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**New or rare Madagascar tiger beetles – 14**  
***Chaetotaxis katsepyana* sp.nov. and a synopsis of**  
**the genus *Chaetotaxis* Jeannel, 1946**  
**(Coleoptera, Cicindelidae)**

by Jiří Moravec

**Abstract.** A further contribution to a taxonomic and nomenclatorial revision of the genus *Chaetotaxis* Jeannel, 1946, endemic to the main Madagascar territory, is presented. *Chaetotaxis* is classified as a well-founded genus of the subtribe Cicindelina, of the subfamily Cicindelinae, family Cicindelidae, and is considered a transitional link between the subtribes Cicindelina and Prothymina. A generic redescription and a dichotomous key to species and subspecies are provided. The author's revision recognises 11 species and one subspecies; each of them is treated here with its original name combination and synonyms, type locality, type material (lectotype designation where appropriate), biology and distribution, and remarks on taxonomy and nomenclature. *C. semiconfluens* Rivalier, 1965 is treated here as a subspecies of *C. serieguttata* W. Horn, 1934, and *C. ankarahitrae* Jeannel, 1946 is synonymized with *C. soalalae* (Fairmaire, 1903). *C. rugicollis subcaerulea* Wiesner, 1992 (based on the unavailable infrasubspecific name "*Chaetotaxis (Chaetotaxis) rugicollis rugicollis* var. *subcaerulea* Jeannel, 1946"), and *C. grandidieri atripennis* Wiesner, 1946 (based on the unavailable infrasubspecific name "*Chaetotaxis (C.) grandidieri* var. *atripennis* Jeannel, 1946"), are synonymized with *C. rugicollis* (Fairmaire, 1871). *Chaetotaxis katsepyana* sp.nov. is described as a new species for science.

**Key words.** Coleoptera – Cicindelidae – *Chaetotaxis* – taxonomy, *Chaetotaxis katsepyana* sp.nov., new synonymies

### Introduction

This paper is the latest in a series by this author (immediately previous is MORAVEC 2008a, 2008b), submitted in order to publish some taxonomic and nomenclatorial acts in several papers before the completion of the third volume of "*Tiger Beetles of Madagascar*" which is currently under preparation for publication (for the first two volumes see MORAVEC 2002, 2007). Therefore, only the new species, *Chaetotaxis katsepyana* sp.nov. is described and illustrated here in detail, while each of the other taxa is treated here with its original name combination and synonyms, type locality, type material, lectotype designation, biology and distribution, together with remarks on taxonomy and nomenclature. Detailed descriptions and illustrations of all other taxa, as well as citations for all the other specimens examined, are to be published in the third volume of *Tiger Beetles of Madagascar*. Generic identification and a dichotomous key to species and subspecies are provided. Eleven species and one subspecies are recognized after the author's revision of *Chaetotaxis*, which is classified as a well-founded genus of the subtribe Cicindelina W. Horn, 1908, of the subfamily Cicindelinae Csiki, 1906, family Cicindelidae Latreille, 1806, and due to its external and internal similarity to the monobasic genus *Calyptoglossa* Jeannel, 1946, considered a transitional link between the subtribes Cicindelina and Prothymina *sensu* RIVALIER (1971).

It should be mentioned that in this contribution (and in *Tiger beetles of Madagascar*) the classification of tiger beetles as the separate family Cicindelidae is maintained in agreement with recent specialists working on tiger beetles; the results of molecular studies, for instance those of VÖGLER & PEARSON (1996), basically confirm the separate position of Cicindelidae within Caraboidea. Although further work in this field is indicated, recent studies on the biology, ecology and morphology of tiger beetles, including their larvae, summarized by CASSOLA (2001) and recently by PUTCHKOV & CASSOLA (2005), also support the independent position of Cicindelidae as a separate family within Adephaga.

### Material and methods

The length of the body is measured from the elytral apex (including the sutural spines) to the end of the clypeus (without the labrum). The term “aedeagus” as used here refers to the median lobe of the organ (without the parameres). All dimensions of aedeagi are measured (and primarily figured) in their left lateral position, where the basal portion (with basal orifice) points to the right while the left lateral outline (with dorso-apical orifice) faces dorsally, provided that the ventral outline of the median portion is settled in its vertical position, and both upper and lower walls of the dorso-apical orifice are in the same line. The treatment and mounting of the aedeagi, in order to observe the structure of the internal sac, followed standard procedure as modified and explained in MORAVEC (2002). The colour photographs of the body were taken with Nikon Coolpix 990 and Coolpix 4500 digital cameras, the body portions including aedeagi with a Coolpix 990 through an MB 10 binocular microscope.

Morphological terminology is partly adopted from Torre-Bueno dictionary (NICHOLS 1989) and LAWRENCE & BRITTON (1994).

The following abbreviations of type status are used: HT = holotype; AT = allotype; PT = paratype.

The list (catalogue) under the name of each taxon (in the taxonomical part) is selective. Thus it gives the original name combination, as well as all synonyms and taxonomic acts published for the first time by the authors cited. The list does not, therefore, repeat identical name combinations subsequently published by those authors who adopted them, and does not cite these publications and authors.

All labels for each type specimen are fully cited. Each label is given in inverted commas, and labels are separated by a semicolon. Each line within the label is separated by a comma. Each specimen or series of specimens is separated by full stop. The colour of the label, the mode of writing and other author's notes appear in square brackets. Words printed in labels in full capital letters are transcribed as normal letters here (capitals are used in abbreviations only). The citation of labels in non-type specimens (here only in rare taxa) is mostly restricted to locality labels, or merely the name of a place. Exceptionally, in recently collected specimens (“Recent data”), or in cases of some other historical or otherwise important data (“Interesting data” and “Historical data”), the labels are cited more completely. Specimens deposited in BMNH were listed in detail in MORAVEC & GILLET (2009).

The spelling of the locality names and administrative divisions is largely adopted from VIETTE (1991). The localities are spelled in French (occasionally in English) on the labels of most specimens (nearly all of the older ones). For Malagasy equivalents see MORAVEC (2007).

The depository for each set of specimens examined is covered in the “Type material” sections (and “Other material examined” where appropriate), using the following abbreviations.

APCA	.....	Collection André Peyrieras, Antananarivo, Madagascar
BMNH	.....	The Natural History Museum London, U.K.
CEWH	.....	Erich Werner Collection, Höchststadt, Germany
CCJM	.....	Jiří Moravec Cicindelidae Collection, Adamov, Czech Republic
CJBB	.....	Jaroslav Bašta Collection, Brno, Czech Republic
CJVB	.....	Jan Vybíral Collection, Židlochovice, Czech Republic
CMTD	.....	Miloš Trýzna Collection, Děčín, Czech Republic
CPVP	.....	Petr Votruba Collection, Prague, Czech Republic
DEIC	.....	Deutsches Entomologisches Institut, Müncheberg (formerly in Eberswalde), Germany
FCCR	.....	The Fabio Cassola Collection, Rome, Italy
HNHM	.....	Hungarian Natural History Museum, Budapest, Hungary
IRSNB	.....	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
JWCW	.....	Jürgen Wiesner Collection, Wolfsburg, Germany
KCBC	.....	Arnošt Kudrna Collection, České Budějovice, Czech Republic
MHCK	.....	The Michio Hori Collection, Kyoto, Japan
MNHN	.....	Muséum national d’Histoire naturelle, Paris, France
MNHU	.....	Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
MRAC	.....	Musée Royal de l’Afrique Centrale, Tervuren, Belgium
NHMB	.....	Naturhistorisches Museum, Basel, Switzerland
NHMW	.....	Naturhistorisches Museum Wien, Vienna, Austria
NMPC	.....	National Museum (Entomological Department), Prague, Czech Republic
RNCD	.....	Roger Naviaux Collection, Domérat, France

## Taxonomy

### Genus *Chaetotaxis* Jeannel, 1946

*Chaetotaxis* (*Chaetotaxis*) Jeannel, 1946: 170.

**Type species:** *Megalomma rugicolle* Fairmaire, 1871: 32 (by original designation).

*Chaetotaxis*: RIVALIER (1957): 319.

*Cicindela* (*Chaetotaxis*): LORENZ (1998a): 39

**Generic redescription.** A genus endemic to Madagascan main territory with an outstanding position within the subtribe Cicindelina, due to its combination of characters. Body 8–14 mm in length. Labrum 4-setose (exceptionally, in some adults one or two setae not developed), in both sexes with prominent anterolateral teeth separated from median lobe by deep notches, sometimes also with lateral teeth or indentation (shape rather variable), usually with a few barely obvious, very short but stiff secondary setae originating mostly from a black area of lateral indentation at the labral margin; male labrum mostly with short tridentate median lobe, female labrum usually with

prolonged medial tooth, all teeth wide, median tooth and sometimes also anterolateral teeth characteristically mucronate (except for rounded lateral labral margins in *C. cicindeloides*). Palpi with either slender or more or less dilated penultimate (longest) palpomere of labial palpi. Pronotum with setae on sublateral and lateral areas (except for entirely glabrous pronotum of *C. cicindeloides*), metasternum always setose on lateral areas, but setal vestiture of other thoracic sterna and ventrites differs: ventral thoracic sterna and mostly also lateral sterna setose or punctate-setose, but proepisterna, mesepisterna and metepisterna may be partly or entirely glabrous; abdominal sterna either entirely glabrous (except for a few sensory setae), or with more or less dense setae on at least first two or four visible ventrites. Elytra elongate, surface either coarsely isolate-punctate (punctures occasionally anastomosing and with cristulate anterior margins), or finely isolate-punctate, and always with more or less conspicuous, large but shallow, cupreous, bronze, blue or greenish iridescent patch-like foveae, each of them with setigerous deep puncture at its anterior margin; whitish elytral maculation mostly restricted to lateral areas, rarely humeral lunule and median transverse band present. Legs mostly conspicuously elongate, in several species very long. Aedeagus long, internal sac in most species with similar sclerites as in the type species *C. rugicollis* (structure pattern “*rugicollis*”), and well-developed flagellum with rather simply coiled basal portion and mostly very long flagelliform portion (in some specimens hardly obvious) often protruding from apical orifice; only *C. soalalae* possesses an internal sac with different sclerites and a short flagellum which has obvious only its horseshoe-like basal portion. Adults are diurnal.

**Remarks.** *Chaetotaxis* was originally established as a separate genus by JEANNEL (1946) with two subgenera: subgen. *Chaetotaxis* s.str., and subgen. *Ambalia* Jeannel, 1946, the later promoted to the rank of separate genera by RIVALIER (1957); this position is accepted here after a thorough revision of Madagascan taxa.

As discussed in MORAVEC (2000), although the long flagellum is present within the internal sac of most species of *Chaetotaxis*, it may be very difficult to trace its prolonged filiform flagelliform portion as this is usually very thin and almost transparent, and thus may appear to merge with other sclerites. JEANNEL (1946) described and illustrated the internal sac in most species of *Chaetotaxis* (including the type species of the genus) as lacking the long flagellum, but RIVALIER (1957: fig. 3c) correctly mentioned and illustrated the flagellum with its very long, filiform flagellated portion in the type species and most other species, fully in agreement with my current revision.

The very short but stiff secondary setae originating mostly from the black area of lateral indentation at the labral margin or from the ventral marginal area, which are present in the labrum of most species of *Chaetotaxis* and also observed by myself in some other genera (for instance in *Calyptoglossa* Jeannel, 1946), are here mentioned for the first time. These setae, however, may be very indistinct in some specimens and therefore barely obvious even at  $\times 60$  magnification.

LORENZ (1998a, 1998b, 2005a, 2005b), probably in error, listed *Chaetotaxis* as a subgenus of *Cicindela* Linné, 1758, and thus formally transferred it into *Cicindela*, although without offering any evidence or explanation for doing so (in a catalogue only,

not based on a revision). As a result of my revision of all Madagascan tiger beetle genera, I maintain the commonly accepted classification by RIVALIER (1957) and consider *Chaetotaxis* a well-founded genus which, moreover, fundamentally differs from the basically Holarctic genus *Cicindela*. Following RIVALIER (1957), the genus is considered here a transitional link between the subtribe Prothymina *sensu* RIVALIER (1971) and subtribe Cicindelina, principally due to the 4-setose labrum combined with a rather sparse setal vesture in some species. The 4-setose labrum in all species of the genus *Chaetotaxis*, the labral shape, as well as the internal sac of the aedeagi (of “*rugicollis* pattern”) in most species, are similar to those of the monobasic genus *Calyptoglossa* (subtribe Prothymina) represented by *Calyptoglossa frontalis* (Audouin & Brullé, 1839). More precisely, *Chaetotaxis macropus* superficially resembles *Calyptoglossa frontalis* in having wide, similarly coloured and finely punctate elytra and similar shape of mandibles and male labrum, but differs principally in the presence of the above-mentioned setal vesture and presence of large, iridescent-coloured foveae running longitudinally on each elytron. In contrast, *Calyptoglossa* has all body portions glabrous (except for setose coxae and sparse sensory hairlike setae on elytra).

#### Key to species and subspecies of *Chaetotaxis*

1. Elytra with velvety-black longitudinal bands, one running on disc along suture towards apices (but distant from it), and another, much shorter one on subhumeral area; whitish maculae isolated. Aedeagus and internal sac of “*rugicollis*” pattern. .... 2.
  - Elytra lacking longitudinal, well-delimited velvety-black bands. Aedeagus and internal sac either of “*rugicollis*” pattern, or different from it. .... 4.
2. Elytral surface convex, punctures rather fine, generally isolate; 4–9 large, iridescent elytral foveae on each elytron arranged within longitudinal velvety-black bands. Proepisterna glabrous (with sparse setae at ventral margin only). .... 3.
  - Elytral surface flatter, punctures coarse, more commonly anastomosing on basodiscal convexity; large, iridescent elytral foveae numerous, not entirely confined to within longitudinal velvety-black bands, but irregularly covering almost the whole elytral surface. Body 8.50–11.0 mm. Proepisterna and metepisterna distinctly punctate-setose. .... *C. multifoveolata* Moravec
3. Body 8.1–10.8 mm long (not exceeding 11 mm). Elytra and legs comparatively short; humeral and sublateral-median macula sometimes absent independent of sex, median macula (if present) prolonged along lateral elytral margin posteriad. Fourth tooth in both mandibles somewhat distant from the third, but the gap does not have a flat base. Metepisterna in male only partly and sparsely setose, glabrous in female. .... *C. rugicollis* (Fairmaire)

- Body large, 10.2–13.1 mm (females reaching 13.1 mm), all body parts and legs more elongate. Elytra conspicuously elongate, white humeral macula present in both sexes, sublateral-median band mostly present, but never prolonged along lateral elytral margin posteriad. Mandibles (especially the left) with fourth tooth markedly distant from the third. Metepisterna in male densely punctate-setose (sparsely setose in female). ..... *C. katsepyana* sp.nov.
- 4. Elytra with isolate whitish maculae (rarely median macula connected to anteapical macula or lunule by inconspicuous thin stripe). ..... 5.
- Elytra with long, continuous whitish sublateral band running longitudinally from top of humerus posteriad, reaching at least elytral half. .... 8.
- 5. Pronotum small, as long as wide, or longer. Labrum with well-developed anterolateral teeth in both sexes. Body medium-sized to large 9.5–13.8 mm long. .... 6.
- Pronotum notably wide, with subglobose disc. Whitish elytral maculation complete, consisting of always present and well-separated humeral lunule or short band, postero-mesad directed median band, and anteapical macula (or lunule). Body 8.5–10.5 mm long. Aedeagus and internal sac of “*rugicollis*” pattern. .... 7.
- 6. Head markedly smaller than notably wide elytra. Elytral surface rather flat; whitish maculation complete in males; females sometimes lack humeral macula which is always present in male, prolonged posteriad but separated from sublateral-median one; sublateral-median macula with mesad-directed protrusion and more or less prolonged along elytral lateral margin posteriad, separated from anteapical macula or rarely thinly connected to it. Female labrum with extremely long and robust median tooth. Aedeagus and internal sac of “*rugicollis*” pattern. ....  
..... *C. macropus* (W. Horn)
- Head notably large, approximately as wide as elytra. Elytral surface markedly convex; whitish elytral maculation similar to that of *C. macropus* due to similarly shaped median and anteapical maculae, but generally wider, short humeral band always present in both sexes (separated from median macula). Aedeagus of unique shape, having notably elongate apical portion that constricts towards narrow, capitate apex; internal sac with similar sclerites as in “*rugicollis*” pattern, but with much shorter flagellum not protruding from apical orifice. ....  
..... *C. descarpentriesi* Deuve
- 7. Male labrum short, semicircular, with teeth entirely effaced; female labrum possessing only median tooth. Pronotal surface entirely glabrous (both characters unique within the genus), finely wavy to vermicular-

- rugulose. All ventrites and thoracic sterna glabrous except for setose lateral areas of metasternum. .... *C. cicindeloides* (W. Horn)
- Labrum with well-developed anterolateral teeth in both sexes. Elytra rather short and notably dilated in middle (more markedly so in female). Pronotal surface with sparse setae (as in other species except for the preceding one). Metepisterna and ventrites setose. Elytral iridescent foveae very inconspicuous and much sparser than in all other species. White elytral maculation similar to that in *C. cicindeloides*, but humeral lunule interrupted in female. .... *C. isaloensis* Moravec
- 8 White elytral sublateral longitudinal band separated from anteapical macula. Pronotum wider than long, disc subglobose. Aedeagus and internal sac of “*rugicollis* pattern”. .... 9.
- White elytral sublateral longitudinal band running continuously from top of humerus posteriad and either covering whole anteapical angle, or isolated from anteapical macula. Body 9.50–13.0 mm long. .... 10.
9. Body 9.0–10.6 mm long, elytral punctures rather coarse, iridescent foveae large. .... *C. s. serieguttata* (W. Horn)
- Body notably larger, 12.0–12.7 mm long, elytral punctures somewhat finer and foveae smaller. Pronotal disc somewhat wider. ....  
..... *C. s. semiconfluens* Rivalier
10. Continuous longitudinal white sublateral band thin, with only one small median protrusion; elytral punctures fine. Pronotum slightly wider than long, disc subglobose. Aedeagus and internal sac of “*rugicollis* pattern. Female unknown. .... *C. leptographa* Rivalier
- Continuous white sublateral longitudinal band wide or narrow, with two or three protrusions. .... 11.
11. Pronotum narrow, slightly longer than wide. Mandibles in both sexes dark brown. Continuous white sublateral longitudinal band with distinct, mesad-directed median protrusion and also anteapical protrusion (as a part of anteapical lunule). Internal sac of aedeagus unique within the genus in having different sclerites and only horseshoe-like basal portion of a short flagellum obvious. ....  
..... *C. soalalae* (Fairmaire)
- Pronotum wider than long, pronotal disc subglobose. Male mandibles ochre-testaceous, much paler than those of the female. Continuous white sublateral longitudinal band notably wide and usually with two protrusions (one in anterior elytral third, the other beyond elytral half), markedly dilated in anteapical angle or with additional protrusion there. Aedeagus and internal sac of “*rugicollis*” pattern. ....  
..... *C. grandidieri* (Künckel in Grandidier)

### ***Chaetotaxis macropus* W. Horn, 1915**

*Megalomma marginatum* Fairmaire, 1871: 33.

**Type locality:** Madagascar.

*Peridexia marginata*: FLEUTIAUX (1892): 30.

*Cicindela macropus* W. Horn, 1915: 279 (replacement name by Horn).

*Chaetotaxis (Chaetotaxis) macropus*: JEANNEL (1946): 175.

*Chaetotaxis macropus*: RIVALIER (1957): 319.

*Cicindela (Chaetotaxis) macropus*: LORENZ (1998a): 39.

**Type material.** Holotype (by monotypy) ♀ [lacking head] in MNHN: “Museum Paris, Madagascar, Coll. Chaudoir, 203-74” [green, printed/handwritten]; “marginata, Chaud., Madagascar, 59, C. Laferté” [handwritten]; “203/74” [circular, handwritten]; “Revision Jiří Moravec 2007: Holotype (by monotypy), *Megalomma marginata* Fairmaire, 1871” [red, printed]; “*Chaetotaxis marginata* (Fairmaire, 1871) = *C. macropus* (W. Horn, 1915) syn.nov. det. Jiří Moravec 2007” [incorrect interpretation of ICZN rules at that time]; “*Chaetotaxis macropus* (W. Horn, 1915) det. Jiří Moravec 2008” [printed].

**Other material examined.** 186 specimens from collections: BMNH, CCJM, CJVB, CPVP, CMTD, DEIC, JWCW, KCBC, MHCK, MNHN, MNHU, MRAC, NHMW and NMPC.

**Biology and distribution.** Although surprisingly rather rare in collections, *C. macropus* was common in the La Mandraka valley between Antananarivo and Moramanga, and very common even recently in the now-devastated evergreen forest remnants near Moramanga along the Antananarivo-Tamatave road (one of them known as Antsahatsaka), in Anosibe Ifody and other forest remnants towards Perinet (but it is very interesting that I never have seen a specimen from the large and protected Analamazaotra-Perinet forest complex). Nevertheless, it penetrates northwards through the forest of Didy to the Zahamena Natural Reserve near Manakambahiny in the area of Lac Alaotra (Ambatondrazaka subprefecture). Eight specimens in MRAC (*ex* Breuning collection) with labels “Suberbieville” are probably mislabelled (like most specimens of other genera from the Breuning collection). An occurrence of this species in the now-near-vanished remnants of western deciduous forest near Maevatanana (= Suberbieville) is very improbable, because it is unknown from the Manankazo and other forests lying in the interval before this western area.

**Remarks.** This species was originally described as *Megalomma marginatum* Fairmaire, 1871, and when HORN (1915) transferred it to the genus *Cicindela* Linné, 1758, he quite logically replaced the species-group name *marginata* by the name *macropus*, to avoid a secondary homonymy arising out of existing older homonyms within the genus *Cicindela*. When JEANNEL (1946) transferred this taxon into his genus *Chaetotaxis*, he overlooked the fact that Fairmaire’s name was neither preoccupied within the genus *Megalomma* nor in *Chaetotaxis* and would therefore become to be no longer congeneric. Consequently, the original epithet by Fairmaire should have been restored as *Chaetotaxis marginata* (FAIRMAIRE 1871). However, as the substituted epithet *macropus* has been in common use, it should be valid (ICZN 1999. Art. 59.3).

HORN (1915) was probably inspired by the name “*Cicindela macropus* Chaudoir” listed in the catalogue by CHAUDOIR (1865), and later in the catalogue by FLEUTIAUX (1892) as *Peridexia macropus*, but always without description. As the name by Chaudoir was not validly published, it must be considered nomen nudum, and the valid name is certainly that by HORN (1915).

It is very interesting that the aedeagus and internal sac of *C. macropus* is very similar to that of *C. rugicollis* despite the very different body appearance of the latter.

### ***Chaetotaxis descarpentriesi* Deuve, 1987**

*Chaetotaxis descarpentriesi* Deuve, 1987: 74.

**Type locality:** Western Madagascar, Ankarafantsika, Ampijoroa (nature reserve, deciduous western forest in the Ambato Boeni subprefecture, Majunga prefecture).

*Cicindela (Chaetotaxis) descarpentriesi*: LORENZ (1998a): 39.

**Type material.** Holotype (by monotypy) ♀ in MNHN, labelled: “Ankarafantsika, Ampijoroa, 10.II.1973” [printed]; “Museum Paris, Madagascar Ouest, A. Peyrieras” [printed]; “*Chaetotaxis descarpentriesi* n. sp., det. T. Deuve” [handwritten]; “Holotype” [red, printed]; “Revision Jiří Moravec 2007: Holotype (by monotypy) *Chaetotaxis descarpentriesi* Deuve, 1987” [red, printed].

**Other material examined.** 7 specimens. 2 ♂♂, 2 ♀♀ in JWCW, 1 ♂, 1 ♀ in CCJM: “Madagascar, 16°05’S, 46°55’E, Mahajanga prov., Ankarafantsika Nat. Park, 6–12.I.2002, I. Andrew, V. Dolin & R. Andreeva leg.”. 1 ♂ in CJVB: “Mahajanga, Andranofasika env., 2.I.2003, leg. Mráček”.

**Biology and distribution.** *Chaetotaxis descarpentriesi* is a rather rare species known only from the deciduous western forest of the Ankarafantsika National Park and neighbouring Ampijoroa Nature Reserve in the Ambato-Boeni subprefecture of the Majunga (= Mahajanga) prefecture.

### ***Chaetotaxis soalalae* (Fairmaire, 1903)**

*Cicindela soalalae* Fairmaire, 1903: 358.

**Type locality:** Western Madagascar: Soalala (western deciduous forest near the town of Soalala in the Baie de Baly bay, 45 m a.s.l., Soalala subprefecture, Majunga (=Mahajanga) province).

*Chaetotaxis (Chaetotaxis) soalalae*: JEANNEL (1946): 174.

*Chaetotaxis (Chaetotaxis) ankarahitrae* Jeannel, 1946: 175 **syn.nov.**

**Type locality:** Western Madagascar: Ankarahitra (= Ankirihitra) (western deciduous forest near the town of Ankarahitra 59 km southwest of Ambato Boeni in Majunga (= Mahajanga) province).

*Chaetotaxis ankarahitrae*: RIVALIER (1957): 319.

*Chaetotaxis soalalae*: RIVALIER (1957): 319.

*Cicindela (Chaetotaxis) soalalae*: LORENZ (1998a): 39.

*Cicindela (Chaetotaxis) ankarahitrae*: LORENZ (1998a): 39.

**Type material.** Lectotype (designated here) ♂ in MNHN, labelled: “Soalala, Perrier” [handwritten]; “Museum Paris, Madagascar, Perrier de la Bathie, Coll. Léon Fairmaire, 1906” [printed]; “Type” [red, printed]; “Lectotype, *Cicindela soalalae* Fairmaire, 1903, design. Jiří Moravec 2007” [red, printed]; “*Chaetotaxis soalalae* (Fairmaire, 1903), det Jiří Moravec, 2007” [printed]. Paralectotypes. 2 ♀♀ in MNHN: “Museum Paris, Madagascar, Perrier de la Bathie, Coll. Léon Fairmaire, 1906” [printed]; “Soalalae, Perrier” [handwritten]; “Type” [white with red print]. 1 ♂, 1 ♀ in MNHN: “Soalalae Fairm., Type” [handwritten, not in Fairmaire’s hand]; “Museum Paris, ex Coll. M. Maindron, Coll. G. Babault” [greenish, printed]. 1 ♂, 1 ♀ in MNHN: “Museum Paris, Madagascar, Soalala, Perrier de la Bathie” L. Fairmaire, 1904” “*Cicindela Soalalae* Frm., Madag.” [handwritten]; “*Cicindela Soalalae*, Co-type, L. Fairmaire det.” [handwritten]. 1 ♂ in MNHN: “*Cicindela Soalalae* Frm.” [handwritten]; “Museum Paris, Coll. Ch. Alluau” [printed]; “*Cicindela Soalalae*, Co-type Frm.” [with red frame, handwritten]. 1 ♂ in MNHN: “Ankarahit[ra], Perrier” [handwritten]; “*Cicindela Soalalae* Frm., Madag.” [handwritten]; “Museum Paris, Madagascar, Perrier de la Bathie, Coll. Léon Fairmaire, 1906” [printed]; “Type” [white with red print]. 1 ♂ in DEIC: “Ankarahit[ra], Perrier” [handwritten]; “*Peridexia marginata* Frm.” [sic!]; “Type! Coll. W. Horn” [printed]; “*Syntypus*” [red, printed]; “Coll. W. Horn, DEI Eberswalde” [printed]. 1 ♂ in DEIC: “Soalala, Perrier” [handwritten]; “Soalalae Fairm.”

[handwritten]; “Type! Coll. W. Horn” [printed]. 1 ♀ in DEIC: “Soalala, H. Perrier” [handwritten]; “Soalalae Fairm.” [handwritten]; “Type! Coll. W. Horn” [printed]; “Syntypus” [red, printed]; “Coll. W. Horn, DEI Eberswalde” [printed]. All paralectotypes labelled: “Revision Jiří Moravec 2007: Paralectotype, *Cicindela soalalae* Fairmaire, 1903” [red, printed]; “*Chaetotaxis soalalae* (Fairmaire, 1903), det Jiří Moravec, 2007” [printed].

**Type material of synonyms.** Holotype (by monotypy) of *Chaetotaxis (Chaetotaxis) ankarahitrae* Jeannel, 1946, ♀ in MNHN, labelled: “Ankarahitra, [leg.]Perrier” [handwritten]; “ankarahitrae n. sp.”; “Museum Paris, Madagascar, Perrier de la Bathie, Coll. Léon Fairmaire, 1906” [printed]; “Type” [red, printed]; “Lectotype, *Chaetotaxis (Chaetotaxis) ankarahitrae* Jeannel, 1946, design. Jiří Moravec 2007” [red, printed].

**Other material examined.** 25 specimens filed as *C. soalalae* in collections: BMNH, CCJM, CCJM (also ex RNCD and APCA), DEIC and MNHN. 1 ♂ filed as *C. ankarahitrae* in MNHN.

**Biology and distribution.** *Chaetotaxis soalalae* is probably a rare species today. It occurs in the western deciduous forest in Majunga (= Mahajanga) province. Apart from the type locality Soalala in Baie de Baly bay, other specimens, including the holotype of the synonymous *C. ankarahitrae*, have been taken near the town of Ankarahitra (also spelled “Ankirihitra”) 59 km southwest of Ambato Boeni (Ambato Boeni subprefecture of the Majunga prefecture). The species spreads southwards to the western deciduous forest of the Bemaraha plateau near Antsalova (Antsalova subprefecture of the prefecture Maintirano).

**Remarks.** *Chaetotaxis ankarahitrae* Jeannel, 1946 is treated here as a junior synonym of *C. soalalae* because the female holotype of the former differs only in its larger size: length 14.3 mm, width 4.40 mm (according to Jeannel 17 mm long, but obviously measured including mandibles). The somewhat finer elytral punctation emphasized by JEANNEL (1946) as a differentiating character is within the usual range of variability of larger adults; moreover, the punctures are present on the whole elytral surface and not effaced on the posterior area as inaccurately reported by Jeannel. The other specimen filed in MNHN under the name *C. ankarahitrae* is a male 12.3 mm long, and this specimen is within the size range of some females and one male of *C. soalalae* from the Soalala type locality (males from Soalala reach 12.1 mm). The male from Ankarahitra was identified and filed as *C. ankarahitrae*, probably by Jeannel or Rivalier, and my examination has revealed that its aedeagus and internal sac are identical with those of the lectotype of *C. soalalae* and aedeagi of other specimens from Soalala. As all other characters (except for the larger size) of the female holotype of *C. ankarahitrae* are identical with those of other specimens of *C. soalalae* both from Soalala and Ankarahitra, the female is considered here to be merely an exceptionally large adult.

This result is supported by the fact that both the lectotype of *C. soalalae* and the holotype of *C. ankarahitrae* were caught by Perrier and bear the label “Museum Paris, Madagascar, Perrier de la Bathie, Coll. Léon Fairmaire, 1906”. When JEANNEL (1946) described his *C. ankarahitrae*, he overlooked the fact that some syntypes of *C. soalalae* come from Ankarahitra. He interpreted the locality of one syntype of *C. soalalae* in MNHN as “Ankara plateau”, which lies west of Ankarahitra, but because “Ankarahit.” is written on the label we must interpret it as Ankarahitra. This is in accordance with another syntype of *C. soalalae* in DEIC labelled “Ankarahit.”. The sympatric occurrence of both taxa excludes the possibility of subspecific status for *C. ankarahitrae*, and the size itself (moreover of only one female) is not a sufficient character for a separate species.

***Chaetotaxis leptographa* Rivalier, 1965**

*Chaetotaxis leptographa* Rivalier, 1965: 650.

**Type locality:** Sambirano: deciduous forest of the Manongarivo massif, 1150 m near Maromandia, historical district of Analalava (Ambanja subprefecture).

*Cicindela (Chaetotaxis) leptographa*: LORENZ (1998a): 39.

**Type material.** Holotype ♂ in MNHN, labelled: “Madagascar, Sambirano, dct. Analalava, Poste Maromandia, Manongarivo, 1150 m, XII.60, Andrea Robinson”. [printed]; “Institute scientifique, Madagascar” [greenish, printed]; “édéage 1683, Rivalier” [handwritten]. Paratype. 1 ♂ in MNHN with same labels except for: “édéage 1682, Rivalier” [handwritten]. Both type specimens labelled: “Revision Jiří Moravec 2007: Holotype (Paratype respectively), *Chaetotaxis leptographa* Rivalier, 1965.

**Other material examined.** 1 ♂ in MNHN: “Madagascar Ouest, réserve spéciale du Zombitsy, East de Sakaraha, matsabory, 640 m, 7/10.II.1974, P. Viette et A. Peyrieras” [*sic!* evidently mislabelled].

**Biology and distribution.** Besides the holotype and paratype from the type locality, the one additional male (MNHN) labelled “Zombitsy” was evidently mislabelled, since the occurrence of *C. leptographa* in this southern locality is very improbable.

**Remarks.** The internal sacs of the aedeagi of the holotype and paratype were extracted by Rivalier and mounted together with the aedeagi between glass slides. This caused a considerable deformation both of the aedeagi and their internal sac which were flattened and partly destroyed. Nevertheless, it is possible to recognize that the aedeagus and internal sac of *C. leptographa* are of the same “*rugicollis*” pattern as occurs in *C. rugicollis* and related species, as well as in *C. macropus* and several other species. The shape is obvious from the aedeagus of the additional male of this easily recognizable species.

***Chaetotaxis serieguttata serieguttata* (W. Horn, 1934)**

*Cicindela serieguttata* W. Horn, 1934: 28.

**Type locality:** Sambirano: Antseva-Ambobako (evergreen forest 15 km south-east of Ambanja, source of the Ramena river, Sambirano).

*Chaetotaxis serieguttata*: JEANNEL (1946: 175.

*Chaetotaxis serieguttata*: RIVALIER (1957: 319.

*Cicindela (Chaetotaxis) serieguttata*: LORENZ (1998a): 39.

**Type material.** Lectotype (designated here) ♂ in DEIC, labelled: “Antseva-Ambobako, N.-W. Madagascar” [printed, “W” handwritten]; “R. Ramena, NW. Madag., J. Mellis” [photo-print]; “Type, W. Horn” [printed]; “Syntype” [red, printed]; “Coll. W. Horn, DEI Eberswalde” [printed]; “Lectotype, *Cicindela serieguttata* W. Horn, 1934, design. Jiří Moravec 2007” [red, printed]. Paralectotypes. 4 ♂♂, 1 ♀ in DEIC with same labels as in lectotype, one ♂ with additional label: “serieguttata m.” [bluish, handwritten]; “Revision Jiří Moravec: 2007: *Cicindela serieguttata* W. Horn, 1934”. [red, printed]. All type specimens labelled: “*Chaetotaxis serieguttata* (W. Horn, 1934), det. Jiří Moravec 2007” [printed].

**Biology and distribution.** The nominotypical subspecies is known only from the type locality in Sambirano, an evergreen forest today almost gone, near Antseva-Ambobako, 15 km south-east of Ambanja, source of the Ramena river.

**Remarks.** The lectotype is designated here for the better stability of the taxon.

***Chaetotaxis serieguttata semiconfluens* Rivalier, 1965 stat.nov.**

*Chaetotaxis semiconfluens* Rivalier, 1965: 688.

**Type locality:** Northern Madagascar: Montagne des Français (Diego Suarez prefecture).

*Cicindela (Chaetotaxis) semiconfluens*: LORENZ (1998a):39.

**Type material.** Holotype ) ♂ in MNHN, labelled: “Madagascar Nord, dct. Diego Suarez, Montagne des Français, Andria Robinson” [printed, folded]; “Institute Scientifique, Madagascar” [printed]; “édéage 1681, Rivalier” [handwritten]; “Chaetotaxis semi-confluens Rivalier” [handwritten]; “Type” [red, printed]; “Revision Jiří Moravec: 2007: Holotype, Chaetotaxis semi-confluens Rivalier, 1965” [red, printed]. Paratype. 1 ♀ in MNHN with same first two labels as in holotype and: “Paratype” [red, printed]; Revision Jiří Moravec: 2007: Paratype, Chaetotaxis semi-confluens Rivalier, 1965” [red, printed]. All type specimens labelled: “Chaetotaxis serieguttata semiconfluens Rivalier, 1965, det. Jiří Moravec 2007” [printed].

**Biology and distribution.** The two existing specimens were caught by Andria Robinson 45 years ago in the deciduous forest of Montagne des Français (Diego Suarez prefecture).

**Remarks.** When RIVALIER (1965) described his *Chaetotaxis semiconfluens*, he very probably did not examine specimens of *Chaetotaxis serieguttata* from DEIC, and consequently missed the identical pattern of white elytral maculation and other characters shared by these two taxa. My examination has revealed that *C. semiconfluens* is distinguished merely by larger body, wider pronotum, finer elytral punctation and smaller foveae, and that both taxa are conspecific, or even identical. Nevertheless, because these characters are constant in the two existing adults, and because of the geographical separation, I do not treat *C. semiconfluens* here as a junior synonym, but prefer to recognize it as a subspecies of *C. serieguttata*.

The internal sac of the aedeagus of the holotype was extracted by Rivalier and mounted between glass slides together with the empty aedeagus. Such treatment gave rise to considerable distortion: the aedeagus was flattened (and therefore dilated) and its internal sac deformed. Despite the damage, it is possible to recognize that the aedeagus and internal sac are virtually identical with those of *C. s. serieguttata*.

***Chaetotaxis grandidieri* (Künckel in Grandidier, 1887)**

*Cicindela grandidieri* Künckel, 1887: pl. 25, fig. 7. [subsequent redescription by ALLUAUD 1902: 638].

**Type locality:** Madagascar Sud.

*Chaetotaxis (Chaetotaxis) grandidieri*: JEANNEL (1946):176.

*Chaetotaxis (Chaetotaxis) grandidieri* var. *atripennis* Jeannel, 1946: 176 (unavailable infrasubspecific name; synonymy by LORENZ 1998a).

**Type locality:** Southern Madagascar: Bekily, Tulear (= Toliara) province.

*Chaetotaxis grandidieri*: RIVALIER (1957):319.

*Chaetotaxis grandidieri atripennis* Wiesner, 1992: 97 (available subspecific name **syn.nov.**).

*Cicindela (Chaetotaxis) grandidieri*: LORENZ (1998a):39.

**Type material.** Lectotype (designated here), ♀ in MNHN, labelled: “Grandidieri Künckel, Al.[illegible] Grandidier, Madagascar” [handwritten by Grandidier, folded]; “C. grandidieri, type, Künckel, Madagascar, Al. Grandidier” [greenish, lined, handwritten, folded]; “2954/75” [circular, greenish, handwritten, folded]; “Museum Paris, Madagascar, 1875” [printed]; “Type” [red, printed]; “Cicindela grandidieri Künckel, type,

W. Horn det, 1903" [handwritten/printed]. "Lectotype, *Cicindela grandidieri* Künckel, 1887, design. Jiří Moravec 2007" [red, printed]; "Chaetotaxis grandidieri Künckel, 1887, det. Jiří Moravec 2007" [printed].

**Other material examined.** 79 specimens in collections: BMNH, CCJM (also *ex* APCA), DEIC, MNHN, MNHU and MRAC. Interesting data. 1 ♀ in DEIC, 3 ♀♀ in MNHN: "Muséum Paris, Madagascar, Imanombo, Cap. Vacher – 1901" [printed/handwritten]; "Cicindela grandidieri, Type All." [with red frame, handwritten]; two of them in MNHN with additional label: "Type" [*sic!* red, printed].

**Biology and distribution.** Known from open, sandy places in the inland areas of south-central and south-western Madagascar in the Tular (= Toliara) province. It occurs in Ampandandrava (lat. 24.22, long. 45.30) which lies near Beraketa, some 45 km north-east of Bekily (Bekily subprefecture of Toliara province), and in the xerophyllous deciduous forests of Imanombo in the Ambovombe subprefecture (area of Androy) 59 km north of Antanimora. In the Isalo National Park and neighbouring areas of the Ranohira village, it is sympatric with *Waltherhornia skrabali* Moravec, 2008, and the much rarer *Chaetotaxis isaloensis* Moravec, 2000, and *C. multifeolata* Moravec, 2008, usually inhabiting sandy paths. The adults fly well. The larvae tunnel in sandy soil.

**Remarks.** The single female deposited in MNHN labelled as "Type" is designated here as lectotype for the better stability of the taxon. It is not clear from the original description if another syntype also exists; no other original syntype has been found in the collections (except for invalid "syntypes" additionally labelled as "Type" by Alluaud). This species was illustrated (without a description) in the *Atlas* (in GRANDIDIER) by KÜNCKEL (1887) as *Cicindela grandidieri*. Later, ALLUAUD (1902) treated it with a "description" as "*Cicindela grandidieri* n. sp.", but this must be considered merely a subsequent redescription of Künckel's taxon, because Alluaud explicitly cited the illustration by Grandidier and mentioned that he maintained the name for Grandidier. Therefore, the three additional specimens, captured in Imanombo by Vacher and labelled subsequently and therefore invalidly as "Type" by ALLUAUD (1902), cannot be type specimens.

The name *Chaetotaxis (Chaetotaxis) grandidieri* var. *atripennis* Jeannel, 1946, which was synonymized with *C. grandidieri* by LORENZ (1998a), is a clearly unavailable infrasubspecific name (although it was proposed before 1961) because the author explicitly mentioned that it lived together with the typical form (ICZN 1999, Art. 45.6.4). No specimen labelled by this name is in MNHN. The name was listed as a subspecies by WIESNER (1992) who simultaneously referred to JEANNEL (1946). Consequently, the name is proposed here as an available name attributed to Wiesner as *C. grandidieri atripennis* Wiesner, 1992 (ICZN 1999, Art. 45.5.1 and 13.1.2). Notwithstanding, the synonymy of this taxon with *C. grandidieri* is here confirmed.

### ***Chaetotaxis cicindeloides* (W. Horn, 1905)**

*Odontochila cicindeloides* W. Horn, 1905a: 281.

**Type locality:** Northern Madagascar: Montagne d'Ambre (evergreen forest of the national park in the Diego Suarez prefecture and province).

*Chaetotaxis (Chaetotaxis) cicindeloides*: JEANNEL (1946):174.

*Cicindela (Chaetotaxis) cicindeloides*: LORENZ (1998a): 39.

**Type material.** Holotype (by monotypy) ♀ in DEIC, labelled: “Heyne, Ambre Geb[irg].” [printed/handwritten]; “cicindeloides mihi” [blue, handwritten]; “Cicindela cicindeloides W. Horn” [handwritten]; “Holotypus” [red, printed]; “Dtsch. Entomol. Institut Berlin” [printed]; “Coll. W. Horn, DEI Eberswalde” [printed]; Revision Jiří Moravec 2007: “Holotype, *Odontocheila cicindeloides* W. Horn, 1905” [red, printed].  
**Other material examined.** 1 ♀ in DEIC, 2 ♂♂, 3 ♀♀ in MNHN: “Mt. d’Ambre”. Historical data: 1 ♀ in MRAC: “Mt. d’Ambre”; “Comp. type, Basilewsky”. Recent data. 10 ♂♂, 1 ♀ in CCJM, 1 ♂ in CPVP: “Madagascar Nord, Sakaramy, Montagne d’Ambre, 11.II.2000, leg. Jiří Moravec”. 11 ♂♂, 1 ♀ in CJVB, 1 ♀ in CCJM: ditto, “leg. Jan Vybíral”. 5 ♂♂, 1 ♀ in CJVB: *ibid.*, “1–3.I.2007, “leg. Jan Vybíral”.

**Biology and distribution.** *Chaetotaxis cicindeloides* is a rare species, scarce or entirely absent in most collections. It is known only from the evergreen forest of Montagne d’Ambre in Diego Suarez province. The type and another few historical specimens with labels written in German as “Ambre”, or “Ambre Gebirg” were very probably caught in what is now the Montagne d’Ambre National Park. Far more adults were captured recently in forest remnants northwest of Sakaramy near this national park on two very different biotopes: flying onto the sandy places and stones of a half-dried-out rivulet together with *Physodeutera (Microlepidia) rectolabialis* W. Horn, 1914, and in another locality preying on small insects on the recently-burnt soil of a large burnt place in neighbouring forest remnant and in a fairly dry cornfield.

**Remarks.** HORN (1905a) quite logically compared his new species to *Chaetotaxis rugicollis*, treated by him as *Cicindela*, but surprisingly and quite inadequately described it under the genus-group name *Odontochila* Agassiz, 1846 = *Odontocheila* Laporte de Castelnau, 1834 of a very different Neotropical genus (subtribe Prothymina). Such a classification arose out of a similarity to *Calyptoglossa frontalis* (based on *Cicindela frontalis* Audouin & Brullé, 1839) which was also transferred by HORN (1910) from *Cicindela* to the genus “*Odontochila*”. These classifications were quite properly challenged by JEANNEL (1946).

### *Chaetotaxis isaloensis* Moravec, 2000

*Chaetotaxis isaloensis* Moravec, 2000: 18.

**Type locality:** South-western Madagascar: steppe area at the border of the Isalo National Park near the village of Ranohira.

*Cicindela (Chaetotaxis) isaloensis*: LORENZ (2005a): 41.

**Type material.** Holotype ♂ in NHMW labelled: “Madagascar, Ranohira-Isalo, 8–11.II.1995 leg. Jiří Moravec” [printed]; “Holotype, *Chaetotaxis isaloensis* sp. n. J. Moravec, 1999 ded.” [red, printed]; Paratype. 1 ♀ in CCJM with the same locality label and: “Paratype, *Chaetotaxis isaloensis* sp. n., J. Moravec, 1999 ded.” [red, printed].

**Biology and distribution.** Known from only the two adults from the type locality in south-western Madagascar, inhabiting sandy, grassy places in the steppe area with admixed *Uapaca* shrubs at the border of the Isalo National Park near the village of Ranohira. Adults were flying onto moist sandy soil together with few adults of *C. grandidieri* (Künckel, 1887) and *C. multifoveolata* Moravec, 2008.

**Remarks.** A very remarkable species, intermediate between the preceding species and the “*C. rugicollis* group of species”. Its elytra lack well-delimited velvety-black longitudinal bands. In the original description (MORAVEC 2000), when my knowledge of

the genus and its characters was less complete, I inappropriately described some larger elytral punctures on the elytral basal area as “foveae”. In fact, a few small patch-like foveae, running in an inconspicuous longitudinal row on the elytral disc, are present on each elytron of *C. isaloensis* – the female of *C. isaloensis*, in particular, has an inconspicuous row of only four small iridescent-cupreous foveae on each elytron. This is also made very clear in the colour photographs in MORAVEC (2000).

***Chaetotaxis rugicollis* (Fairmaire, 1871)**

(Fig. 20)

*Megalomma rugicolle* Fairmaire, 1871: 32.

**Type locality:** Madagascar.

*Megalomma affine* W. Horn, 1892: 74 (synonymy by HORN 1905b, 1915, 1934).

**Type locality:** Madagascar.

*Cicindela rugicollis*: ALLUAUD (1900): 10.

*Cicindela affinis*: ALLUAUD (1900): 7.

*Chaetotaxis (Chaetotaxis) rugicollis*: JEANNEL (1946): 173.

*Chaetotaxis (Chaetotaxis) rugicollis affinis*: JEANNEL (1946): 173.

*Chaetotaxis (Chaetotaxis) rugicollis rugicollis* var. *subcaerulea* Jeannel, 1946: 173 (unavailable infrasubspecific name).

**Type locality:** Central Madagascar, Manerinerina, 1200 m, 156 km north-west from Antananarivo.

*Chaetotaxis rugicollis*: RIVALIER (1957): 319.

*Chaetotaxis rugicollis affinis*: WIESNER (1992): 96 (available subspecific name; **syn.nov.**).

*Chaetotaxis rugicollis subcaerulea* Wiesner, 1992: 96 (available subspecific name; **syn.nov.**).

*Cicindela (Chaetotaxis) rugicollis*: LORENZ (1998a): 39.

**Type material.** Holotype (by monotypy) ♀ (lacking left elytron) in MNHN, labelled: “Megalom. rugicolle, Fairm.” [handwritten]; “rugicollis Chaud., Madagascar, 59. C. Laferté” [handwritten]; Museum Paris, Madagascar, Coll. de Chaudoir 1874” [printed/handwritten (the date reflects its donation to MNHN)]; “Type” [red, printed]; “Revision Jiří Moravec 2007: Holotype (by monotypy) *Megalomma rugicolle* Fairmaire, 1871” [red, printed]; “*Chaetotaxis rugicollis* (Fairmaire, 1871), det. Jiří Moravec 2007” [printed].

**Type material of synonyms.** Holotype (by monotypy) of *Megalomma affine* W. Horn, 1892, ♂ in DEIC labelled: “Madagascar” [handwritten]; “ex coll. Dr. Richter” [printed]; “affinis, \* mihi” [blue with black frame, handwritten]; “Type! Dr. W. Horn” [printed]; “Holotypus” [red, printed] “Coll. DEI Eberswalde” [printed]; “Revision Jiří Moravec 2007: Holotype (by monotypy) *Megalomma affine* W. Horn, 1892” [red, printed]; “*Chaetotaxis rugicollis* (Fairmaire, 1871), det. Jiří Moravec 2007” [printed].

Type specimens of *Chaetotaxis rugicollis subcaerulea* Wiesner, 1992, based on *Chaetotaxis rugicollis* var. *subcaerulea* Jeannel, 1946. Two specimens standing as “v. *subcaerulea*” in MNHN lacking a type label, one of them ♂ designated here as lectotype is labelled: “Muséum Paris, Madagascar, Manerinerina, Capne Meunier 1900” [printed]; “rugicollis Fairm., W. Horn det. 1905” [handwritten]; “Lectotype, *Chaetotaxis rugicollis subcaerulea* Wiesner, 1992 = *Chaetotaxis rugicollis* var. *subcaerulea* Jeannel, 1946, design. Jiří Moravec 2007” [red, printed]; “*Chaetotaxis rugicollis* (Fairmaire, 1871), det. Jiří Moravec 2007” [printed].

**Other material examined.** 72 specimens in collections: BMNH, CCJM, CJVB, DEIC, IRSNB, MHCK, MNHN, MNHU, MRAC and NHMW. Interesting data. 1 ♀ in MNHN: “Madagascar”; “rugicollis Fairm., Co-type” [*sic!* printed, subsequently labelled]; “Paratype” [*sic!* red, printed, subsequently labelled]; “Museum Paris, ex Coll. M. Maindron, Coll. G. Babault 1930”. 1 ♀ in BMNH: “Madag., Perrier” [handwritten]; “Muséum Paris, Madagascar, Perrier de la Bathie, 1906” [printed]; “Paratype” [*sic!*, round with yellow frame, subsequently labelled]; “Brit. Mus., 1947 – 246” [printed].

**Biology and distribution.** Inhabiting a large area of central Madagascar, especially the central plateau, this common species reaches western Madagascar, Antsalova in the Bongolava massif, and the Namaroka integral natural reserve in the Ambongo region

near Soalala, further northwest to Ankarahitra, Maevatanana (= Suberbieville), but it also penetrates into inner areas of eastern Madagascar, including Mandritsara. Many adults come from the area of Antananarivo, i.e. Andrangoloaka and Angavokely, formerly a forest station, now a small national park in a mountainous area 20 km east of Antananarivo (Manjakandriana subprefecture), and from the Ankaratra massif (Ambatolampy and Faratsiho) some 50 km south of Antananarivo and somewhat farther southwards to Betafo. The labels “Tananarive” and “Annanarivo” (often employed by insect dealers) refer to the larger area of Antananarivo, probably including the Angavo massif (Anjozorobe) north-east of the capital, as in other specimens examined. This species is still common in the evergreen forest of the Manankazo forest station near Ankazobe, 130 km north-west of Antananarivo (31 specimens examined). Manerinerina, the type locality of “var. *subcaerulea*” lies nearby along the Antananarivo-Majunga road. The “Majunga” labels accompanying some specimens are ambiguous as they usually refer to the province, which is very large.

**Remarks.** *Chaetotaxis rugicollis*, the type of the genus, is a rather variable species. The coloration and whitish elytral maculation are very variable, independent of sex. The shape of the labrum is also variable, especially in the female, in which the labrum of the holotype has an exceptionally shorter median tooth. The gap between the third and fourth tooth of the mandibles may be wider in some adults, but the fourth tooth is never as markedly distant and the gap never has such a flat base as it does in *Chaetotaxis katsepyana* sp.nov..

The evidently subsequently-labelled specimens “Co-type” or “Paratype” in MNHN and BMNH are not genuine syntypes because, according to the original description by FAIRMAIRE (1871), the species was based on only one female from the Chaudoir collection.

Examination of the holotype) of *Chaetotaxis rugicollis affine* (W. Horn, 1892) (based on *Megalomma affine*) confirmed a synonymy with *C. rugicollis* stated by HORN (1905b) himself and also maintained by him later (HORN 1915, 1934).

The synonymous *Chaetotaxis rugicollis subcaerulea* Wiesner, 1992 (based on the unavailable infrasubspecific name *Chaetotaxis rugicollis rugicollis* var. *subcaerulea* Jeannel, 1946) was made an available subspecific name by WIESNER (1992), who listed it for the first time at subspecific rank (ICZN 1999, Art. 45.5.1.) and simultaneously added the bibliographical reference to JEANNEL (1946) where the original statement of differentiating characters had been published (ICZN Art. 13.1.2.). JEANNEL (1946) was fully aware of the feeble status of his “var. *subcaerulea*” and he did not label the two syntypes from Manerinerina. They stood in his collection in MNHN as “var. *subcaerulea*”, but bearing no type label. I designated the male as lectotype, although the name is a junior synonym of *C. rugicollis* and the two syntypes in fact do not differ from other specimens of *C. rugicollis* (the blue coloration mentioned by Jeannel is only feebly present, while a greenish colour prevails, as in many other adults of *C. rugicollis*).

Four specimens from Ambondromamy and two from the Bora forest reserve near Antsohihy (western Madagascar) indicate a possibility that another species within *C. rugicollis* may be recognized. This would not be surprising in view of the uniquely wide biodiversity of Madagascar. Nevertheless, when some diverse characters are evaluated,

possibly erratic evolutionary pressures during the process of speciation should also be taken into consideration.

***Chaetotaxis katsepyana* sp.nov.**

(Figs 1–19)

**Type locality:** Western Madagascar: fragment of deciduous forest near Katsepy on the left estuary of the Betsiboka river opposite to Majunga (= Mahajanga).

**Type material.** Holotype ♂ in NHMW, labelled: “Madagascar, Katsepy (Majunga), 24–31.XII.1998 leg. Moravec et Pacholátko” [printed]. Allotype. 1 ♀ in CCJM: ditto. Paratypes. 17 ♂♂, 15 ♀♀ in CCJM, 1 ♂ in CJVB, 1 ♂, 1 ♀ in FCCR, 1 ♂, 1 ♀ in JWCW, 1 ♂, 1 ♀ in CEWH, 1 ♂ in KCBC, 1 ♂, 1 ♀ in NHMB: ditto. 12 ♂♂, 14 ♀♀ in CCJM: *ibid.*, “5.II.2002, leg. Jiří Moravec”. 7 ♂♂, 3 ♀♀ in CJVB: ditto, “leg. Jan Vybíral”. 3 ♂♂, 2 ♀♀ in CJBB: ditto, “leg. Jaroslav Bašta”. All type specimens labelled: “Holotype (Allotype or Paratype respectively), *Chaetotaxis katsepyana* sp.nov., det. Jiří Moravec 2007” [red, printed].

**Other material examined.** 1 ♂, 1 ♀ in CCJM: “Kirindy”.

**Description.** Body medium-sized, length 10.2–13.1 (HT 10.5, AT 12.8) mm, width 3.00–4.0 (HT 3.25, AT 4.00) mm.

Head narrower than body, width 3.1–3.6 mm, dark copper or vividly cupreous, rarely purplish-copper, usually with green, rarely bluish iridescence.

Frons more or less steeply declined towards clypeus, finely and densely longitudinally striate-rugose, rugae often radiate on median area and on more or less rounded frons-vertex fold; supra-antennal plates elongate-triangular, usually interrupted in middle by deep impression, smooth and shiny metallic-cupreous with bluish or purple lustre.

Vertex glabrous except for two (anterior and median) juxtaorbital setigerous pits with white sensory setae (on each side), densely and coarsely rugulose, rugae forming arcuate-parallel ornament in deep median impression, those on lateral areas parallel-longitudinal, divergent posteriorly and becoming irregularly wavy or anastomosing when passing onto genae; juxtaorbital areas parallel-striate; posterior vertex-occiput area bulged in middle, transverse-wavy rugulose.

Genae glabrous, longitudinally and shallowly striate-wrinkled in parallel, ventral area almost smooth, shiny metallic green-cupreous, often with purple lustre.

Clypeus rather coarsely, mostly obliquely transverse striate-rugulose.

Labrum 4-setose (and with short, stiff secondary setae at lateral indentation), one of the four setae sometimes undeveloped (or abraded), ivory-yellow to ochre, usually with black-brown margin and darkened basolateral areas of central convexity, shape similar to that in *C. rugicollis*; male labrum length 0.85–1.00 mm, width 1.35–1.50 mm, lateral margins with more or less distinct lateral indentation (with stiff, short secondary setae arising from black denticles) and prominent subacute or acute (mucronate) anterolateral teeth, median lobe usually not surpassing anterolateral teeth, laterally rounded, anterior margin subtruncate or slightly emarginate and mostly with minute median tooth; female labrum much longer, length 1.4–1.6 mm, width 1.65–1.70 mm, with prominent median lobe projecting in form of large, almost acute, tooth.

Mandibles faintly asymmetrical, lateral margins arcuate, those of male ivory-yellow to dark ochraceous, in female mahogany-brownish, left mandible in male with all three inner teeth of almost equal size (in female second tooth usually smaller), third tooth

in right mandible in both sexes notably smaller than second and fourth tooth in each mandible (but more markedly in the left), conspicuously distant from the third, separated by a wide gap, with a flat base.

Antennae of males reaching mid-elytra, those of females shorter; antennomeres 2–5 in both sexes mostly unicoloured ochre-brownish or brown (scape sometimes black-brown), antennomeres 6–11 smoky-darkened.

Thorax. Pronotum concolorous with head, in male usually slightly longer than wide, in female almost as long as wide, length 2.10–2.50 mm, width 1.80–2.50 mm, anterior and posterior sulcus well pronounced, surface of anterior and posterior lobe densely and irregularly transversely wavy to vermicular-rugulose; disc with lateral margins moderately arcuate-convex and more constricted towards posterior sulcus, medial line usually dilated in posterior half of disc; discal surface with two small impressions in anterior area (in middle of each pronotal half), and covered with coarse, transverse rugae which in anterior and posterior area radially converge towards the median line, while rugae on sublateral areas towards notopleural sutures become irregular, wavy and anastomosing, mixed with setigerous punctures, but rugae are separated from notopleural sutures by narrow, smooth stripe with violaceous lustre (narrower than in *C. rugicollis*); notopleural sutures well differentiated, but thin and only indistinctly defined in dorsal view; lateral areas of anterior lobe and disc inconspicuously but rather densely covered with somewhat short, white hair-like setae; prosternum and mesosternum dark black-blue with violaceous or greenish lustre, glabrous and smooth in middle, anterior and lateral areas wrinkled; proepisterna large, metallic black-copper or black-blue, with iridescent-green lustre, very shallowly wrinkled, glabrous except for sparse setae at ventral margin; mesepisterna shiny-copper, smooth or shallowly wrinkled, ventral and juxtamesepimeral areas (and also mesepimeron) with scattered white setae, female coupling sulcus with deep central pit; metasternum smooth, black-blue with greenish iridescence, lateral areas usually metallic-green or bronze-greenish and densely covered with setigerous punctures with white setae; metepisterna usually dark cupreous or shiny cupreous with purple iridescence, in male with scattered or denser setigerous punctures with white setae, in female with uneven surface and only sparse setae on anterior area.

Elytra markedly elongate, length 6.2–8.2 mm, with well-marked, rounded humeri; lateral margins almost parallel in male, subparallel in female, anteapical angles in male widely arcuate towards apices, apices in female rounded, sutural spine always well developed, short and acute; microserrulation very fine; elytral surface distinctly convex, basodiscal convexity moderate, discal impression very faint or nearly absent, humeral and apical impressions moderate; elytral coloration predominantly black-copper with indistinct greenish iridescence on anterior and humeral area, rarely also on elytral disc; juxtaepipleural area chatoyant black-violaceous with greenish, bluish or bronze iridescence (depending upon angle of illumination, but lacking catoptrical band); whole elytral surface punctate, punctures isolate, larger and only very rarely anastomosing on basodiscal convexity, usually finer on posterior elytral half; each elytron with one velvety-black band running longitudinally along, but distant from suture and with 7–9 large, iridescent, green, blue, or purple foveae running within this band, usually

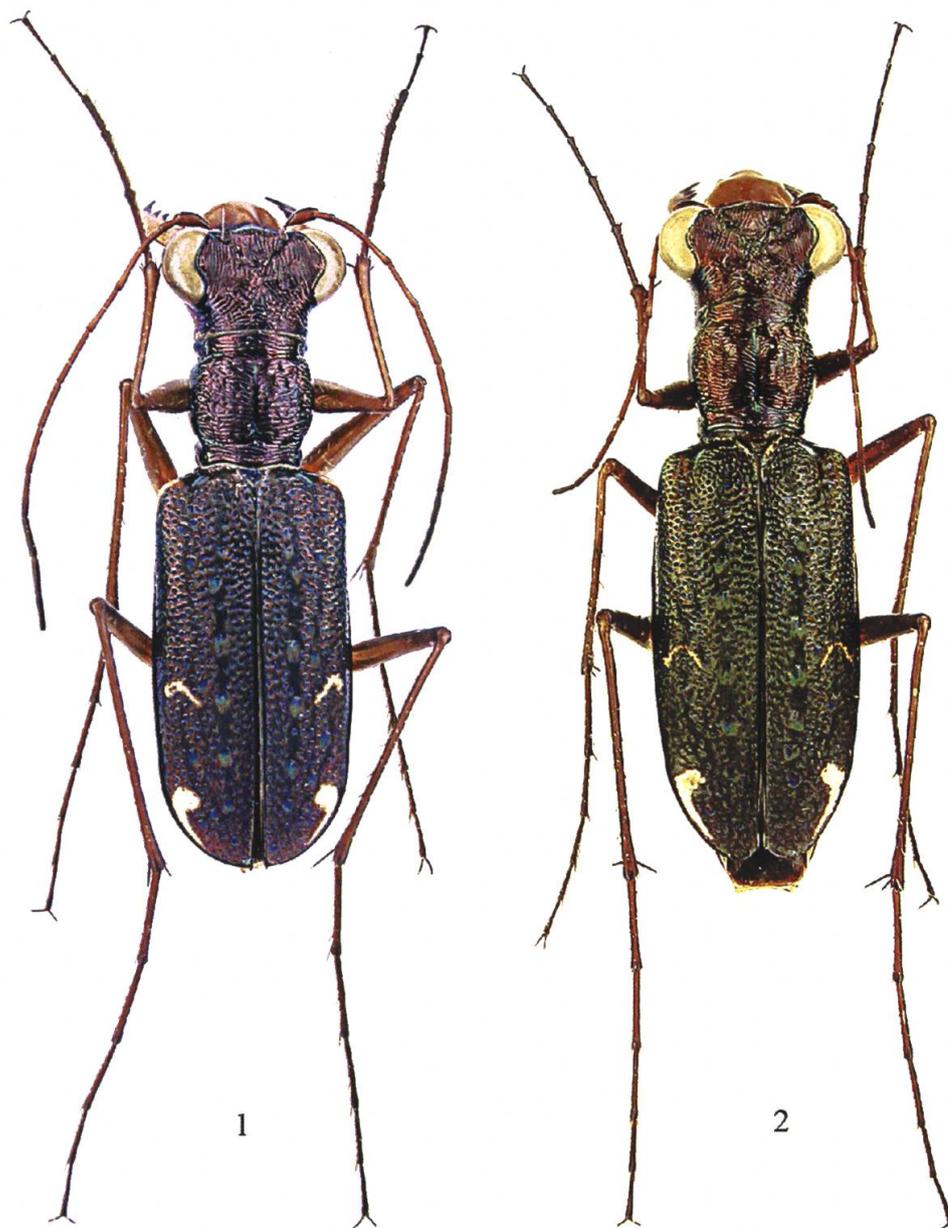
additional, more or less distinct and short blackish subhumeral band with 1–3 smaller foveae present; elytral setal vestiture indistinct, consisting of several long, white, hairlike setae scattered on basal and humeral areas and a few juxtaepileural microtrichia; whitish elytral maculation consists of humeral macula which is present in both sexes (larger in male), sublateral-median band usually present in both sexes (but never prolonged along lateral elytral margin posteriad) or reduced to small macula only, or very rarely absent, while anteapical lunule always present in both sexes.

Legs. Coxae metallic black-blue with green iridescence, pro- and mesocoxae densely setose, setae on metacoxae dense, but present only on lateral area; other leg segments as in *C. rugicollis*; all trochanters ochre-to-brownish-testaceous; femora in male ochre to brownish or mahogany-testaceous, sometimes partly black-brown (especially metafemora), in female almost black (faded in older specimens), all femora with ochre-testaceous subapical belt, femoral surface covered with white hairlike setae that are much sparser on metafemora; tibiae ochre-brownish to brown, sometimes with black-brown darkened apices, pro- and mesotibiae with row of sparse brownish microtrichia and stiff, short setae and black thorn-like setae on tibial apices, metatibiae with only sparse, stiff microtrichia; tarsi black-brown, in male first three tarsomeres of protarsi normally dilated and with usual whitish pad; claws usually reddish-brown.

Aedeagus similar in shape to that of *C. rugicollis* but somewhat more elongate, length 3.1–3.2 mm, width 0.5 mm, in left lateral view with less distinct lateral-apical edges, ventral margin of apical half moderately enlarged in middle, dorsally expanded near base and very moderately emarginate near middle, but apical part voluminous, conically attenuated towards dorsally more-or-less-markedly emarginate, rounded tip; in ventral and dorsal view the apex is conical and blunt; internal sac similar to that in *C. rugicollis* (pattern “*rugicollis*”) consisting of large dorsomedian piece which is irregularly dentate in its apical half, but with larger and markedly obvious arciform piece; other sclerites as in *C. rugicollis*: elongate-longitudinal central sclerite covered with voluminous tooth-like membranous piece, combined smaller basodorsal sclerites and well-developed flagellum with simple basal spiral and long filiform, flagellate upper portion which is either barely visible as optically merging with other sclerites, or very conspicuous when protruding from the apical orifice (usually obvious as such in untreated aedeagi).

Variability. No significant variability (other than that stressed in the description) within the type series observed. No black aberrant specimen seen; the elytral coloration and white maculation is much more complete and constant than in *C. rugicollis*. The two (non-type) adults from the Kirindy Forest Reserve possess the same characters as those of the type series.

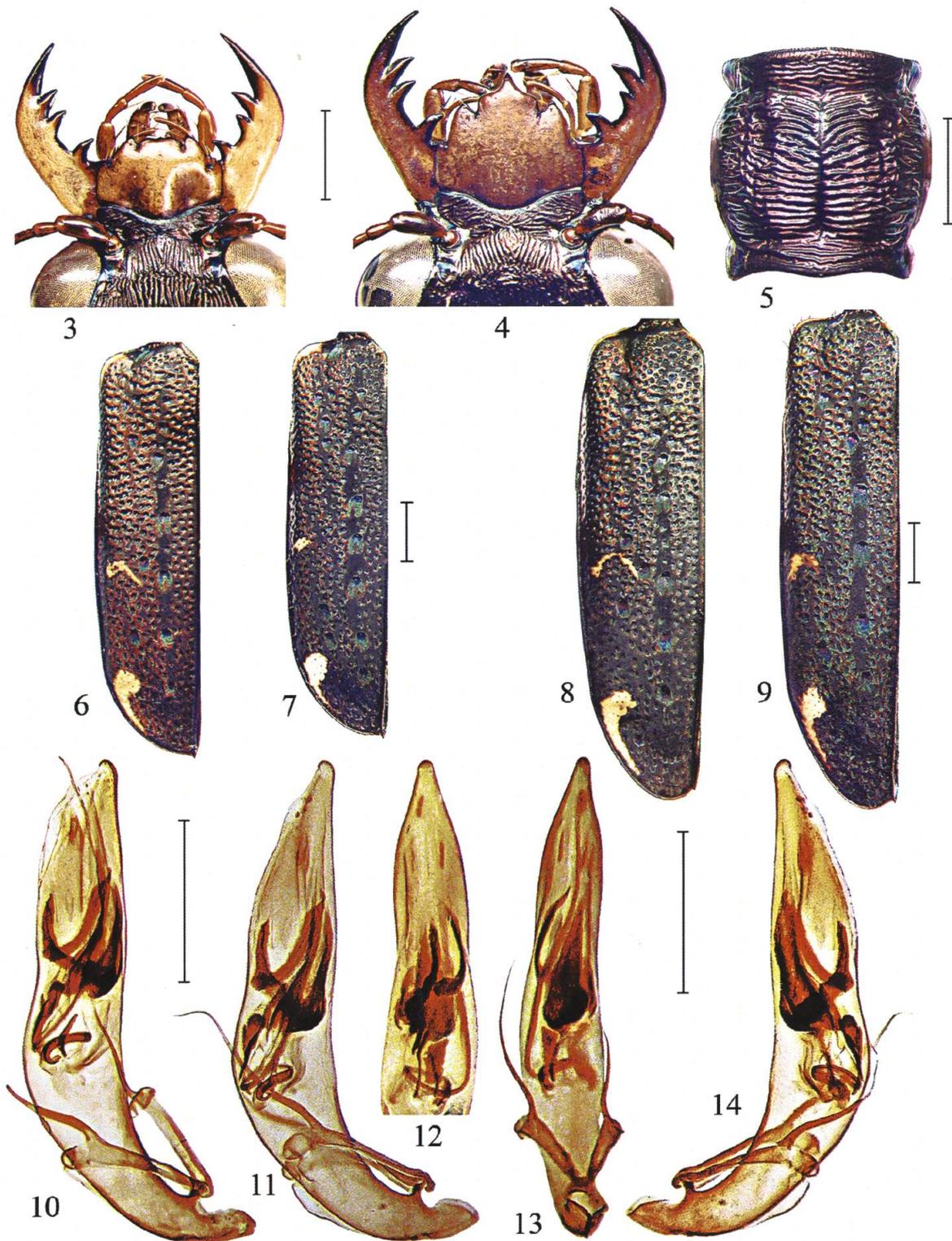
**Biology and distribution.** Known only from the western deciduous forest. The type locality is a very small, isolated fragment of a coastal primary deciduous forest mixed with introduced mango and other trees near the village of Katsepy, which is situated on the left bank of the Betsiboka river estuary opposite to Majunga (= Mahajanga) city. Adults are good fliers. They occur there mostly on paths together with *Stenocosmia tenuicollis* (Fairmaire, 1904) (= *S. angusta* Rivalier, 1965, synonymy by MORAVEC 2002), but also on the sandy-stony bed of a seasonal rivulet near where it joins the sea,



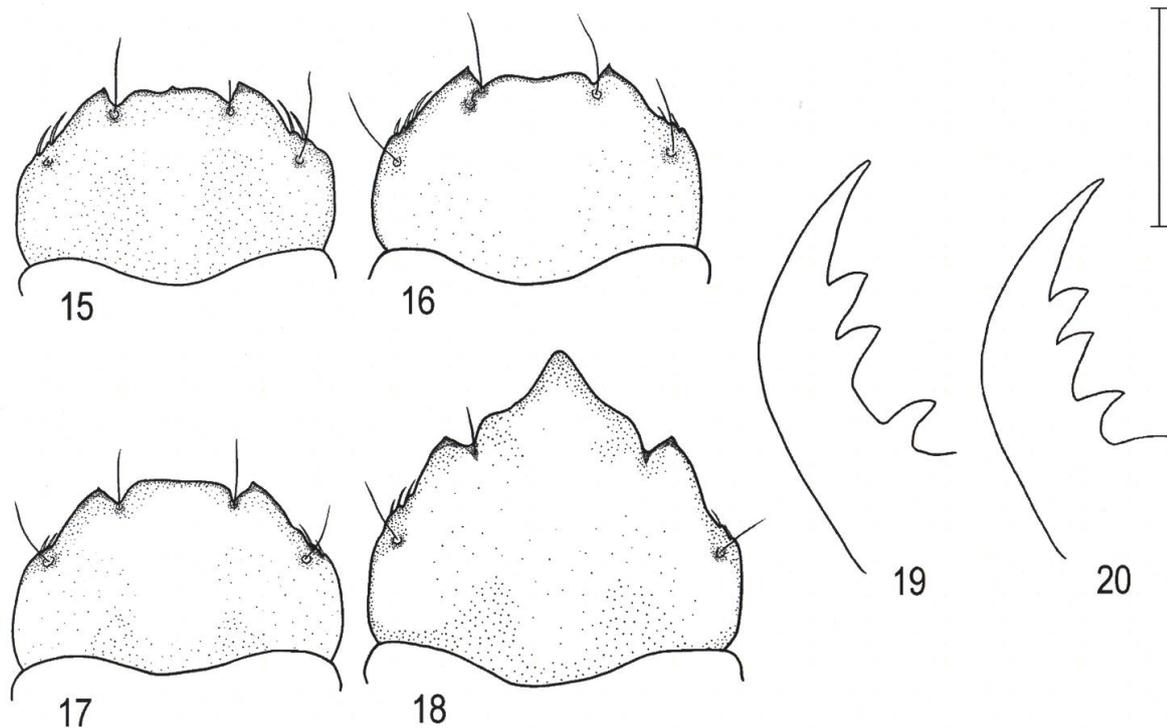
**Figs 1–2.** *Chaetotaxis katsepyana* sp.nov.: 1 – male, HT (NHMW), length 10.5 mm; 2 – female, AT, (CCJM), length 12.8mm (type locality).

together with *Physodeutera (Axinomera) dorri* (Fleutiaux, 1899). A photograph of the locality can be seen in MORAVEC (2002, fig. 807). Two (non-type) adults come from the Kirindy Forest Reserve 50 km north of Morondava.

**Etymology.** Named after the village of Katsepy, the type locality of the new species.



**Figs 3–14.** *Chaetotaxis katsepyana* sp.nov.: 3–4, front part of head (3 – male, HT; 4 – female, PT); 5 – male pronotum, HT; 6, 7 – male elytron (6 – HT; 7 – PT); 8, 9 – female elytron (8 – AT; 9 – PT, CCJM); 10–14 – cleared aedeagi showing internal sac (10, 11 – left lateral view; 12 – dorsal view; 13 – ventral view; 14 – right lateral view), PT (CCJM, type locality). Bars = 1 mm.



**Figs 15–20.** 15–19, *Chaetotaxis katsepyana* sp.nov.: 15, 16 – male labrum (15 – HT; 16–17 – PT, CCJM); 18 – female labrum, AT, CCJM); 19 – shape of left mandible of male (HT). 20 – *Chaetotaxis rugicollis*: shape of left mandible of male (Manankazo, CCJM). Bars = 1 mm.

**Differential diagnosis.** *Chaetotaxis katsepyana* sp.nov. is closely related to *C. rugicollis* (Fairmaire, 1871) having similar elytral punctation and foveae, but is distinguished from it by notably longer body (reaching 13 mm in length), conspicuously elongate elytra, more elongate legs, fourth tooth of mandibles (especially the left) markedly distant from the third, separated by a wide gap usually with a flat base, notopleural suture separated from rugae on pronotal lateral area by narrower smooth stripe, and white elytral maculation more complete and constant: humeral macula and sublateral-median band and anteapical lunule present in both sexes, while the sublateral median band is never prolonged along the lateral elytral margin posteriad. Moreover, the metepisterna in the male are densely punctate-setose (sparsely setose in female), and the lateral areas of the male ventrites densely setose (*C. rugicollis* has metepisterna glabrous except for a few setae on anterior and posterior areas in male).

**Remarks.** *Chaetotaxis katsepyana* is related to *C. rugicollis* and *C. multifoveolata*, but the differences stressed in the differential diagnosis (and in the key to species) separate

it clearly from these two much smaller species. Indeed, in contrast to them, *C. katsepyana* is one of the largest species of the genus.

### ***Chaetotaxis multifoveolata* Moravec, 2008**

*Chaetotaxis multifoveolata* Moravec, 2008a: 10.

**Type locality:** South-central Madagascar: Ampandandrava, lat 24.22, long. 45.31, some 45 km north-east of Bekily, Bekily subprefecture, Tulear (= Toliara) province.

**Type material.** Holotype ♂ in MNHN, labelled: “Ampandandrava, Seyrig: S. Madag.” [printed]; “Museum Paris, 1936, A. Seyrig” [green, printed]. Paratypes. 53 paratypes in collections MNHN, DEIC, MNHU, BMNH, MRAC and CCJM listed with all labels in MORAVEC (2008a).

**Biology and distribution.** Occurs in southern Madagascar in Fianarantsoa and Tulear (Toliara) provinces. It is known from the Ambohipanja mountains and Sahambava near Fianarantsoa, from Ambalavao towards Vohilava in the eastern coastal area near Manakara, penetrating westwards through the Zombitsy Special Reserve east of Sakaraha to the area of the Isalo National Park, and southwards through Behara (Midongy-Sud) to Ampandandrava (type locality) near Bekily in south-central Madagascar. Imitzo (= Imitso) forest (2300 m a.s.l.) is a southern part (Anjavidilava) of the Andringitra massif. In the Isalo National Park it is very rare and sympatric with *C. grandidieri* and *C. isaloensis*, inhabiting a steppe zone along seasonal brooks near the Ranohira village. The adults fly well.

**Remarks.** As noted in MORAVEC (2008a), *C. multifoveolata* is probably identical with *Cicindela rugicollis humeralis* Olsoufieff, 1934, described as a variety from southern Madagascar (Bekily, leg. Seyrig), but I found no type specimen of Olsoufieff’s taxon in the collections. Moreover, the name is a primary junior homonym of *Cicindela humeralis* Dejean, 1831.

As discussed in MORAVEC (2008a), some specimens in MNHN (now paratypes of *C. multifoveolata*) are labelled as syntypes of *Chaetotaxis seyrigiana* Jeannel, although Jeannel never published a description.

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