened, shining and glabrous or with reduced pubescence 3
–. Prosternal process slightly widened before apex; dorsum moderately convex, almost dull and moderately pubescent 4

3(2). Dorsum glabrous; elytra with coarser and diffuse punctures (sometimes separated by weak longitudinal furrows); base of pygidium with 14 arc-like impressions; antennal grooves strongly arcuately convergent; caudal marginal lines behind metacoxal cavities sharply and subangularly deviating from inner portion of hind edge of cavity and reaching middle of ventrite 1; 4.7–8.0 mm. New Caledonia ..... *Psilonitidula* Heller
–. Dorsum with short, sparse, slightly conspicuous hairs; elytra with longitudinal rows of very small, dense punctures bearing short hairs, separated by irregular double rows of sparser large punctures; base of pygidium without arc-like impressions; antennal grooves slightly arcuately convergent; caudal marginal lines behind metacoxal cavities gently and arcuately deviating from hind edge of cavity and not reaching middle of ventrite 1; 10–16 mm. Neotropical region ..... *Lasiodactylus* Perty

4(2). Antennomere 9 about the same size as 10 and 11; dorsum with sparse, squamose hairs or sparse longer hairs arranged in rows, in addition to dispersed moderate hairs; elytra obliquely subtruncate apically; distance between mid coxae about 1.5 times as great as than between hind ones; caudal marginal lines behind metacoxal cavities either not deviating from hind edge of cavity or strongly, arcuately deviating from central portion and extending behind middle of ventrite 1; 4.7–6.6 mm. South America ..... *Lordyra* Gemminger et Harold
–. Antennomere 9 much larger than 10 or 11; dorsum with uniform, sparse and diffuse hairs; elytra slightly shortened and arcuately narrowed apically; distance between mid coxae about 1.5 times as great as than between hind ones; caudal marginal lines behind metacoxal cavities gently and arcuately deviating from central portion of hind edge of cavity and not reaching middle of ventrite 1; 2.7–5.0 mm. New Zealand ..... *Brounithina* Kirejtshuk

5(1). Body regularly oval, strongly compact and streamlined, regularly convex ventrally and dorsally, with rather sparse and very coarse punctation (arranged on elytra in indistinct longitudinal rows); pubescence sparse and conspicuous; head evenly convex; pronotum with rather long process covering most of scutellum; prosternal process extremely wide and flat, at least 3 times as wide at apex of antennal club; hind edge of metasternum convex; 1.8–3.0 mm. Eastern Mediterranean, Africa and Southeast Asia ..... *Anister* Grouvelle
–. Body not regularly oval, less compact and not streamlined, more vaulted at sides, with variable punctation and pubescence, but never with punctures as large and sparse and never with sparse but conspicuous pubescence; head with more or less raised impression

between antennal insertions; base of pronotum less projecting, not concealing part of scutellum; prosternal process variable but never more than 2 times as wide as antennal club; hind edge of metasternum straight or rarely excised 6

6(5). Body elongate (about twice as long or more than twice as long as wide), more densely and more conspicuously pubescent, 3.2–6.7 mm; mesosternum with weak medial protuberance; prosternal process curved in accordance with procoxal shape and pleated at apex; pygidium with 2 wide arc-like impressions along its base (Fig. 1). Male: both mid and hind or at least mid tibiae curved at apex. Australia ... *Australaethina* nom. nov. (*Idaethina* Reitter)

–. Body oval (less than twice as long as broad), usually more sparsely and less conspicuously pubescent; mesosternum carinate or with raised elongate convexity (in *Cleidorura* mesosternum weakly excavated with a small swelling); prosternal process flat and vertically abrupt at apex, but in *Cleidorura* apex of prosternal process looks like a pleat from lateral view; pygidium with 8 short arc-like impressions along base (Fig. 2). Male: tibiae as in female *Aethina* Erichson 7

7(6). Elytra without subsutural lines or with trace of them before apices; surface of elytra with longitudinal rows of subequal hairs; prosternal process with pleated apex, which is nearly as wide as distance between mid coxae; caudal marginal lines of ventrite 1 arcuately deviating fom hind edge of metacoxal cavity and not reaching middle of the ventrite 1; apex of pygidium of both sexes distinctly and deeply excised. Female: gonocoxites forked at apex, styli very short and distant from apex. Indo-Malayan and Australian regions ..... *Cleidorura* subgen. nov.

–. Elytra almost always with subsutural lines, at least along distal half of suture; prosternal process with vertically truncate apex, which is much narrower than distance between mid coxae; pygidial apex never excised in both sexes 8

8(7). Length generally not less 3.0 mm (rarely 2.7 mm), elongate oval and flattened, almost unicolorous; black or dark brown (sometimes elytra and tarsi much lighter); elytra with diffuse pubescence or with longitudinal rows of subequal hairs; caudal marginal lines of ventrite 1 sharply deviating from inner portion of hind edge of metacoxal cavity and forming acute angle behind middle of ventrite 1. Male: pygidium with subtruncate or shallowly excised apex from under which apex of anal sclerite strongly projects. Female: ovipositor deeply forked at apex. Oriental and Australian regions ..... *Idaethina* Gemminger et Harold

–. Without above combination of characters; elytra with diffuse pubescence or elytral hairs forming longitudinal rows (hairs usually differing in length); caudal marginal lines of ventrite 1 usually slightly arcuately deviating or rarely sharply deviating from inner portion of hind edge of metacoxal cavity and forming acute angle before middle of ventrite 1. Female: ovipositor never deeply forked at apex 9

9(8). Length always greater than 3 mm and usually greater than 4 mm; body usually slightly convex to moderately flattened (rarely rather convex); subsutural lines absent or present only before elytral apices; elytra with diffuse pubescence; prosternal process distinctly widened before apex, and usually as wide or wider than antennal club. Indo-Malayan region, Africa, Madagascar and Central America ..... *Aethina* sensu stricto

–. Length not greater than 4.0 mm; body oval, rather convex dorsally; elytra with longitudinal rows of longer hairs between which are 1–3 rows of shorter hairs; prosternal process scarcely widened before apex, and usually markedly narrower than antennal club 10

10(9). Tarsal claws longitudinally cleft; general coloration dark brown to black (sometimes with reddish spot on elytral disc). Female: ovipositor with isolated and heavily sclerotized apex. Africa and Madagascar ..... *Ithyra* Reitter

–. Tarsal claws simple or toothed at base; coloration different, usually reddish to brown. Female: ovipositor with simple apex or very rarely with isolated, heavily sclerotized apex. Asia, Africa, New Guinea and Australia ..... *Circopes* Reitter

SPECIES REVIEWS – *CLEIDORURA* AND *IDAETHINA*

CLEIDORURA subgen. nov.

Type-species. *Aethina* (*Cleidorura*) *transfusa* sp. nov.

Diagnosis. This subgenus closely resembles *Idaethina* but may be distinguished by the broader prosternal process, complete absence of subsutural lines on the elytra, and the deeply excised pygidium in both male and female.

Description. Size moderately large for the group (4.5–6 mm), body nearly flattened to moderately convex above and slightly flattened below; dorsal pubescence of diffuse, uniform and moderately conspicuous hairs, combined with longer hairs in longitudinal rows on elytra. Elytra very short, with separately rounded apices; elytral surfaces with diffuse punctures either large or very small and rasp-like and interspaces smooth or somewhat microreticulated (with dull sheen); subusutural lines absent or with only a trace of them apically. Pygidial apex distinctly and comparatively deeply excised in both sexes, with apex of anal sclerite distinctly exposed in males. Antennal grooves short and arcuate, convergent posteriorly. Prosternal process medially flat and not curved but with "pleated" apex. Mesosternum moderately excavate with weak, medial tubercle. Without sexual dimorphism in shape of tibiae. Tarsi all very wide, fore tarsi considerably wider, but without sexual dimorphism; claws slightly toothed basally. Caudal marginal lines of ventrite 1

arcuately deviating fom hind edge of metacoxal cavity and not reaching middle of the ventrite. Ovipositor with forked apex, styli lateral, and distal portion of inner lobes of coxites incompletely separated.

Notes. Members of the subgenus are very similar to one another, differing only in the characters mentioned in the key. Male and female genitalia are rather similar throughout the group, only the aedeagus of *obscura* being distinct from that of other species. The four known members of the subgenus represent two pairs of similar and probably closely related species: *transfusa* and *malekulaensis*, on the one hand, and *obscura* and *sulawesiensis*, on the other.

Key to the species of the subgenus *Cleidorura* subgen. nov.

1. Elytral punctures small, indistinct and sometimes rasp-like, interspaces between them with dense and very contrasting microreticulation; head and pronotum with denser punctures and interspaces between them contrastingly microreticulated; dorsum almost unicoloured brownish to blackish, but underside, pronotal sides and appendages much lighter (to reddish); antennal grooves slightly curved and subparallel; caudal marginal lines of ventrite 1 reaching middle of ventrite 2

–. Elytral punctures at least twice as large as eye facets, quite distinct and not or slightly rasp-like, interspaces between them completely smooth or slightly microreticulate; head and pronotum with more sparse punctures and interspaces between them completely smooth or slightly microreticulate; body and appendages bright reddish with completely or partly blackish elytra, sometimes also with darkened disc and base of pronotum and metasternum; antennal grooves more arcuate; caudal marginal line of ventrite 1 not reaching middle of ventrite 3

2(1). Pronotal base with margin at scutellum narrower than antennomere 2; labral lobes subtruncate at apices; metasternum with interspaces between punctures about as broad as a puncture diameter or narrower. Male: apex of pygidium dinstinctly excised; apices of tegmen and penis sharply acute. Female: apex of pygidium slightly emarginate. 4.5–5.0 mm. Himalayas, Vietnam ..... *A.* (*C.*) *obscura* (Reitter)

–. Pronotal base with margin at scutellum about as wide as antennomere 2; labral lobes gently rounded at apices; metasternum with interspaces between punctures much broader than a puncture diameter. Male: tegmen and penis rounded at apices. 4.8 mm. Sulawesi ..... *A.* (*C.*) *sulawesiensis* sp. nov.

3(1). Smaller: 4.6–4.9 mm; labral lobes subtruncate at apices; antennal club narrower than wide and about as wide as or narrower than fore tibia; body lighter (almost yellowish), except for completely or partly blackish elytra, often disc and base of pronotum and sometimes metasternum more or less darkened; mentum about twice as wide as long; distance between hind coxae about 1.5 times as broad as that between mid coxae and twice as broad as that between fore coxae. Australia ..... *A.* (*C.*) *transfusa* sp. nov.

–. Larger: 5.1–6.1 mm; labral lobes gently rounded at apices; antennal club as long as wide and markedly wider than fore tibia; body, including entire pronotum, unicoloured reddish and only elytra blackish; mentum less than twice as wide as long; distance between hind coxae about twice as broad as that between mid coxae and markedly more twice as broad as that between fore coxae. New Hebrides ..... *A.* (*C.*) *malekulaensis* sp. nov.

Aethina* (*Cleidorura*) *malekulaensis sp. nov.

Diagnosis. This species differs from *obscura* and *sulawesiensis* in having larger elytral punctures separated by smoother interspaces, arcuate antennal grooves, and caudal marginal lines on ventrite 1 not extending as far posteriorly. From the Australian *transfusa* it differs in its larger size, broader antennal club, and more widely separated metacoxae, as well as in colouration.

Description (female). Length 5.4, breadth 3.3, height 1.7 mm. Oval, rather convex from above and slightly from below; bright reddish with blackish elytra; rather shiny; dorsum sparsely, shortly and well conspicuously pubescent: covered with hairs subrecumbent on head, pronotum and scutellum, and with suberect ones on elytra and pygidium; on elytra more or less distinct longitudinal rows of hairs; pronotal and elytral sides ciliate; ventral surface with less conspicuous and diffuse subrecumbent hairs; coloration of hairs somewhat yellowish golden on light surface, but dark greyish on elytra.

Dorsal surface with punctures much larger than eye facets, but in distal parts of elytra and pygidium punctation becomes finer and shallower; intervals between punctures on head, pronotum and scutellum slightly broader than a puncture diameter, almost completely smooth; those on elytra somewhat larger, but on pygidium smaller and more sparse. Ventral surface about as punctured as that on head and pronotum, with interstices between punctures on prosternal process slightly narrower than a puncture diameter and smoothly microreticulated, but interspaces on metasternum markedly broader than a puncture diameter, almost smooth and shiny.

Labrum bilobed, with narrow medial excision and widely rounded apices. Mentum hardly narrowed to apex, less than twice as wide as long. Antennal grooves rather conspicuous, with sharp inner ridges which are strongly arcuated and convergent as to head base as at mandibles. Antennae almost as long as head broad; their club nearly as long as wide and composing about a third total antennal length. Elytra somewhat more than 5/6 as long as their combined width, separately rounded at apices and extremely narrowly explanate sides; more steeply slopped to lateral edges than

those in pronotum. Distance between hind coxae about twice as broad as that between mid ones and markedly more twice as broad as that between fore ones. Caudal marginal lines of metasternum almost rectilinearly deviating from internal part of hind edge of mesocoxal cavity and reaching distal third of metepisternum. Caudal marginal lines of ventrite 1 not reaching middle of the ventrite. Pygidium widely rounded at apex.

Tibiae markedly narrower than antennal club. Fore tarsi 2/3 as wide as fore tibiae; claws slightly toothed at base.

Ovipositor well sclerotized.

Variation. Length 5.1–5.8 mm. The paratypes slightly vary in coloration from reddish with dark reddish elytra to bright reddish to blackish elytra. Punctation is to a certain extent variable, sometimes punctures on pronotum and elytra look same in size and density.

Types. Holotype, female (NHML) and 5 paratypes, females (NHML, ZIN) – "New Hebrides, Malekula, Ounua Mar. & Apl. 1929, Miss. L.E. Cheesman, B.M. 1929–343";

Distribution. New Hebrides: Malekula.

Aethina (*Cleidorura*) *obscura* Reitter, comb. nov.
(Figs 43–48)

Aethina obscura Reitter, 1873: 86; *Aethina* (*Olliffura*) *obscura*: Kirejtshuk 1986.

Diagnosis. This species differs from *transfusa* and *malekulaensis* in having smaller elytral punctures separated by distinctly microreticulate interspaces, subparallel or slightly curved antennal grooves and caudal marginal lines of ventrite 1 extending to the middle of the ventrite. From *sulawesiensis* it may be distinguished by the narrower basal pronotal margin, somewhat sparser metasternal punctation, truncate labral lobes and a distinctive aedeagus (with apically acute tegmen and penis).

Types. Type locality: "Himalaya". Types in ? MNHN.

Distribution. Himalayas, Vietnam.

Aethina (*Cleidorura*) *sulawesiensis* sp. nov.

Diagnosis. This species resembles *obscura* in colouration and in having relatively small elytral punctures separated by distinctly microreticulate interspaces, slightly curved or subparallel antennal grooves and caudal marginal lines on ventrite 1 extending at least to middle of ventrite. It differs from *obscura* in having a broader basal pronotal margin, rounded labral lobes, sparser metasternal punctation and a different aedeagus (with apically rounded tegmen and penis).

Description (male). Length 4.8, breadth 3.0, height 1.4 mm. Oval, rather convex from above and slightly from below; black with dark brown underside and reddish pronotal sides, antenall flagelli and legs; with a slight fat lustre; dorsum with rather short, fine and slightly conspicuous, dark golden hairs, forming on elytra longitudinal rows; underside with longer subrecumbent and well conspicuous yellowish golden hairs; pronotal and elytral sides ciliate.

Surface of head and pronotum with shallow and not quite distinct punctures much larger than eye facets; intervals between punctures densely, finely and contrasting microreticulated. Surface on elytra and pygidium with less distinct, smaller and shallower punctures; interspaces between them with extremely contrasting and almost rasplike microreticulation. Surface on pygidium as that on elytra and pygidium, but with a tendency to become microgranulate. Middle of prosternum and metasternum with more distinct punctures, somewhat larger than eye facets; interspaces between them broader than a puncture diameter, smooth or very smoothed.

Labrum bilobed, with narrow medial excision and widely rounded apices. Antennal grooves rather conspicuous, with sharp inner ridges which are slightly arcuated and subparallelsided. Antennae almost as long as head broad; their club nearly as long as wide and composing about a third total antennal length. Pronotum with basal margin almost as wide as antennomere 2. Caudal marginal lines cavities reaches the middle of the ventrite 1. Pygidium widely rounded at apex.

Tibiae markedly narrower than antennal club. Fore tarsi 2/3 as wide as fore tibiae; claws slightly toothed at base.

Aedeagus well sclerotized.

Types. Holotype, male (NHML) – "Indonesia, Sulawesi, Utara, Dumoga-Bone N.P., February 1985", "Rothamstead, light trap, site 2, 220 m, H. Barlow", "80.20", "Project Wallace".

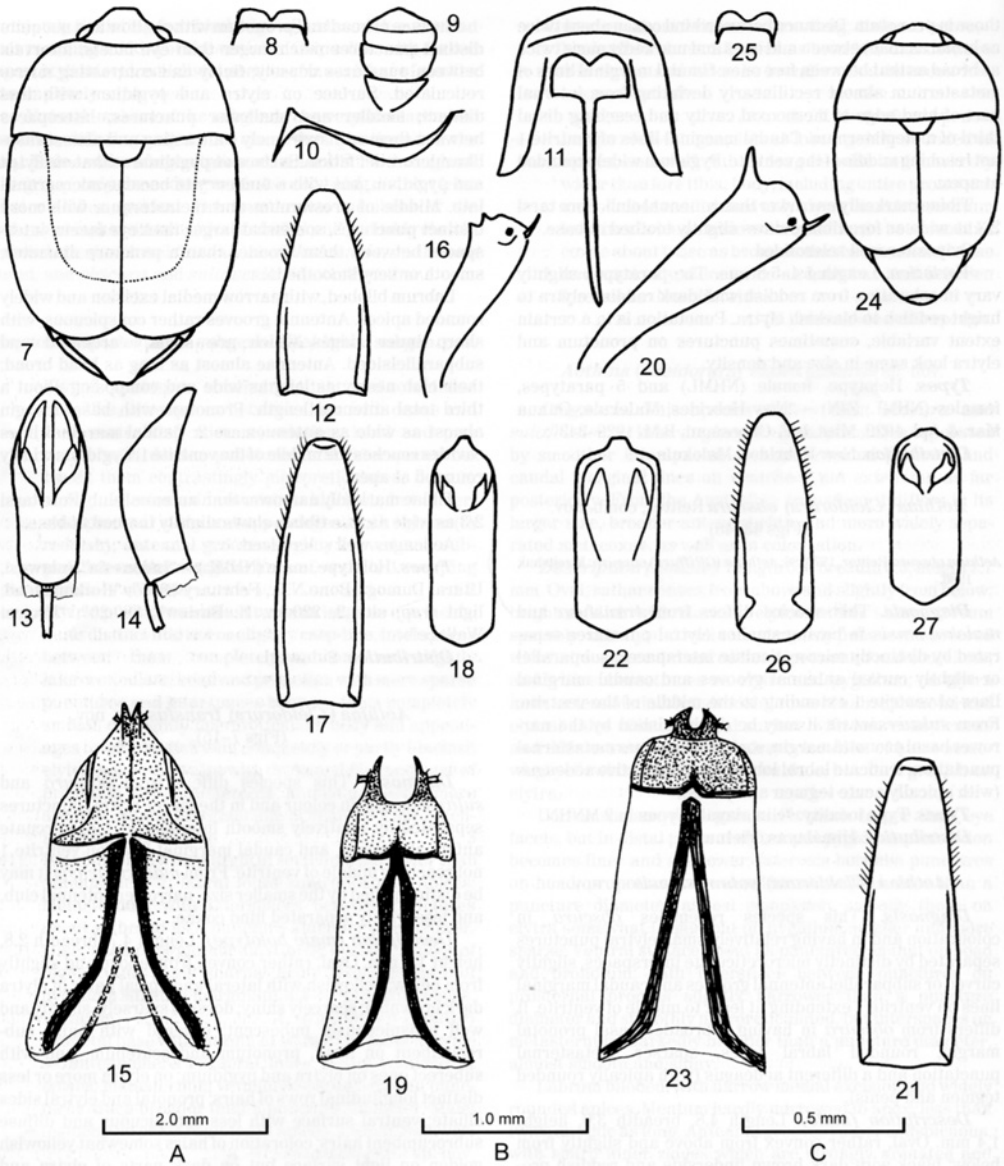
Distribution. Sulawesi.

Aethina (*Cleidorura*) *transfusa* sp. nov.
(Figs 7–15)

Diagnosis. This species differs from *obscura* and *sulawesiensis* in colour and in the larger elytral punctures separated by relatively smooth interspaces, more arcuate antennal grooves, and caudal marginal lines on ventrite 1 not reaching middle of ventrite. From *malekulaensis* it may be distinguished by the smaller size, narrower antennal club, and less widely separated hind coxae.

Description (male holotype). Length 4.7, breadth 2.8, height 1.3 mm. Oval, rather convex from above and slightly from below; yellowish with lateral and apical parts of elytra dark brownish; scarcely shiny; dorsum sparsely, shortly and well conspicuously pubescent: covered with hairs subrecumbent on head, pronotum and scutellum, and with suberect ones on elytra and pygidium; on elytra more or less distinct longitudinal rows of hairs; pronotal and elytral sides ciliate; ventral surface with less conspicuous and diffuse subrecumbent hairs; coloration of hairs somewhat yellowish golden on light surface but on dark parts of elytra and pronotal disk they are almost black.

Dorsal surface with punctures much larger than eye facets, but in distal parts of elytra and pygidium punctation becomes finer and shallower; intervals between punctures on head, pronotum and scutellum nearly as broad as a



Figures 7–27. 7–15. *Aethina* (*Cleidorura*) *transfusa* sp. nov.: (7) habitus, dorsal, with dotted outline of darkened part of elytra; (8) labrum and anterior edge of clypeus, dorsal; (9) antennal club; (10) caudal marginal line behind hind coxal cavity; (11) anal sclerite and spiculum gastrale, ventral; (12) tegmen, ventral; (13) body of penis, dorsal; (14) body of penis, lateral; (15) ovipositor, ventral. 16–19. *A.* (*Idaethina*) *concolor* (Macleay): (16) fore tibia, dorsal; (17) tegmen, ventral; (18) penis trunk, dorsal; (19) ovipositor, ventral. 20–23. *A.* (*I.*) *abbreviata* (Fabricius): (20) fore tibia, dorsal; (21) tegmen, ventral; (22) body of penis, dorsal; (23) ovipositor, ventral. 24–27. *A.* (*I.*) *lugens* (Grouvelle): (24) habitus, dorsal; (25) labrum and anterior edge of clypeus, dorsal; (26) tegmen, ventral; (27) body of penis, dorsal. Scale A: Figs 7, 24; B: Figs 8–10, 16, 20, 25; C: Figs 11–15, 17–19, 21–23, 26–27.

puncture diameter, finely alutaceous to almost smooth; those on elytra and pygidium much sparser. Ventral surface as punctured as that on head and pronotum, with interstices between punctures more or less finely microreticulated, but prosternum with smaller punctures and interstices almost smooth and shiny.

Head much shorter than distance between eyes, concave between antennal insertions, its fore edge not margined and scarcely emarginate, with narrowly rounded side corners. Labrum bilobed, with narrow medial excision and subtruncate at apices. Mandibles not strongly projecting from under labrum, with long sharp apices and strongly curved at sides. Eyes consist of extremely small facets. Mentum hardly narrowed to apex, nearly twice as wide as long. Antennal grooves rather conspicuous, with sharp inner ridges which are strongly arcuated and convergent as to head base as at mandibles. Last segment of maxillary palps 4 times and those of labial palps 3 times as long as thick. Antennae almost as long as head broad; their club considerably longer than wide and composing about a third total antennal length; antennomere 3 somewhat longer than 2 and much shorter than scape.

Pronotum evenly sloped to lateral subexplanate edges which are narrowly margined as is base, its rounded fore corners somewhat projecting, and hind ones almost acute and rather projecting behind. Scutellum subquadrate with gentle outline. Elytra 5/6 as long as their combined width, separately rounded at apices and narrowly explanate sides; more steeply slopped to lateral edges than those in pronotum; shoulders well raised, but subsutural lines not expressed. Pygidium subtriangular, with a considerable arcuate excision at apex.

Prosternum with distinct notosternal sutures; its intercoxal process a little broadened before extremely widely rounded and margined apex which looks from lateral view nearly as a pleat because of weak medial excavation of mesosternum. Distance between hind coxae about 1.5 times as broad as that between mid ones and twice as broad as that between fore ones. Mesosternum somewhat medially swollen. Metasternum flat, with a trace of medial suture in distal half, its hind edge between coxae straight. Caudal marginal lines of metasternum almost rectilinearly deviating from internal part of hind edge of mesocoxal cavity and reaching distal third of metepisternum. Caudal marginal lines of ventrite 1 not reaching the middle of the ventrite. Pygidium transversely subtruncate at apex.

Legs moderately long and not stout. Tibiae slightly wider than antennal club: fore ones subtriangular, without subapical process; mid and hind ones more parallelside and narrowed at base. Fore femora 1.5 times, mid ones nearly twice and hind ones more than twice wider than corresponding tibiae. Fore tarsi 2/3 as wide as fore tibiae, mid and hind ones much narrower; claws slightly toothed at base.

Anal sclerite moderately exposed from under pygidial apex. Aedeagus not heavily sclerotized.

Variation. Length 4.6–4.9 mm. The female differs from the male only in absence of exposed anal sclerite. Ovipositor is well sclerotized. The paratypes are somewhat darker than the holotype with brown metasternum, dark brown pronotal disk and black elytra; pubescence on dark parts of dorsal surface almost black. Punctation is to a certain extent variable, and space between punctures on dorsum trends to be smooth.

Types. QUEENSLAND: holotype, male, "Cow Bay, N of Daintree, N Qld, 9–27.XII.1983, J.C. Cunningham" (DPIM). Paratypes: 3 females, "Kuranda, 1/G.B.", "J.G. Brooks Bequest 1976" (ANIC, ZIN); 1 male, "Cape Tribulation 16 04S 145 28E, 23 Jan. 1991, R. L. Kitching" "Canopy Pyrethrin spray D-3-H-8" "535" (ANIC).

Distribution. Australia: North Queensland.

AETHINA (*IDAETHINA*) Gemminger et Harold

Idaethina Gemminger et Harold, 1868; type species, *Carpophilus longipennis* Motschulsky (designated by Olliff 1884); not *Idaethina* Reitter 1875.

Olliffura Jelinek et Kirejtshuk (in Kirejtshuk 1986), unnecessary replacement name for *Macroura*.

Macroura Reitter, 1873 (non Meuschen); type species, *M. meligethoides* Reitter, 1873 (designated by Kirejtshuk 1986).

Description. Size small to moderately large for the group (2.3–5.8 mm), body nearly flattened to moderately convex above and slightly flattened below; color almost unicolorous; black or dark brown (sometimes elytra and tarsi much lighter); dorsal pubescence consisting of diffuse, uniform and moderately conspicuous hairs, sometimes combined with longer hairs in longitudinal rows on elytra. Elytra very short, with separately rounded apices; elytral surfaces with diffuse punctures large or very small and rasp-like and interspaces smooth or somewhat microreticulated (with dull sheen); subusutural lines absent. Pygidial apex slightly excised, transversely subtruncate or broadly rounded with apex of anal sclerite exposed in males. Antennal grooves absent. Prosternal process medially flat and not curved in accordance with shape of coxae, rather narrow, with vertically abrupt apex. Mesosternum strongly excavate and slightly to distinctly carinate. Without sexual dimorphism in shape of tibiae. Tarsi all very wide, fore tarsi considerably wider, but without sexual dimorphism; claws more or less toothed basally. Caudal marginal lines of ventrite 1 sharply deviating from inner portion of hind edge of metacoxal cavity and forming acute angle behind middle of ventrite. Ovipositor with forked apex, styli lateral, and distal portion of inner lobes of coxites incompletely separated.

Distribution. This subgenus is widely distributed in the Indo-Malayan and Australian regions and extends also in southern China, Taiwan and some Polynesian island systems (see below).

Bionomics. The species of *Aethina* (*Idaethina*) are usually found in the flowers of Malvaceae (mainly *Hibiscus*, but also *Alyogyne* and *Gossypium*), but have also been recorded from Asteraceae (*Dahlia*), Campanulaceae (*Wahlenbergia*), Convolvulaceae (*Ipomoea*), Lecythidaceae (*Planchonia*), Myrtaceae (*Melaleuca*), Solanaceae (*Solanum*) and Zingiberaceae (*Hedychium*). Both adults

and larvae may occur in flowers, but at least in *A.* (*I.*) *concolor* most larval development takes place after flower fall (Gough and Hamacek 1989), and pupation occurs in the soil.

Notes. This subgenus is also characterized and discussed in Kirejtshuk 1986. The included species group are rather similar to one another and the minor differences in the key below should be used in combination with the genitalic illustrations, taking into consideration the extent of variability in the shape of tegmen and penis. The female genitalia are also rather similar in species, except *abbreviata*, do not show any distinct differences. Because the dorsal punctation of *concolor* and *sobrina* is so variable it may be difficult to choose between them; thus *A* (*I.*) *sobrina* is included twice in the key below.

Males of some species have a median patch of glandular hairs on the anterior portion of the prosternum (Figs 3–4); however these are often difficult to see or appear as a slight increase in the density of hairs. These have been observed in males of *abbreviata*, *brunnescens*, *concolor* and *sobrina*. Sexual characters of this type are common throughout Coleoptera and are usually somewhat erratic in their occurrence. In Nitidulidae, similar but more distinct hair patches are located in the same area in species of *Thalycrodes* (Kirejtshuk and Lawrence 1992).

Most data on specimens of the Indo-Malayan species and their depositories were published in Kirejtshuk 1986; therefore only some new or important distributional records for these species are included in this paper.

Key to the Species of the Subgenus *Idaethina*

1. Scutellum emarginate at apex; body dark brown with reddish mouth parts, legs, prohypomera, epipleura and very pale antennae; dorsum covered with greyish, conspicuous hairs; head and pronotum with moderately large but rather dense punctures; elytra with obsolete punctures, nearly rasp-like; labrum with a comparatively wide medial excision. Male: pygidium with excised apex. 4.0–4.4 mm. Aedeagus – Figs 30–32. New Guinea .... *A.* (*I.*) *cuneata* (Grouvelle)

–. Scutellum rounded or truncate at apex; body usually dark brown to almost black with brownish ventral surfaces and appendages 2

2(1). Punctation of dorsum rather coarse and sparse, pronotum with regular oval punctures, much more than 3 eye facets wide (variable, *sobrina* may have finer and rather dense punctation); elytral punctures comparatively large and oval or reduced and rasp-like (in *nigritula*, *orientalis* and *sobrina*) 3

–. Punctation of dorsum moderately fine and dense, pronotum with irregular (frequently rasp-like) or sometimes regular punctures, 2 or less than 2 eye facets wide (except in *lugens* and sometimes *concolor*, where pronotal punctures may be rather large, sparse and regular); punctures on elytra always irregular or inconspicuous and rasp-like 8

3(2). Femora comparatively narrow, hind femora 4 times as long as wide; fore tibiae with 2 subapical teeth very widely separated (Fig. 38); caudal marginal lines behind hind coxal cavities returning to hind edge of cavity at interior third, punctures on head and pronotum with diameter at least 3 or more than 3 times as great as eye facets; punctures on elytra rather small, but distinct. Male: apex of pygidium rather widely rounded than truncate. 3.2–3.7 mm. Aedeagus – Figs 39–40. Australia
..... *A.* (*I.*) *deceptor* (Blackburn)

–. Femora rather widened, hind femora 2–3 times as long as wide; fore tibiae without or with 2 subapical teeth narrowly separated; caudal marginal lines behind hind coxal cavities returning to hind edge of cavity at middle; punctures on elytra variable. Indo-Malayan species 4

4(3). Punctures on metasternum rather sparse, interspaces between them usually much broader or rarely subequal to a puncture diameter, smooth; punctures on elytra very shallow and large or rarely rather reduced; fore tibiae with approximate subapical teeth. Male: pygidial apex shallowly excised. 2.8–4.7 mm. Aedeagus – Figs 50–57. Malaysia (Pahang); Indonesia (Bintang); Philippines
..... *A.* (*I.*) *punctata* (Reitter)

–. Punctures on metasternum dense, interspaces between them narrower than a puncture diameter (usually about half a puncture diameter) and with more or less raised microreticulation 5

5(4). Male: apex of penis more elongate and more gently narrowed; apex of pygidium subtruncate. Elytral punctures rather reduced, rasp like; pronotum with punctures rather dense and very coarse (puncture diameter at least twice as great as eye facet) 6

–. Male: apex of penis rounded and with a small medial tubercle; apex of pygidium subtruncate or slightly emarginate; elytral punctures different; pronotum with punctures markedly sparser or markedly smaller 7

6(5). Interspaces between punctures on pronotum densely and contrastingly microreticulated. Male: tegmen 3 times longer than wide, and penis about 2/3 as long as tegmen. 2.6–3.4 mm. Aedeagus – Figs 58–59. Sri Lanka; Indonesia (Java, Sumatra)
..... *A.* (*I.*) *nigritula* (Reitter)

–. Interspaces between punctures on pronotum more or less smooth. Male: tegmen more than 3 times longer than wide, and penis much shorter. 2.3–3.3 mm. Aedeagus – Figs 60–61. Southern India; Sri Lanka; Indonesia (Sumatra) .. *A.* (*I.*) *orientalis* (Nietner)

7(5). Dorsum somewhat shiny with interspaces between punctures rather smooth; punctures on elytra almost equal to those on head and pronotum, scarcely rasp-like. Male: apex of pygidium rather more slightly emarginate than subtruncate. 2.4–3.3 mm. Aedeagus – Figs 54–55. Nepal; India; China; Myanmar (Burma); Thailand; Vietnam .. *A.* (*I.*) *subrugosa* (Grouvelle)

–. Dorsum almost dull with interspaces between punctures on pronotum densely and contrastingly microreticulated; punctures on elytra strongly reduced, much smaller than those on head and pronotum, distinctly rasp-like. Male: apex of pygidium subtruncate, not emarginate. 2.9–4.9 mm. Aedeagus – Figs 52–53. Sri Lanka; Indonesia (Java, Sumatra, Kalimantan, Timor, Aru Islands, Key Islands); Philippines ..... *A. (I.) sobrina* (Olliff)

8(2). Bicolored: dark brown to black with reddish elytra, mouth parts, antennae and legs (only light specimens look nearly unicolorous); dorsum with rather dense punctation, extremely conspicuous, dense and greyish pubescence; femoral lines of hind coxal cavities returning to hind edge of cavity at middle. Male: apex of pygidium subtruncate or slightly emarginate. 2.8–5.2 mm. Aedeagus – Figs 33–35. Australia (WA, SA) ..... *A. (I.) brunnescens* (Reitter)

–. More or less unicolorous with somewhat lighter mouth parts, antennae and legs (elytra coloured nearly as head and pronotum or slightly lighter); dorsum with comparatively more sparse punctation, usually not quite conspicuous, sparse and yellowish, reddish or brownish pubescence 9

9(8). Pronotum with very dense and asymmetrical punctures partly arranged in irregular transverse rows forming feeble furrows; elytra with punctures scarcely visible and very diffuse, and pubescence rather sparse; caudal marginal lines behind hind coxal cavities returning to hind edge of cavity at lateral third. Male: apex of pygidium slightly excised. 2.8–5.2 mm. Aedeagus – Figs 36–37. Australia (Queensland) ..... *A. (I.) inermis* (Blackburn

–. Pronotum with quite regular and diffuse punctures and without trace of transverse rugosity; elytral punctation more or less visible, and pubescence much denser; caudal marginal lines behind hind coxal cavities returning to hind edge of cavity before middle. Male: apex of pygidium subtruncate or scarcely emarginate 10

10(9). Labrum shallowly emarginate; pronotum with very large and regular punctures, with diameter much greater than 2 eye facets (up to 4 or 5 diameters), separated by a third to half a puncture diameter; scutellum with subtruncate apex. Male: prosternum without median patch of hairs; apex of pygidium shallowly excised. 3.2–3.4 mm. Aedeagus – Figs 26–27 (apex of penis strongly widened). New Guinea ..... *A. (I.) lugens* (Grouvelle)

–. Labrum deeply and sharply excised; pronotum with smaller and much denser punctures (frequently not quite regular); scutellum with widely rounded apex. Male: prosternum with median patch of hairs; apex of penis moderately wide or subacute 11

11(10). Antennae and legs much lighter than body (and lighter than epipleura, i.e. bright reddish); fore tibia with strong subapical process (Figs 3, 5, 20); head and pronotum more finely and densely punctured; at the average larger: 3.6–5.8 mm. Ovipositor – Fig. 23. Australia (NSW, Q); New Guinea ..... *A. (I.) abbreviata* (Fabricius)

–. Antennae and legs nearly as the same colour or slightly lighter than body (usually as dark as epipleuron, brown); fore tibia with weak subapical 2 (1) teeth (Figs 4, 6, 16); head and pronotum moderately finely and moderately densely punctured; on the average smaller: 2.8–5.2 mm. Ovipositor – Fig. 19 12

12(11). More densely and coarsely punctured. Aedeagus – tegmen with rounded apex and penis with truncate apex (Figs 17–18). Australia (WA, NT, Q, ACT, NSW, SA, Lord Howe I.); Norfolk I.; New Zealand; New Guinea; New Britain; Bismarck Is.; Tonga Is.; West-Samoa Is.; New Caledonia ..... *A. (I.) concolor* (Macleay)

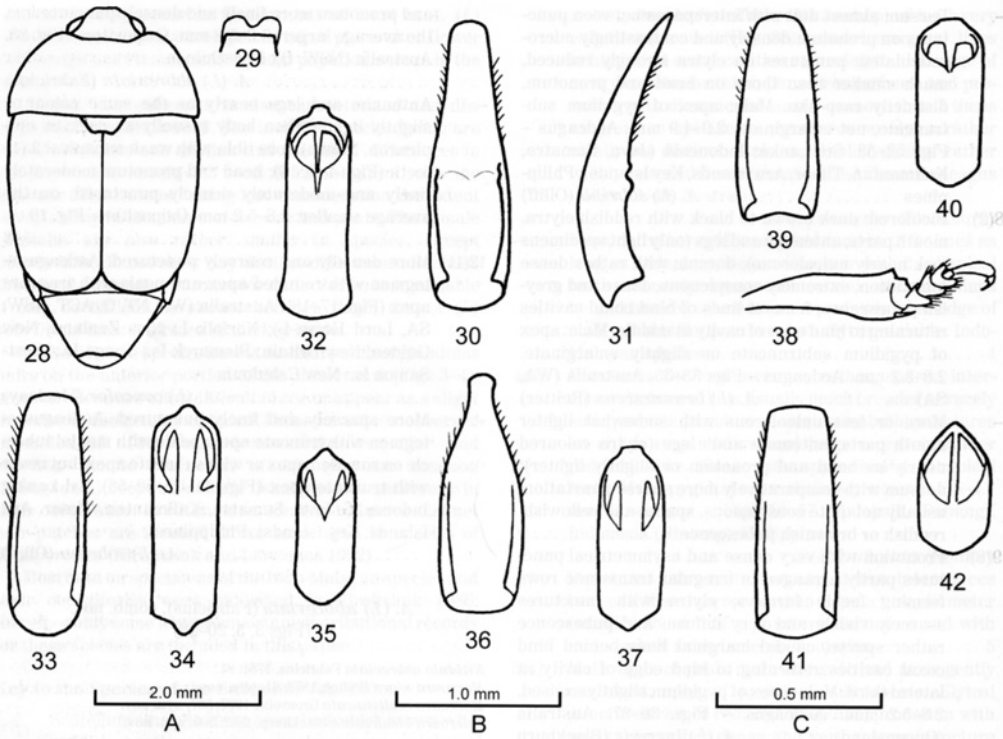
–. More sparsely and finely punctured. Aedeagus – tegmen with truncate apex; penis with medial tubercle on rounded apex or with subacute apex, but never with truncate apex (Figs 41–42, 52–53). Sri Lanka; Indonesia (Java, Sumatra, Kalimantan, Timor, Aru Islands, Key Islands); Philippines ..... *A. (I.) sobrina* (Olliff)

A. (I.) abbreviata (Fabricius), comb. nov.
(Figs 3, 5, 20–23)

Nitidula abbreviata Fabricius, 1781: 91.
Macroura nigra Reitter, 1873: 81, **syn. nov.**
Macroura multilineata Grouvelle, 1907: 567, **syn. nov.**
Macroura bicalcarata Blackburn, 1902: 309, **syn. nov.**

Diagnosis. This species is very similar to *concolor* and *sobrina*, differing from them in the larger, frequently somewhat paler body with appendages much lighter in color, a strong subapical tooth on fore tibiae and the peculiar structure of ovipositor. The large body resembles that of *brunnescens* and *cuneata*, but it differs from in the very characteristic subapical tibial tooth, almost unicoloured body, rounded scutellar apex and subtruncate pygidial apex.

Types. *N. abbreviata* Fabricius: holotype, female, "Nitidula abbreviata /Fabr. Spec. Ins. n. 3" (Banks Collection, NHML); examined (JFL). This single specimen in the Banks Collection is certainly the type of the species; however the type locality given by Fabricius ("nova Zelandia") is incorrect, and should be one of those along the eastern coast of Australia which were visited by the *Endeavor* in 1770. The most likely of these, according to Musgrave (1954) and Radford (1980) is Endeavor River (Cooktown). Among the 5 "syntypes" labelled as "abbreviata" in ZMK and examined by one of us (AGK), one is conspecific with *concolor*; one with *Meligethes atratus* (Olivier), one with *M. (Clypeogethes) coracinus* Sturm and two with *Nitidula rufipes* (Linnaeus). *Macroura nigra* Reitter: lectotype, male (NMW), here designated, "767" and black quadrangle. *Macroura multilineata* Grouvelle: 1 syntype, male (MNP):



Figures 28–42. 28–32. *A.(I.) cuneata* (Grouvelle): (28) habitus, dorsal; (29) labrum and anterior edge of clypeus, dorsal; (30) tegmen, ventral; (31) tegmen, lateral; (32) body of penis, dorsal. 33–35. *A.(I.) brunnescens* (Reitter): (33) tegmen, ventral; (34) body of penis, dorsal; (35) body of penis, dorsal (variant). 36–37. *A.(I.) inermis* (Blackburn): (36) tegmen, ventral; (37) body of penis, dorsal. 38–40. *A.(I.) deceptor* (Blackburn): (38) fore tibia, dorsal; (39) tegmen, ventral; (40) body of penis, dorsal. 41–42. A.(*I.*) *sobrina* (Olliff): (41) tegmen, ventral; (42) body of penis, dorsal. Scale A: Fig. 28; B: Figs 29, 38; C: Figs 30–37, 39–42.

"N. Guinea, Mer. Kapakapa Mag.-Giugno 1891 L. Loria", "Macroura multilineata", "cotype Grouv.". *Macroura bicalcarata* Blackburn: lectotype, female (NHML) here designated – "T. 7169, Ch. T.", "Blackburn Coll., 1910-236", "Macroura bicalcarata Blackb".

Additional material examined. AUSTRALIA: **New South Wales**: Kroombit Tops Nat. Park, 13.II.1986, V. R. Bejsak (1, VRB); Lake Cathie, 4 km N turnoff on Pacific Hwy, nr. Port Macquarie, 15.XI.1995, reared from flowers of *Hibiscus heterophyllus*, J. S. F. Barker (5, ANIC); Lansdowne, 3 km. N, via Taree, 16.XII.1989, *Hibiscus splendens* flowers ex rainforest margin (5, ANIC, ZIN); Pabulum, 22.XII.1896, K: 2674, D. A. Porter (1, AMS); Redhead, SE of Taree, 24.XI.1983, littoral rainf., G. Williams (1, ANIC); **Queensland**: Bald Hill, 11 km WbyN (13.44S 143.20E), 520 m, Mellwraith Range, 27.vi–12.vii.1989, ANIC Berl. 1110, leaf and palm frond litter, T. A. Weir (1, ANIC); Bald Hill, 15 km WNW (13.44S 143.20E), 500 m, Mellwraith Range, 27.VI–12.VII.1989, monsoon rainf. interface site, ANIC Berl. 1122, T. A. Weir (1, ANIC); Beerwah, 1/2 mi. W (26.51S 152.58E), 16.XII.1968, S. Britton. S. Misko" (27, ANIC, ZIN); Bowen, A. Simpson (1, SAM); Brandy Ck. (20.20.5S 148.41E), 8 mi. NE of Proserpine, 11.XII.68, in flowers, E. Britton. S. Misko (14, ANIC, ZIN); Byfield, Yeppoon, I.1960, C. V. (1, ANIC); Calliope, 22 km W, 2.XI.1985, V. R. Bejsak (4, VRB, ZIN); Casuarina Hill, 4 km SE (15.03S 145.15E), 30.IV–2.V.1981, A. Calder (19, ANIC); Emerald, 12.II.1986, ex hibiscus, J. Daly (3, ANIC); Goodnight Scrub State Forest, ex *Hibiscus splendens*, A. Lachance (3, ANIC); Heathlands, 12 km SSE, 7.VI–25.VII.1992, ANIC F.I.T. 1250, closed forest, P. Zborowski, E. Nielsen (1, ANIC); Indooroopilly, Forest Lodge Motel, 17–23.X.1993, S. A. Slipinski, J. F. Lawrence (1, ANIC); Magnetic I. A. M. Lea (13, SAM, ZIN); Murray I., Torres St. (2, AMS); Pine Creen, nr. Bundaberg, 3–7.XI.1975, H. Frauca (1, ANIC); Port Curtis District, Zilzie Point, 19.VIII.1984, T. W. Davies (1, CAS); Rockhampton (2, MACL, ZIN); Yamba, N of Bruce Hwy., 19.IX.1977, on native *Hibiscus* J. Armstrong (6, ANIC); Yeppoon, 30 km N, Stoney Creek, nr. Byfield, 14.VIII.1984, on flowers *Hibiscus maraukensis*, T. W. Davies (4, CAS); **Northern Territory**: Brock Creek, Burnside, 20.IV.1929, T. G. Campbell, "Macroura deceptor Blackb., det. W. K. Hughes" (1, ANIC); Koongarra (12.52S 132.50E), 15 km E of Mt. Cahill, 24.V.1973, E. G. Matthews (1, ANIC); Manton Dam (12.50S 131.08E), 52 km SEbyS of Darwin, 15.XI.1979, T. Weir (2, ANIC, ZIN); Oenpelli, 6 km SWbyS (12.22S 133.01E), 30.V.1973, at light, E. G. Matthews (1, ZIN).

Distribution. Eastern and Northern Australia, from northern New South Wales to the Torres Strait, and Papua New Guinea.

Biology. This species is collected in the flowers of *Hibiscus*, particularly *Hibiscus splendens*.

A. (*I.*) ***brunnescens*** (Reitter), comb. nov.
(Figs 33–35)

Macroura brunnescens Reitter, 1875: 110.

Diagnosis. This species is distinguished from all members of the subgenus by to its distinctive colouration and other features given in the above key.

Types. Type locality: Australia. Type in ? MNHN; not examined.

Material examined. **AUSTRALIA**: **South Australia**: No specific locality "S. Australia" (1, MACL). **Western Australia**: Ajana, 60 km N (27.25S 114.40E) 16.X.1970, M. S. Upton (1, ANIC); Australia occid. 1192 (1, TMB); Balladonia R.H., 35 km NWbyW (32.12S 123.18E), 18.IX.1981, ex ethanol, I. D. Naumann, J. C. Cardale (3, ANIC); Beverley, F. H. du Boulay (4, SAM); Binnu (28.02S 114.39E), 13.IX.1969, E. H. Uther Baker (1, ZIN); Cataby, 11 km NW, 4.XI.1987, M. E. Irwin, E. I. Schlinger (1, CAS); Coral Bay, 17.VIII.1973, K. & E. Carnaby (4, ANIC, ZIN); Freemantle, Mjöberg, IX (1, NRS); Geraldton & Mullewa W.A. Lea (2, ANIC); Geraldton, 20.XI.1920, J. W. Meller (9, SAM, ZIN); Geraldton, W. D. Dodd (1, SAM); Grass Patch, 13 km S (33.21S 121.43E), 19.IX.1981, I. D. Naumann, J. C. Cardale (1, ANIC); Grass Patch, 18 km SbyW (33.23S 121.41E), 19.IX.1981, ex ethanol, I. D. Naumann, J. C. Cardale ((1, ANIC); Grass Patch, 19 km SSW (33.23S 121.40E), 19–20.IX.1981, ex ethanol, I. D. Naumann, J. C. Cardale (1, ANIC); Hyden, E of, 5.II.1977, K. & E. Carnaby (1, ANIC); Irwin River at Yarragadee, 3.XI.1987, M. E. Irwin, E. I. Schlinger (3, CAS); Kalbarri Nat. Park, Meenarra Hill, 1.XI.1987, M. E. Irwin, E. I. Schlinger (7, CAS); Kalgoorlie, Dutz (2, SAM); Kumarl Siding (32.47S 121.33E), 19.IX.1981, ex ethanol, I. D. Naumann, J. C. Cardale (1, ANIC); Lake Grace, 30.I.1974, K. & E. Carnaby (2, ANIC, ZIN); Mt Singleton. 11 km WbyS (29.29S 117.11E), 28.IX.1981, I. D. Naumann, J. Cardale (1, ANIC); Mt. Singleton, 15 km NbyE (29.21S 117.20E), ex ethanol, I. D. Naumann, J. C. Cardale (1, ANIC); Mullewa, 20 mi. W, 4.XI.1968, N. McFarland (1, SAM); Murchison River at Hwy, 1 N of Binnu, 1.XI.1987, M. E. Irwin, E. I. Schlinger (2, CAS); No specific locality " W. Australia" (2, MACL); No specific locality "Austral. occid." (1, NRS); No specific locality "WA" (3, SAM); Northam (1, SAM); Perth VIII.1926 H. J.Carter (4, ANIC, ZIN); Pindar, 14–21.IX.1981, K. & E. Carnaby (1, ANIC); Ponier Rockhole, Balladonia, 5.XII.1974, on *Hibiscus*, S. Barker (36, SAM, ZIN); Red Bluff (27.44S 114.11E), 7.XI.1971, D. & N. McFarland (1, ANIC); Red Bluff, 2 mi. S. of Kalbarri, 12.XI.1971, in *Alyogyne hakeifolia* fls, D. & N. McFarland, larvae drop to pupate in sand or litter (100, ANIC, ZIN); Swan River (2, ANIC); Walsh Point (14.34S 125.51E), 17.V.1983, I. D. Naumann, J. C. Cardale (1, ANIC); Watheroo Nat. Park, 12 km NW Watheroo, 20–23.VII.1987, ex *Mel. uncinata*, C. Reid (15, ANIC); Wubin, 42 km NE (29.49S 116.57E), 26.IX.1981, ex ethanol, I. D. Naumann, J. C. Cardale (1, ANIC).

Distribution. Widely distributed in Western Australia, extending east to South Australia.

Bionomics. Large numbers of adults and larvae were collected in the flowers of *Alyogyne hakeifolia* (Malvaceae) near Kalbarri; the collector noted that larvae dropped to the ground and pupated in the sandy soil.

Notes. Although the type of this species has not been examined, the concept used here agrees with that of Blackburn and Grouvelle.

A. (*I.*) ***concolor*** (Macleay), comb. nov.
(Figs 2, 4, 6, 16–19)

Nitidula concolor Macleay, 1872:162; *Macroura concolor*: Blackburn 1902.
Macroura baileyi Blackburn, 1891: 108; synonymized by Blackburn 1894.
Macroura obscura Blackburn, 1894: 204 (not *Carpophilus obscurus* Macleay, 1872) (misidentification).
Macroura lesnei Grouvelle, 1907: 553, **syn. nov.**
Macroura bouvieri Grouvelle, 1907: 563, **syn. nov.**
Macroura fauveli Grouvelle, 1907: 556, **syn. nov.**
Macroura punctulata Grouvelle, 1907: 554, **syn. nov.**

Diagnosis. This species is very similar to *sobrina*, differing from it and other species according to the above key. Both species are widely distributed, frequently rather common and have considerable variability in punctation, and, therefore, in many cases only the shape of penis trunk allows to distinguish them. Elytral punctation in the New Caledonian specimens is usually more distinct in comparison with the specimens from other areas.

Types. *Nitidula concolor* Macleay: lectotype, male (AMS), here designated and 1 paralectotype (AMS): "K 26913 Gayndah"; 7 paralectotypes (SAM and ZIN): "Gayndah Queensland Masters". *Macroura baileyi* Blackburn: lectotype, male (SAM), here designated and 5 paralectotypes (SAM, ZIN): "3639, N. Qu., Queensland, Blackburn coll.", "Macroura concolor Macl. Baileyi Bl., Queensland, cotype"; (a lectotype should be designated from among the type specimens in the NHML, but they are not deposited there). *Macroura lesnei* Grouvelle: lectotype, male (MNHN), here designated, "Mus. Hist. Nat. Lix Nelle Bretagne", "Macroura Lesnei c. Ty. Grouv." (written by Grouvelle). *Macroura bouvieri* Grouvelle: lectotype, male (MNHN), here designated, "Mus. Hist. Nat. Lix Nelle Bretagne", "Macroura Bouvieri c. Ty. Grouv." (written by Grouvelle). *Macroura fauveli* Grouvelle: lectotype, male (MNHN), here designated, "Mus. Paris, Nouv. Caledonia, Balansa, 1873", "Macroura Fauveli Grouv."; 4 specimens after Fauvel's determination "Nouvelle Caledonia, ex Coll. Fauvel" (IRSN): "Ile des Gri.", "Kanala", "Kanala Heurs 8", "Norinea"; 1 female (IRSN) after Fauvel's determination with label "Australia ex coll. Fauvel". *Macroura punctulata* Grouvelle: 2 syntypes, male and female (NHML), "N. Guinea mer., Kapakapa, Mag Guigna 1891, L. Loria", "ex Genova Mus. 1908–29", "syntype"; 1 syntype, female (NHML), "Pascoe Coll., 93-60", "Macroura punctulata var. Grouv." (written by Grouvelle), "syntype" (a lectotype must be selected from among the type specimens in MCG, which have not been examined).

Other material examined. **AUSTRALIA**: **New South Wales**: Alstonville, 21–196, *Hibiscus mutabilis*, II.1996, D. James (7, ZIN); Ballina, 28.XII.1960, flowers, W. J. M. Vestjens (5, ANIC); Bantry Bay, Sydney, 18,19.XII.1983, 10.XII.1984, 10,18.II.1985, R. Bejsak (8, MACL, VRB); Barrington Tops, 420 m, Barrington House, 16.VI.1978, S. & J. Peck, log litter and fungi (1, ANIC); Broadwater Nat. Park, 13.II.1994, on flowers of *Hibiscus diversifolius*, J. S. F. Barker (21, ANIC); Bronte, near Sydney, 11.XI.1970, D.K. McAlpine (12, AMS); Cabramatta, 26.I,10.II.1982, V. R. Bejsak (4, MACL, VRB); Camels Hump N. R., SW slope, N of Gloucester, 10.I.1989, flowers of *Hibiscus heterophyllus*, G. Williams (2, ANIC); Cessnock, III.1961, on *Dahlia* flowers, N. Jackson (4, ANIC, ZIN); Chatswood, III.1950, A. Dyce (1, ANIC); Cheltenham, Sydney, 18.I.1985, R. Bejsak (1, MACL); Clarence R., A. & F. R. Zietz (3, SAM); Coogee, J. Armstrong (4, ANIC); Cowra, 6.75 km N (33.46.25S 148.41.46E), 9.IV.1994, *Ipomoea*, G. V. Maynard, G. Davis (1, ANIC); Cronulla, 17.XII.64, in flowers J. Anderson (2, MACL); Deniliquin (12, ANIC, 2, ZIN); Eccleston, J. Hopson (2, SAM); Great Mackerel Beach, Sydney, 13.III.1988, R. Bejsak (8, MACL); Inverell, N. Smith (2, ANIC); Lansdowne, 0.5 km SE, 10–11.XII.1992, riverine rainforest, ethanol trap, G. A. Williams (2, ANIC); Lansdowne, 3 km N, via Taree, 12.XI.1992, ex *Hibiscus splendens*, G. Williams (3, ANIC); Leeton, 11.II.1969, on *Hibiscus* flowers, P.Atkinson (52, ANIC, ZIN); Lord Howe Island, 21–30.I.1985, G. F. Bornemissza (2, ZIN); Mt. Druit, IX.1983, ornamental roses, F. A. Mellor, (3, ANIC, ZIN); N.Ward, 8.IV.1934, J. G. Brooks Bequest, 1976 (2, ANIC); Narrabeen, 4,5.I.1981, 25.XII.1984, G. Hangay (5, TMB); Narrabri (30.19S 149.47E), 27.X.1969, trapped in yellow aphis pan. A.P. Guttierez (11, ANIC, ZIN); North Sydney, 1.I.1983, Z. Liepa (2, ANIC); Nowra, 14.III.1934, Rodway (1, ANIC); Nyngan, 2.18 km ESE (31.34.35S 147.13.12E), 8.IV.1994, *Wahlenbergia*, G. V.

Maynard, G. Davis (3, ANIC); Quaker Hill, H. Davidson (2, ANIC); Redhead, SE of Taree, 24.XI.1983, littoral rainf., G. Williams (4, ANIC); Rose Bay, Sydney, 26.I.1985, R. Bejsak (8, MACL, ZIN); Sydney (5, SAM); Sydney, 25.VII.1906, Helms Collection (1, BMH); Sydney, 30.XI.1986, H. & A. Howden (1, ANIC); Temple, Sydney, II.1983, J. Leon (1, MACL); Wahroonga, 30.X.1932, H. J. Carter (1, ANIC); Wahroongah, NSW, H. J. Carter (5, ANIC, ZIN); Woko Nat. Park, NNW Gloucester, 20.XII.1991, ex flwrs. *Hibiscus heterophyllus*, G. Williams (2, ANIC); Yuraygir Nat. Park, Station Creek, 20.XI.1982, J. & E. Doyen (12, ANIC). **Australian Capital Territory**: Ainslie, ACT, 26.II.1983, in *Hibiscus* flowers J. F. Lawrence (2, ANIC, ZIN); Canberra, 11.I.1991, on *Hibiscus* flowers, A. G. Kirejtshuk (2, ZIN); Canberra, A.C.T. 4.III.1976, "Carpophilus aterrimus Macl., E. B. Britton det. 1976" (3, ANIC, ZIN); O'Connor, 26.I.1981, on *Dahlia* flowers, H. J. Banks (5, ANIC). **Queensland**: Almaden, 6 km ESE (17.22S 144.44E), 530 m, 31.III.1984, A. Calder, T. Weir (1, ANIC); Ayr (19.35S 147.24E), 10,15.X.1970, W. B. Muir (4, ANIC, ZIN); Bald Hill, 11 km W by N, search party campsite (13.44S 143.20E), 520 m, Mellwraith Range, 27.VI–12.VII.1989, T.A. Weir, (1, ANIC); Beerwah, 0.5 mi W (26.51S 152.58E), 16.XII.1968, E. Britton, S. Misko (9, ANIC, ZIN); Bluff Range, Biggenden, 21.X.1972, H. Frauca (10, ANIC, ZIN); Boigu I., Torres Straits, Q, C.D. McNamara (8, SAM, ZIN); Brandy Ck. 8 mi. NE of Proserpine (20.20.5S 148.41E), 11.XII.68, in flowers, E. Britton. S. Misko (9, ANIC, ZIN); Brisbane, 4.II.1912 H. Hacker (4, SAM); Brisbane, A.J. Turner (2, SAM); Brisbane, A.M. Lea (2, SAM); Brisbane, Blackwood (2, AMS); Brisbane, II.1984., N. Gough, bred from *Hibiscus* flowers (3, ANIC, ZIN); Brisbane, Q., Blockwood (2, AMS); Brisbane, XI.1988, ex *Hibiscus* flwrs., C. Murray (12, ANIC); Brookfield, Brisbane, 3–7.XI.1986, R. Bejsak (8, MACL, ZIN); Bundaberg (3, SAM); Bundaberg, II.1971, 20.X.1971, 20.II.1972, 15–30.II.1973, H. Frauca (37, ANIC, ZIN); Burnet River Bundaberg, II.1973, H. Frauca (1, ANIC); Cairns distr., A.M. Lea (26, SAM); Cairns, 14 Jul.84, C. Rojewski (6, SAM); Cairns, 14,16,31.VII.1969, J. E. Tobler (43, CAS); Cairns, 15871, "Macroura inermis Blackb." (6, SAM); Cairns, 27.VII.1969, R.E. Parrott (1, CNC); Cairns, 6.IX.1972, G. G. E. Scudder (4, BMH); Cairns, E. Allen, "deceptor" (2, SAM); Cairns, F.P. Dodd (12, SAM); Cairns, H.C. Thompson, 1903 (1, SAM); Cairns, X.1970, J. G. Brooks (2, ANIC); Camira, XII.1987, B. Molnar (4, TMB, ZIN); Captain Billy Landing (11.38S 142,51E), 21.I.1992, T. A. Weir, I. D. Naumann (11, ANIC); Casuarina Hill, 4 km SW (15.03S 145.15E), 30.IV–2.V.1981, A. Calder (11, ANIC); Coen R., W. D. Dodd (2, SAM); Cooktown (1, SAM); Dalby, F. H. Hobler (2, SAM); Darr River (23.13S 144.04E), 31 km NWbyN of Longreach, 22.X.1975, M. S. Upton (1, ANIC); Edge Hill, NW of Cairns, 9,18,21,30.VII.1969, J. E. Tobler (23, CAS); Edge Hill, Cairns, 11.VIII.1969, R.E. Parrott (4, CNC); Eidsvold, T. L. Bancroft (6, ANIC, ZIN); Electra S. F., c. 25km S of Bundaberg, QLD, 13–IX. 25.X.1976, H. Frauca (4, ANIC, ZIN); Emerald, 12.II.1986, ex hibiscus, J. Daly (1, ANIC); Emerald, 31.XII.1986, ex flight int. trap, H. & A. Howden (5, ANIC); Endeavour (1, SAM); Farmer I. (12.15S 143.13E), 23.VII.1969, H. Heatwole (1, ANIC); Indooroopilly, Brisbane, 20.I,14.III.1981, S. W. DeBeer (2, ANIC); Ingham, 20 km N, 29.I.1981, T. J. Hawkesvood, TH 2/4 (6, ANIC, ZIN); Jimboomba (27.50S 153.02E), 8.III.1991, ex *Hibiscus* flwrs., W. Dressler (20, ANIC); Kuranda, Griffith Collection (1, SAM); Kuranda, I.1949, J. G. Brooks Bequest (4, ANIC); Lake Barrine, 750 m, 31.VII.1982, SBP 94, rotted bark litter, S. & J. Peck (1, ANIC); Leumeah, 27.II.1934, G. Burns (7, MACL, ZIN); Mareeba, 11 km S, Southedge Tob. Res. Sta., 22–23.XII.1986, flwrs. *Planchonia careya*, H. & A. Howden (1, ANIC); Maroo, 19.I.1973, S. Allen (1, ANIC); Maryborough, Manski (7, ANIC); Moa I., Torres Straits, J.W. Schomberg (2, SAM, ZIN); Mt. Carbine, 10 km S, Station Creek, 27.XII.1986, H. & A. Howden (1, ANIC); Mt. Cook Nat. Park (15.29S 145.16E), Cooktown, 11–20.X.1980, ex ethanol, J. C. Cardale (1, ANIC); Mt. Spec., 16.I.1965, J. G. Brooks (1, ANIC); Mt. Tozer, 2 km NNE (12.44S 143.13E), 3.VII.1986, T. Weir, A. Calder (2, ANIC); Mt. Walsh Nat. Park, c. 10 km SbyE of Biggenden, 14.XI.1990, H. Frauca (1, ANIC); Mt. Walsh, nr. Biggenden, 17.X.1975, c. 1000 m, H. Frauca (1, ANIC); Noah Beach (16.08S 145.27E), 9 km ENE Thornton Peak, 27.III.1984, A. Calder, T. Weir (1, ANIC); O'Reilly's (28.14S 153.08E), Lamington Nat. Park, 25,28.X.1993, S. A. Slipinski, J. F. Lawrence (1, ANIC); Pine Ck, nr Bundaberg, 3–7.XI.1975, H. Frauca (1, ANIC); Pine Mountain, K26915 (2, AMS); Proserpine, 2.I.1978, J. Thurmer (1, SAM); Rainbow Beach, ex *Ipomoea pes-caprae*, A. Lachance (3, ANIC); Rockhampton (5, SAM, ZIN); Rockhampton, 26–27.XI.1967, J. & M. Sedlacek (7, BMH); Rosedale, 17.XI.1973, H. Frauca (8, ANIC, ZIN); Somerset, I.1875, L. M. D'Albertis, "Museum Leiden Macroura densita det: Reitt" (1, ZIN); Somerset, I.1875, L. M. D'Albertis, "Microura densita" Reitter typique" (1, SAM); Stoney Creek, nr. Byfield, 30 km N of Yepoon, 14.VIII.1984, on flowers *Hibiscus meraukensis*, T. W. Davies (2, CAS); Thangool, 30 km SE, 15.XI.1986, V. R. Bejsak (1, VRB); Thunderbird Park, Tamborine Mountain, 23–29.X.1993, S. A. Slipinski & J. F. Lawrence (20, ANIC); Tin Can Bay (25.54S 153.01E), 30.VIII.1980, W. Allen (1, ANIC); Toowoomba, 23.III.1965, S. Macqueen, J. G. Brooks Bequest (12, ANIC, ZIN); Toowoomba, 4,20.II,26.XI.1974, J. Macqueen (4, ANIC); Watalgan Range (24.45S 152.03E), 1500 ft., 23.X.1971, on *Hibiscus*, H. Frauca (11, ANIC); Watalgan Range, N of Bundaberg, 7.X.1972, H. Frauca (1, ANIC); West Chermside, Brisbane, 4.V.1991, S. Khan (4, ANIC); Yandina (26.34S 152.57E), 24.IX.1990, W. Dressler (1, ANIC); Yeppoon, 25.XI.1967, J. & M. Sedlacek (3, BMH); Yeppoon, X.1924, H. J. Carter (4, ANIC). **Northern Territory**: Bathurst Isl., G. F. Hill (3, SAM); Bessie Spring (16.40S 135.51E), 8 km ESE of Cape Crawford, 26.X.1975, M. S. Upton (1, ANIC); Black Point, Cobourg (11.09 S 132.09E), 2.II.1977, E. D. Edwards (3, ANIC, ZIN); Caranbirini W. H., (16.16S 136.05E), 33 km SW of Borroloola, 3.XI.1975, M. S. Upton (1, ANIC); Darwin, 0–50m, XI.1968, N. L. H. Krauss (1, BMH); Darwin, A. M. Lea (1, SAM); Darwin, G. F. Hill (3, SAM); Delamere, 12.IX.1968, M. Mendum (1, ANIC); Darwin, W. K. Hunt (13, SAM, ZIN); East Point, nr Darwin (12.28S 130.50E), 12.XI.1972, in flowers of *Hibiscus tiliacens*, E. Britton (1, ANIC); Groote Eylandt, N. B. Tindale (1, SAM); Katherine, 17.IV.1956, cotton flowers, L. D. Crawford (6, ANIC); Lee Point (12.20S 130.54E), 15 km NNE of Darwin, 17.XI.1979, T. Weir (7, ANIC, ZIN); McArthur River (16.27S 136.05E), 48 km SW by S of Borroloola, 29.X.1975, M. S. Upton (2, ANIC); Melville L., 16.IV.1914, in *Hibiscus* flowers, G. F. H., "*Macroura deceptor* Bl. det. Lea" (8, SAM, ZIN); Roper River Mission, 18.V.1977, on *Acacia*, M. Tyler (3, SAM). **Western Australia**: Charnley Riv., 2 km SW Rolly Hill, CALM site 25/2 (16.22S 126.12E), 16–20.VI.1988, open forest I. D. Naumann (1, ANIC); Cockatoo Ck., 3 km from road near Junctionn of Argyle Rd and Conning Hwy, 21.II.1977 (2, SAM); Coral Bay, 17.VIII.1973, K. & E. Carnaby (1, ANIC); Kimberley Research Station, ex cotton, 3.II.1960, K. T. Richards (1, ANIC). **South Australia**: Tallaringawell, 24 km WNW, 5.X.1960, F. Gross (1, SAM). **NORFOLK ISLAND**: Highland Guesthouse (29.02S 167.57E), 23.III.1984, J. Feehan, swimming pool (3, ANIC); No specific locality (Field No 131), 10.XI.1980, on ornamental shrubs, R. Paten (1, ANIC); Point Hunger Reserve (29.04S 167.58E), 29.XI.1984, ex ethanol, I. D. Naumann (1, ANIC); Selwyn Pine Rd. (29.01S 167.57E), 120 m, 25.III.1984, E. D. Edwards (5, ANIC, 2 ZIN); Stop 16 (29.02S 167.57E), 20.III–9.IV.1984, burnt pine, J. Evans (3, ANIC). **NEW ZEALAND**: Orakei, Auckland, Botanix Garden Centre, 22.II.1990, 28835, ex *Hibiscus*, J. P. Dickinson (2, ANIC); Remuera, Auckland, Botanix Nurseries, 22.II.1990, ex Hibiscus, K. Chadfield (2, ANIC). **NEW GUINEA**: Boana Mission, Huon Pen., NE, 900 m, 4–5.IX.1956, E. F. Ford (7, BMH,. ZIN); Bougainville (S.), Kieta, 29.XI.1959, T. C. Maa (4, BMH); Bubia, NE, 1956, E. F. Ford (2, BMH); Deutsch Neu-Guinea Cötzelmann, Mus. Hauschild, 12 –9 –1914 (4, ZIN, ZMK); Finisterre Range, NE, Saidor: Sibog Vill., 6–16.VI.1958, W. W. Brandt (2, BMH); Ifar, Cyclops Mts., NW, 300–500 m, 28.VI.1962, J. L. Gressitt (1, BMH); Ifar, Cyclops Mts., NW, 400 m, 27.VI.1962, *Ipomoea*, J. L. Gressitt (1, BMH); Kamong, New Ireland Dist., NE, 0–50 m, X.1968, N. L. H. Krauss (1, BMH); Lae, I.1969, H. Ohlmus (1, ANIC); Lae, IX.1949, N. L. H. Krauss (3, BMH, ZIN); Markham River, NE, 50 m, 20–25.I.1962, J. & M. Sedlacek, G. Monteith (1, BMH); Port Moresby, SE, 30 m, 27.II.1964, J. Sedlacek (3, BMH); Mindik, Morobe Dist., NE, 1200–1600 m, IX.1968, N. L. H. Krauss (2, BMH); Mt. Hagen, W. Highland, 21.VIII.1972, G. G. E. Scudder (1, BMH); Normanby I., Papua, Wakaiuna, Sewa Bay, 1–10, 21–31.XII.1956, W. W. Brandt (5, BMH); Ulap, Morobe Dist., NE, 800–1100 m, IX.1968, N. L. H. Krauss (2, BMH, ZIN); Wau, Morobe Dist., B. P. Bishop Museum Field Station, 4.X.1969, J. E. Tobler (5, CAS, ZIN); Wau, NE, Vanjub, Clissold (1, BMH). **BISMARCK ISLANDS**: Manus Lorengau, 25.VI.1962, Noona Dan Exp. 61–62 (1 ZMK). **NEW BRITAIN**: Gaulim, Gazelle Pen., 140 m, 21–27.X.1962, J. Sedlacek (4, BMH); Kandrian, S. Coast, 1m, 18.IV.1956, J. L. Gressitt (2, BMH); Rabaul, 0–100 m, X.1968, N. L. H. Krauss (7, ANIC, BMH, ZIN); **NEW CALEDONIA**: Col d'Amieu, 500 m, 26.XII.1976, J. L. Gressitt (5, BMH, ZIN); Hienghene, 0–50 m, I.1969, N. L. H. Krauss (1, BMH); Isle of Pines, Vao, 0–100 m, I.1985, N. H. L. Krauss (2, CAS, ZIN); Mt. Bourail, on *Ipomoea*, 26.V.1928, W. P. Cockerell, Pres. by Imp. Bur. Ent. Brit. Mus., 1928-511 (1, ANIC); Mt. Koghi (road to), 200–300 m, XII.1984, N. L. H. Krauss (1, BMH); Noumea, 0–50 m, III.1978, N. L. H. Krauss (1, BMH); Noumea, 0–100 m, XII.1984, N. L. H. Krauss (2, CAS); Noumea, 1.XI.1944, W.Crabb, (4, FMC, ZIN); Noumea, 31.X.1940, on purple fls, *Ipomoea* sp., F. X. Williams (1, BMH); Noumea, II.1958, J. Rageau (2, BMH, ZIN); Noumea, V.1950, II.1958, N. H. L. Krauss (3, BMH); Plum, 50 m, 22–25.XII.1990, Wiesner & Worm (5, NHML, ZIN); Touho (beach area), 8.III.1978, E. I. Schlinger (1, CAS); Yahoue, 100–200 m, XII.1983, N. L. H. Krauss (4, BMH, ZIN); Yahoue, XII.1985, N. L. H. Krauss (13, ZIN, ZMK). **LOYALTY ISLANDS**: Lifou I.: 1 km W Doueoulou, 0–30 m, 19–20.VIII.1979, flowers, G. A. Samuelson (1, BMH); Lifou I.: We,

30–31.I.,II.1962, N. L. H. Krauss (6, BMH, ZIN); Mare I.: La Roche, III.1959, N. L. H. Krauss (2, BMH); Ouvea, Fayaoue, 0–50 m, I.1969, N. L. H. Krauss (1, BMH). **SOLOMON ISLANDS**: Guadalcanal, Honiara, 0–100 m, III.1986, N. H. L. Krauss (3, CAS, ZIN); Guadalcanal, Honiara, 0–100 m, X.1970, Y. Hirashima (6, BMH, ZIN); Guadalcanal, Honiara, 0–200 m, X.1972, XII.1975, N. L. H. Krauss (3, BMH, ZIN); Kolombangara, Iriri, New Georgia Group, 2 m, 29.VI.1964, T. & M. Sedlacek (4, BMH, ZIN); Malaita, 3 km N Auki, 30 m, 2.VI.1964, J. & M. Sedlacek (1, BMH); Santa Cruz, Graciosa Bay, 0–50 m, I.1977, N. L. H. Krauss (2, BMH, ZIN). **VANUATU (NEW HEBRIDES)**: Efate I.: Port Vila, 0–100 m, I.1973, I,XII.1983, III.1986, N. L. H. Krauss (10, ANIC, BMH, CNC, ZIN); Erromango, 8 km W of Ipota, 100–200 m, III.1970, N. L. H. Krauss (2, BMH); Espiritu Santo I., Luganville, 0–100 m, XII.1983, N. L. H. Krauss (2, BMH, ZIN); Maewo I., Kerepei, 0–200 m, XII.1983, N. L. H. Krauss (1, BMH); Segond Channel, Santo, VIII.1950, N. L. H. Krauss (2, BMH); Tana (Tanna), 0–100 m, XII.1985, J. E. Tobler (7, CAS, ZIN); Tanna I.: Lenakel, 0–100 m, XI.1978, N. L. H. Krauss (2, BMH, ZIN); Tanna I.: Lenakel, 0–200 m, I.1981, N. L. H. Krauss (2, BMH). **FIJI**: Ndavingeile, Kadavu, 27.IV.1941, N. L. H. Krauss (2, BMH); Ovalau, Levuka, 0–150 m, III.1969, N. L. H. Krauss (2, BMH, ZIN); Vanua Levu I.: Savusavu, 0–100 m, III.1973, N. L. H. Krauss (1, BMH); Vanua Levu I.: Savusavu, 25 m, 9.X.1979, in pink tubular flowers, G. A. Samuelson (2, BMH, ZIN); Viti Levu, Suva, III.1956, XI,1957, III.1966, N. L. H. Krauss (9, BMH, ZIN); Viti Levu: Beach S of Vuda Point, 17.III.1978, E. I. Schlinger (3, CAS); Viti Levu: Suva, 5.III.1966, in flowers *Solanum torvum*, N. L. H. Krauss (3, BMH, ZIN);Viti Levu: Suva, Mt. Korobaba, 17.II.1969, J. E. Tobler (1, ZIN). **TONGA ISLANDS**: Tongatapu I., Nukualofa, 0–100 m, VIII.1969, XII.1979, N. L. H. Krauss (5, ANIC, BMH); Tongatapu I.: Nukualofa, III.1966, II.1978, I.1980, N. L. H. Krauss (11, ZMK, ZIN); Tongatapu I: Nukualofa, 0–50 m, I.1979, N. L. H. Krauss (3, BMH, ZIN); Valau I., I.1980 N.L.H. Krauss (19, ZMK, ZIN); Vavau, Neiafu, 0–100 m, XI.1969, I.1980, N. L. H. Krauss (5, BMH, ZIN). **SAMOA**: Savaii, Asau, 100 m, III.1979, N. L. H. Krauss (3, BMH, ZIN); Tutuila, Fagotogo, 3.XII.1963, M. R. Spencer (2, BMH, ZIN); Upolu I., Apia, 0–150 m, I.1978, II.1980, N. L. H. Krauss (8, BMK, ZIN, ZMK); Upolu I., Apia, 31.I.1969, B. Hocking (3, BMH). **SOCIETY ISLANDS**: Tahiti I., Fahe, 0 –150 m, III.1979, N. L. H. Krauss (3, BMH, ZIN); Tahiti I., Pinaauia, 0–150 m, 22.XII.1977, N. L. H. Krauss (9, BMH). **HAWAI'I**: Oahu: Honolulu, 8.VI.1981, M. Hansen & J. Pedersen (9, ZMC, ZIN); Waikiki Beach, Honolulu, 24.XII.1969, D. Giuliani (1, CAS).

Distribution. Widely distributed throughout the Australo-Pacific region, from Australia and New Guinea to the Society Islands. It also occurs in Hawaii and New Zealand, but in both cases it may be associated with introduced plant species. In Australia, it is widely distributed but often associated with garden hibiscus.

Bionomics. This species lives primarily on the flowers of *Hibiscus* species but has also been found on *Dahlia* and *Gossypium*. Adults and larvae are commonly seen feeding on pollen in fresh flowers, but larvae continue development after flower fall, probably feeding on the decomposing flower parts, and pupation occurs in the soil. Gough and Hamacek (1989) studied the impact of the species on bud fall in cultivated hibiscus.

A. (*I.*) ***cuneata*** (Grouvelle), comb. nov.
(Figs 28–32)

Macroura cuneata Grouvelle, 1907: 570.
? *Macroura loriai* Grouvelle, 1907: 571.

Diagnosis. This species seems to be rare, but quite distinct according to the characters in the above key. It somewhat resembles *brunnescens* and *abbreviata* in the comparatively large body and lighter coloration, although the emarginate apex of the pygidium is a unique character.

Types. *Macroura cuneata* Grouvelle: 1 syntype, male (MNHN) – "N Guinea Mer., Irupara, Agosto–Otto 1889, L. Loria", "Collection Grouvelle", "Macroura cuneata cotyp. Grouv." – examined (a lectotype must be selected from among the type specimens in MCG, which have not been examined). *Macroura loriai* Grouvelle: 1 syntype, male (NHML) Macroura loriai Grouv., male – "N.Guinea, Mer Kapakapa, Mag. Guingo, 1891, L. Loria", "Macroura Loriae Gr. Cotype" (written by ? Grouvelle) – examined (a lectotype must be selected from among the type specimens in MCG, which have not been examined).

Distribution. New Guinea.

Notes. Grouvelle (1913b) synonymized *sobrina* and *loriai*, but in the original description (Grouvelle 1907) he recorded that *loriai* is close to *cuneata*, pointing out the large body, characteristic shape of the scutellum and the punctation. If the remaining specimens in MCG are conspecific with *cuneata*, then Grouvelle's synonymization should be corrected.

A. (*I.*) ***deceptor*** (Blackburn), comb. nov.
(Figs 38–40)

Macroura deceptor Blackburn, 1891: 108.

Diagnosis. This species is well characterized by a unique character: the comparatively very narrow legs.

Types. Lectotype, male (NHML), here designated and 1 paralectotype – "T. 2775, N.", "Blackburn Coll. 1910-236" "Macroura deceptor Blackb." 4 paralectotypes (SAM and ZIN): "2775 N.T.", "Macroura deceptor Bl., N. Territory, cotype".

Other material examined. AUSTRALIA: Northern Territory: Manton Dam (12.50S 131.08E), 52 km SE by S of Darwin, 15.XI.1979, T. Weir (1, ANIC); "Northern Territory" (2, ANIC, ZIN).

Distribution. Northern Australia.

A. (*I.*) ***inermis*** (Blackburn), comb. nov.
(Figs 36–37)

Macroura inermis Blackburn, 1902: 307, 310.

Diagnosis. This species has a characteristic pronotal punctation and peculiar shape of the tegmen. It can easily diagnosed according to the above key.

Types. Lectotype, male (SAM), here designated and 2 paralectotypes, "N. Qu., 1170", "N. Queensland, Blackb's Coll.", "Macroura inermis cotype"; 1 paralectotype, female (NHML) – T. 7170, N. Ql., "Blackburn Coll., 1910-236", "Macroura inermis Blackb.".

Other specimens examined. AUSTRALIA: **Queensland:** Kuranda, I, II.1947, J. G. Brooks Bequest (6, ANIC, ZIN); Mt. Blackwood (21.02S 148.56E), 14 km SE by E Mount Ossa, 550 m, 18.XI.1981, Berlesate 27, meso-notophyll-vine forest, A. Gillison, (1, ANIC).

Distribution. North Queensland.

Notes. The lectotype of this species was chosen from among the male syntypes in the SAM because the single specimen in NHLM is a female.

A. (*I.*) ***lugens*** (Grouvelle, 1907), comb. nov.
(Figs 24–27)

Macroura lugens Grouvelle, 1907: 568.
Macroura lugens var. *rugulosa* Grouvelle, 1907: 570.

Diagnosis. This species is quite distinct among the species of the subgenus due to a comparatively shallow medial excision of labrum. It has some resemblance to *cuneata*, but differs from it in the shallower labral excision, smaller body size, much coarser and sparser pronotal punctures and subtruncate pygidial apex.

Types. Syntype, male (MNHN), "N. Guinea Mer., Kapakapa, May Guigna 1891, L. Loria", "Macroura lugens Gr. cotyp."; 5 syntypes, females (NHML) –"N.Guinea Mer., Kapakapa, Mag Guigno, 1891, L. Loria", "Macroura lugens". A lectotype should be selected from among the type specimens in MCG, which have not been examined.

Distribution. New Guinea.

A. (*I.*) *nigritula* (Reitter)
(Figs 58–59)

Macroura nigritula Reitter, 1873: 82; *Aethina* (*Olliffura*) *nigritula*: Kirejtshuk 1986.

Diagnosis. This species is similar to *orientalis*, *subrugosa* and *sobrina* but differs from them according to the characters mentioned in the above key.

Types. Apparently in MNHN, not examined. Type locality: Ceylon?.

Other material examined. **SUMATRA**: 5 (DEI, RMNH, ZIN); **JAVA**: Teibodas, X.1874, O. Beccari, "Macroura nigritula", "teste Grouvelle" (1, MCG); Bantam, J. J. de Vos (10, RMNH, ZIN); Bandar, Baroe, J. J. de Vos (2, RMNH).

Distribution. Sri Lanka, Sumatra and Java.

Notes. The concept of *nigritula* used here is based on that of Grouvelle in the hope that his interpretation was the correct one. Unfortunately, the authors did not see any conspecific specimen from Sri Lanka (type locality). Previous synonymization of *nigritula* and *dubia* by Grouvelle (1907) is incorrect because type specimens of the latter are evidently conspecific with the type specimens of *subrugosa* (see below).

A. (*I.*) *orientalis* (Nietner)
(Figs 60–62)

Meligethes orientalis Nietner, 1856: 11; *Macroura orientalis*: Grouvelle 1907; *Aethina* (*Olliffura*) *orientalis*: Kirejtshuk 1986.
Carpophilus longipennis Motschulsky, 1858: 40; synonymized by Kirejtshuk 1986.
Idaethina nigritula Olliff, 1886: 70 (not Reitter 1873) (misidentification).
Meligethes respondens Walker, 1859: 53; synonymized by Grouvelle1907.

Diagnosis. This species is similar to *nigritula*, *subrugosa* and *sobrina* but it is the shiniest species among them and also differs in the characters mentioned in the key.

Types. *Meligethes orientalis* Nietner: 4 ? syntypes (ZIN, ZMB). *Carpophilus longipennis* Motschulsky: lectotype, male (ZIN – designated by Kirejtshuk 1986) and 6 paralectotypes (NRS, ZIN). *Meligethes respondens* Walker: types in NHML (according to Grouvelle 1907), not examined.

Other specimens examined. 73 from India and Sri Lanka (NHML, TMB, ZIN, ZSI); 2 (TMB) – "Sri Lanka, Southern Province, Galle District, Habaradawa, 20.8–4.9.1982, H.J. Bremer" 5 (NMW, ZIN) – "N-Sumatra, 3.2, D.Toba, Samosir, Tuk Tuk, Indonesia, 1990, Schillhammer"; 6 (NMW, ZIN) – "India, Kerala, Cardamon Hills, Periyar Nat. park, 900 m, 12.10.1991, R. Schuh".

Distribution. India, Sri Lanka and Indonesia (Sumatra).

A. (*I.*) *punctata* (Reitter)
(Figs 56–57)

Macroura punctata Reitter, 1873: 83; *Aethina* (*Olliffura*) *punctata*: Kirejtshuk 1986.
Macroura philippinensis Grouvelle, 1907: 558; synonymized by Kirejtshuk 1986.
Macroura pascoei Grouvelle, 1907: 559, **syn. nov.**; *Aethina* (*Olliffura*) *pascoei*: Kirejtshuk 1986.

Diagnosis. This species is well characterized with most sparse and rather coarser punctation on head, pronotum and metasternum. It can be easily diagnosed according to the above key.

Types. *Macroura punctata* Reitter: lectotype (ZMB – designated by Kirejtshuk 1986) and 3 paralectotypes (ZIN, ZMB). *Macroura philippinensis* Grouvelle: Lectotype, male (MNHN – designated by Kirejtshuk 1986). *Macroura pascoei* Grouvelle: ? holotype, male (NHML) – "Batch.", "Bowring 63-47", "Macroura pascoei ty. Grouv." (written by Grouvelle).

Other material examined. **MALAYSIA:** "Malaysia, Pahang, Tioman Island, kg Tekek, 15–26.7.1992, R. Schuh".

Distribution. Malaysia and the Philippines.

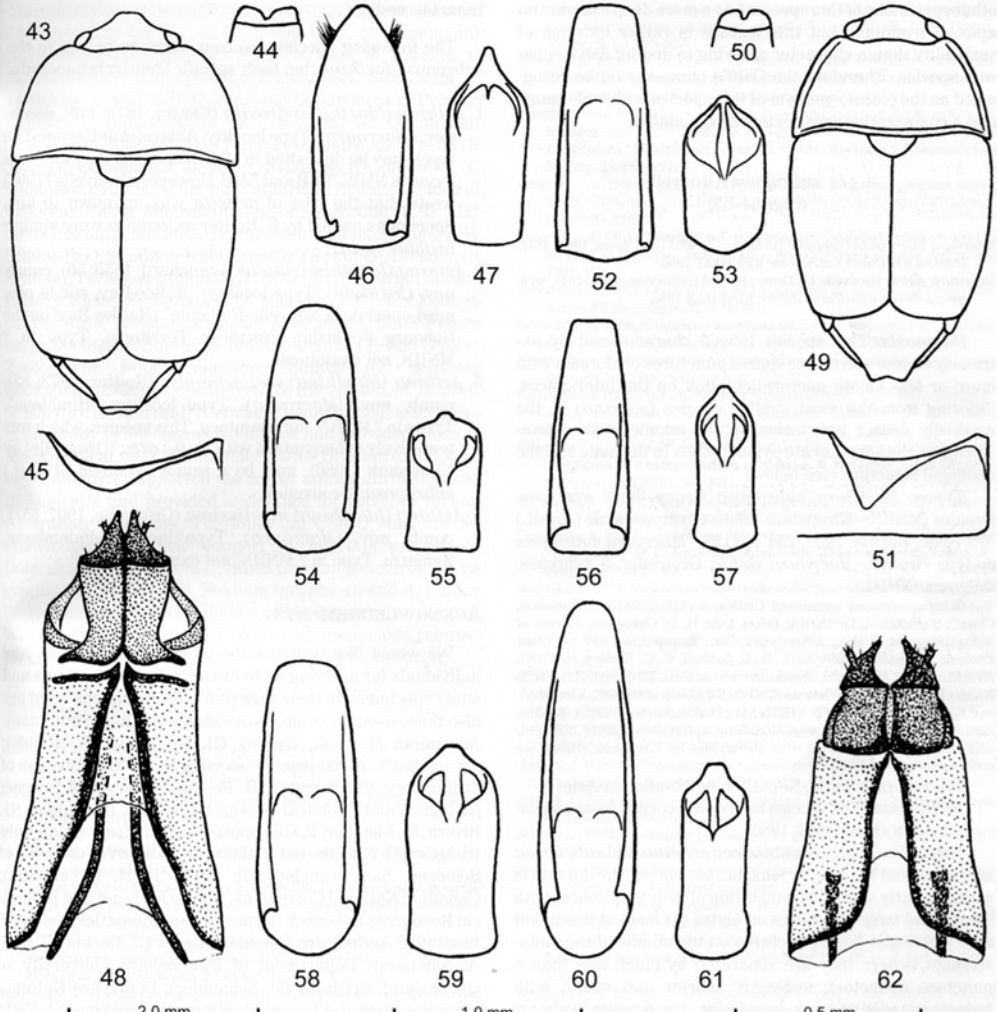
Notes. The type specimen (? holotype) differs from other studied specimens of *punctata* in its somewhat smaller body size (length – 2.8 mm); smooth interspaces between punctures on metasternum as broad as 1.5–2.5 puncture diameters; elytral surface without punctures but only with inclined tubercles (rasp-like), although the tendency to reduction of elytral punctation is more or less expressed in all representatives of this species.

A. (*I.*) *sobrina* (Olliff), comb. nov.
(Figs 41–42, 49–53)

Macroura sobrina Olliff, 1884: 73.
Macroura atra Grouvelle, 1907: 564, **syn. nov.**, non *Aethina atra* Jelínek 1978.
Macroura fuliginosa Grouvelle, 1907: 566; synonymized by Kirejtshuk 1986.
Macroura javanica Grouvelle, 1907: 562; synonymized by Kirejtshuk 1986.
Carpophilus ordinatus Olliff, 1883: 175, **syn. nov.**; *Brachypeplus ordinatus*: Grouvelle 1913a.

Diagnosis. This species is a common and widely distributed member of the subgenus. It is similar, on one hand, to *nigritula*, *orientalis* and *subrugosa*, but on other hand, to *concolor*. Nevertheless the species can be diagnosed according to the above key (see also notes to *concolor* and *subrugosa*).

Types. *Macroura sobrina* Olliff: Lectotype, male (RNL) and paralectotype, male (RNL), here designated: "Rosenberg Ins. Aru", "Idaethina sobrina Oll.". *Macroura atra* Grouvelle: Lectotype, male (MCG – designated in Kirejtshuk 1986). *Macroura fuliginosa* Grouvelle: Lectotype, male (MNHN – designated in Kirejtshuk 1986) and 1 paralectotype (MCG). *Macroura javanica* Grouvelle: 2 syntypes, females (MCG). *Carpophilus ordinatus* Olliff: ? holotype, male (NHML), "Carpophilus ordinatus Olliff", "Typus", "Sandakan, N.Borneo, W.B. Pryer, B.M. 1925-264".



Figures 43–62. 43–48. *Aethina* (*Cleidorura*) *obscura* (Reitter): (43) habitus, dorsal; (44) fore part of head, dorsal; (45) caudal marginal line behind hind coxal cavity; (46) tegmen, ventral; (47) penis trunk, dorsal; (48) ovipositor, ventral. 49–53. *A.* (*Idaethina*) *sobrina* (Olliff): (49) habitus, dorsal; (50) labrum and anterior edge of clypeus, dorsal; (51) caudal marginal line behind hind coxal cavity; (52) tegmen, ventral; (53) body of penis, dorsal. 54–55. *A.* (*I.*) *subrugosa* (Grouvelle): (54) tegmen, ventral; (55) body of penis trunk, dorsal. 56–57. *A.* (*I.*) *punctata* (Reitter): (56) tegmen, ventral; (57) body of penis, dorsal. 58–59. *A.* (*I.*) *nigritula* (Reitter): (58) tegmen, ventral; (59) body of penis, dorsal. 60–62. *A.* (*I.*) *orientalis* (Nietner): (60) tegmen, ventral; (61) body of penis, dorsal; (62) ovipositor, ventral. Scale A: Figs 43, 49; B: Figs 44–45, 50–51; C: Figs 46–48, 52–62.

Other specimens examined. 69 from Sri Lanka, Sumatra, Java, Philippines, Key Islands; **BORNEO**: "Nord Borneo, ex coll. Frühstörfer"(9, RMNH); **JAVA:** "Tjabodas, Java, Dr. J. de Vos" (1,RMNH); "Java, Mellb.", "Boheman" (6,NRS, ZIN).

Distribution. Sri Lanka, Sumatra, Java, Borneo, Philippines, Key Islands.

Notes. The lectotype of *sobrina* (male) in contrast to

other specimens of this species has a more deep excision on apex of pygidium, but this feature is rather extreme of variability than a character allowing to distinguish a separate species. Therefore the Olliff's name should be recognized as the oldest synonym of this species with wide range and a comparative great extent of variability.

A. (*I.*) ***subrugosa*** (Grouvelle)
(Figs 54–55)

Macroura subrugosa Grouvelle (in Grouvelle and Guillebeau, 1894: 461); *Aethina* (*Ollifura*) *subrugosa*: Kirejtshuk 1986.
Macroura dubia Grouvelle (in Grouvelle and Guillebeau, 1894: 461), **syn. nov.**; *Aethina* (*Olliffura*) *dubia*: Kirejtshuk 1986.

Diagnosis. This species is well characterized by extremely coarse and rather sparse punctures on dorsum with more or less smoth microreticulation on the interspaces, differing from the most similar species (*sobrina*) in the markedly denser punctation on the middle of the metasternum), the subtruncate pygidial apex in the male and the aedeagal structure (see below).

Types. *Macroura subrugosa* Grouvelle: 2 syntypes, females (MNHN – Kirejtshuk 1986); 1 syntype, male (NHML) – "Prome, Burma, 1902, 294", "412", "Macroura subrugosa co-type Grouv.". *Macroura dubia* Grouvelle: 3 syntypes, Belgaum (NHML).

Other specimens examined. **CHINA**: 3 (ZIN, ZSM) – "Kiautschou, China"; 5 (SMNS, ZIN); **INDIA**: Dehra Dun, H. G. Champion, flowers of *Hedychtium* (4, NHML, ZIN); Dehra Dun, Baqwantpur, 910 m, Uttar Pradesh, 17.XI.1932, under bark, B. D. Saklani, F. C. Hadden (1, CAS); **NEPAL**: Pipley, IX–X.1969, Woynarovich (10, TMB, ZIN); **NORTH VIETNAM**: 16 from Northern Vietnam (TMB, ZIN) [Kirejtshuk 1986, Kirejtshuk and Kabakov 1997]; **SOUTH VIETNAM**: :Tonkin, Sauter, 1901" (10, TMB, ZIN); **THAILAND**: "Doi Inthanon, Moe Klang, waterfall area, 28.10.1979" (10, ZMK, ZIN) (misidentified as *atra* (Grouvelle) by Kirejtshuk (1986), see *sobrina* above).

Distribution. India, Nepal, China, Southeast Asia.

Bionomics. This species has been recorded from *Hybiscus viragon* (Kirejtshuk 1986).

Notes. The differences between *sobrina* and *subrugosa* are consistent but not obvious. In *subrugosa*, the dorsum is usually nearly shiny, the punctation of body very coarse with sparse and large punctures on elytra (at least at base), but with dense and large punctures on the middle of the metasternum (where they are separated by much less than a puncture diameter); aedeagus shorter and wider, with tegmen rounded at apex. In *sobrina*, the dorsum is almost dull, the punctation somewhat finer with indistinct, rasp-like, transverse rugosities on the elytra, the punctures on the middle of the metasternum somewhat smaller and separated by about a puncture diameter or more, and the aedeagus longer, with the tegmen abrupt at apex.

Grouvelle (1907) regarded this species as very similar to *nigritula* and *dubia*, although in his catalogue to the revision and in the Junk Catalogue (Grouvelle 1913b) he treated the last two as synonyms. However, recent examination of the types of *subrugosa* and *dubia* show that they are conspecific.

Incertae sedis:

The following species are considered to belong to the subgenus *Idaethina*, but their specific identity is uncertain:

1. *Aethina* (*Idaethina*) *densita* (Reitter, 1875: 110), **comb. nov.** (*Macroura*). Type locality: Australia or Ceylon. The types may be deposited in MNHN because they have not found in NMW, TMB and ZMB. However, Grouvelle (1907) wrote that the type of *densita* was unknown to him. Specimens named by E. Reitter as *densita* were similar to *abbreviata*.
2. *Aethina* (*Idaethina*) *latens* (Blanchard, 1853: 56), **comb. nov.** (*Nitidula*). Type locality: "Rafles-Bay, sur la côte nord-ouest de la Nouvelle-Hollande" (Raffles Bay, on the Cobourg Peninsula, Northern Territory). Type in ? MNHN, not examined.
3. *Aethina* (*Idaethina*) *meligethoides* (Reitter, 1873: 82), **comb. nov.** (*Macroura*). Type locality: "Himalaya". Types in ? MNHN, not examined. This species, which was tentatively synonymized with *A.* (I.) *atra* (Grouvelle) by Kirejtshuk (1986), may be a senior synonym of *A.* (I.) *subrugosa* (Grouvelle).
4. *Aethina* (*Idaethina*) *nitidissima* (Grouvelle, 1907: 557), **comb. nov.** (*Macroura*). Type locality: Palembang, Sumatra. Type in ? MNHN, not examined.

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