

New or rare Madagascan tiger beetles – 15
***Pogonostoma (Microstenocera) zombitsynense* sp. nov.,**
a new species from southwestern Madagascar
(Coleoptera: Cicindelidae)

Jiří MORAVEC¹⁾ & Jan VYBÍRAL²⁾

¹⁾ P.O.Box 17/A, 679 04 Adamov, Czech Republic; e-mail: jirmor@quick.cz

²⁾ Palackého 331, 667 01 Židlochovice, Czech Republic; e-mail: janvybiral@dolnimorava.org

Abstract. A new species of the Madagascar endemic genus *Pogonostoma* Klug 1835, *P. (Microstenocera) zombitsynense* sp. nov., belonging to the *P. (M.) pusillum* (Laporte de Castelnau & Gory, 1835) species group, is described from the Zombitse-Vohibasia National Park in southwestern Madagascar and compared with related taxa. A supplemental key to species of the *P. (M.) pusillum* species group is appended.

Taxonomy, new species, Coleoptera, Cicindelidae, *Pogonostoma*, *Microstenocera*, Madagascar

INTRODUCTION

The taxonomy and nomenclature of the endemic Madagascan tiger beetle genus *Pogonostoma* Klug, 1835 was recently revised and monographed by the first author (MORAVEC 2007). In that monograph, based on a thorough examination of type and other relevant specimens (more than 6500) deposited both in institutional and private collections, 119 species and 9 subspecies were distinguished. Nevertheless, the discovery of a new species described herein from adults recently caught by the second author in the subhumid forest of the Zombitse-Vohibasia National Park, indicates that some areas of the large island, particularly isolated southwestern forest communities, deserve further field research.

The new species was compared with the type and other specimens of related taxa treated and illustrated in MORAVEC (2007). It belongs to the *P. (Microstenocera) pusillum* (Laporte de Castelnau & Gory, 1835) species group originally proposed by JEANNEL (1946), thereafter distinctly modified by RIVALIER (1970) and MORAVEC (2007). The other two species groups, mentioned in the differential diagnosis below, were proposed by RIVALIER (1970), and modified by MORAVEC (2007).

MATERIAL AND METHODS

The terms referring to the morphology and chaetotaxy correspond with those in the monograph (MORAVEC 2007). The length of the body is measured from the elytral apex to the apex of the clypeus (without the labrum). All dimensions of the aedeagus (the median lobe of the organ without the parameres) are measured and figured in its left lateral position where the basal portion (with basal orifice) points to the right while the left lateral outline (with dorsoapical orifice) faces dorsally, provided that the ventral margin of the median portion is settled in its vertical position. The photographs were taken with a Nikon Coolpix 990 digital

camera through an MBC-10 binocular stereo-microscope. The following abbreviations of type category are used: HT = holotype; AT = allotype; PT = paratype.

The depository of type specimens uses the following codens:

CCJM Collection Cicindelidae Jiří Moravec, Adamov, Czech Republic;
CJVB Collection Jan Vybíral, Židlochovice, Czech Republic;
NHMW Naturhistorisches Museum Wien, Vienna, Austria.

***Pogonostoma (Microstenocera) zombitsynense* sp. nov.**

(Figs. 1-12)

Type locality: Southwestern Madagascar, Tulear (Toliara) Province, margin of the Zombitse-Vohibasia National Park ("Parcelle Zombitsy"), subhumid forest along the road (NR7), 10 km southeast of Sakaraha, 22°53'29"S 44°41'39.0"E.

Type specimens. Holotype ♂ (NHMW) labelled: "NW Madagascar, Zombitse Vohibasia NP., S22°53'29" E44°41'39.0", J. Vybíral lgt., 14.1.2010" [printed]. Allotype ♀ (CJVB) with same locality label.

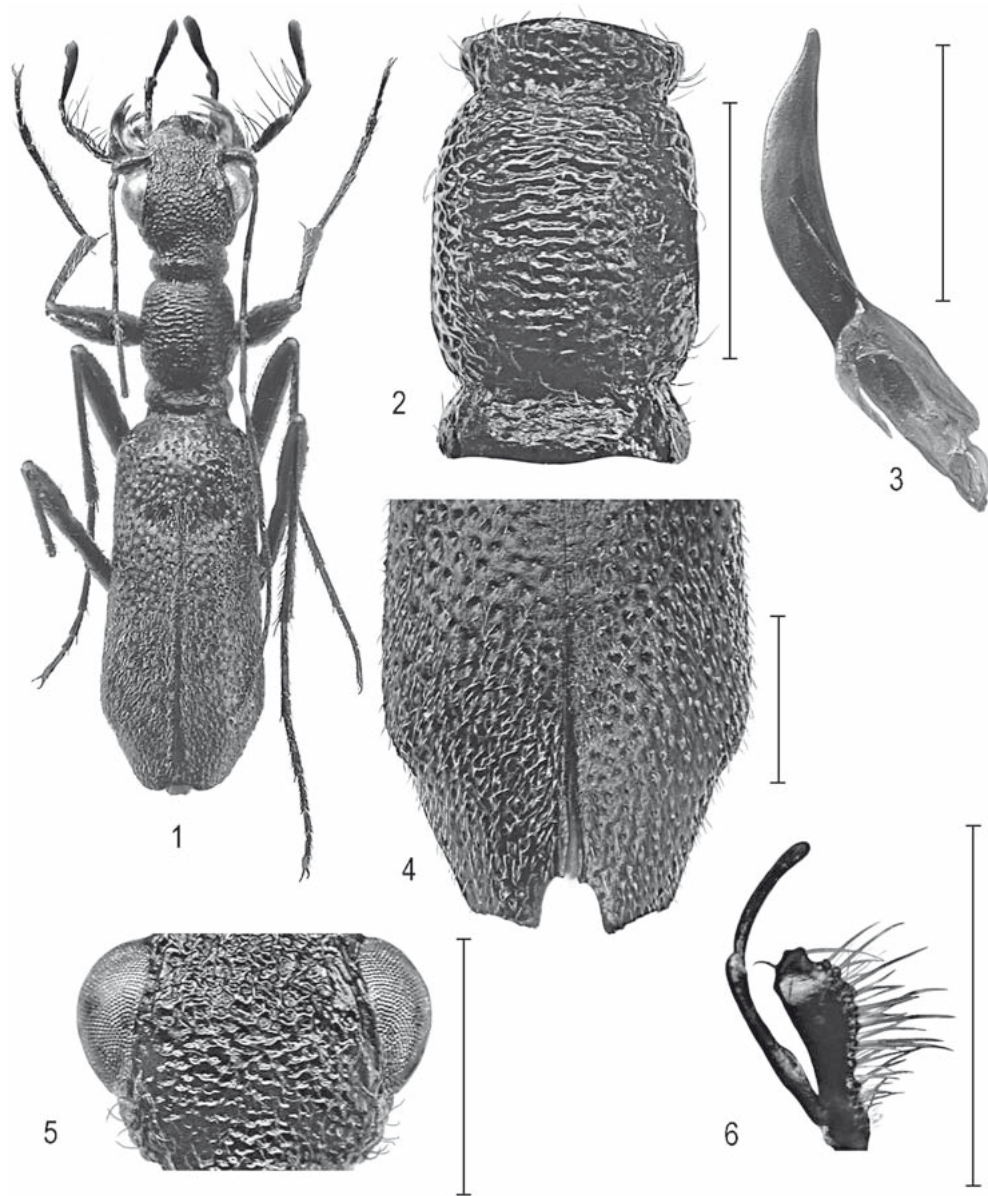
Paratypes: 1 ♂, 2 ♀♀ (CCJM), 1 ♂, 3 ♀♀ (CJVB) with same locality labels. All type specimens labelled: "Holotype ("Allotype" or "Paratype" respectively), *Pogonostoma (Microstenocera) zombitsynense* sp. nov., J. Moravec et J. Vybíral det. 2010" [red, printed].

Differential diagnosis. A species of the *Pogonostoma (Microstenocera) pusillum* species group, with both maxillary and labial palpi black, but clearly distinguished from all other species of this group by the shape of its aedeagus which has markedly bent (boomerang-like) and long basal portion. Body small, 7mm in length, black; setae blonde on head and pronotum, ochraceous on elytra; elytra with distinct discal impression, rather shallowly punctate with shiny to velvety-coriaceous intervals between punctures; mandibles asymmetrical; antennae black except for brownish to ochre-testaceous base of antennomeres 4-6.

Owing to its extremely coarsely areolate-rugose sculpture on the head, and coarsely transverse-rugose sculpture on the pronotum, the new species resembles *P. (M.) rugosiceps* Rivalier, 1970 which differs principally in having ochre-yellow penultimate (longest) palpomeres of the labial palpi and differently shaped, much straighter aedeagus, and is a member of the *P. (M.) fleutiauxi* W. Horn, 1905 species group.

Pogonostoma (M.) parallelum W. Horn, 1909 may also resemble the new species due to a similar shape of its pronotum, but this species of the *P. (M.) schaumii* W. Horn, 1893 species group principally differs in having whitish to testaceous penultimate (longest) palpomeres of the labial palpi, entirely black antennae, much finer surface sculpture of its head and pronotum, elytra with much larger and deeper punctures and indistinct discal impression, as well as a shorter aedeagus with a different shape of its apical half. In addition, the new species differs in having much longer setae on the head and pronotum and a somewhat differently shaped labrum.

Description. Body (Fig. 1) small, rather uniformly shaped and sized, 6.90-7.40 (HT 7.20, AT 7.40) mm long, 1.80-1.95 (HT 1.80, AT 1.95) mm wide, entirely black.



Figs. 1-6. Characters of *Pogonostoma (Microstenocera) zombitsynense* **sp. nov.** 1 – habitus of male, HT (NHMW), length 7.2 mm; 2 – male pronotum, HT; 3 – aedeagus, HT; 4 – elytral apices, female, AT (CJVB); 5 – part of head, male, HT; 6 – galea and lacinia, female, AT. Scale bars = 1 mm.

Head (Fig. 5) narrower than body, width 1.40-1.45 mm, temples very short, subangular, 2.2-2.5 times shorter than eyes.

Frons merging with clypeus and not differentiated from vertex, coarsely scabrous-rugulose, convex in middle; supraantennal keels in form of moderately elevated anterior crest which may partly merge with coarse surface sculpture, and indistinct posterior crest (merging with the sculpture); vertex moderately convex between eyes, with indistinct posterior impression; surface notably coarsely scabrous-rugulose to irregularly areolate, areolae large, mostly umbilicate, posterior area and temples coarsely scabrous-rugulose by irregular, shorter rugae passing onto genae; occipital area with transverse-wavy rugae; entire surface densely covered with rather short, decumbent, becoming longer and erect, whitish setae.

Genae rather large, narrowed in anterior juxtaorbital area, coarsely irregularly rugulose on posterior and anterior areas, ventral area nearly smooth, with sparse but rather long whitish hairlike setae.

Clypeus black, rugulose-punctate, with scattered short, whitish hairlike setae, frontoclypeal area rather distinctly elevated.

Labrum (Figs. 7-9) 4-setose with two anterior and two lateral, long and stiff testaceous setae, black, surface nearly flat, more or less markedly covered with rather long or very short, appressed, white microtrichia, in both sexes of similar shape, with low and arcuate lateral margins, mostly right-angled blunt lateral indentations, arcuate or blunt and almost right-angled anterolateral teeth and short median lobe which in male is very short and shallowly emarginate between two blunt anterior teeth, in female slightly more prolonged anteriorly and in one female with bluntly indicated median tooth between the blunt anterior teeth; male labrum (Fig. 7) 0.38-0.40 mm long, 0.70-0.75 mm wide, female labrum (Figs. 8-9) 0.40-0.55 mm long, 0.70-0.85 mm wide.

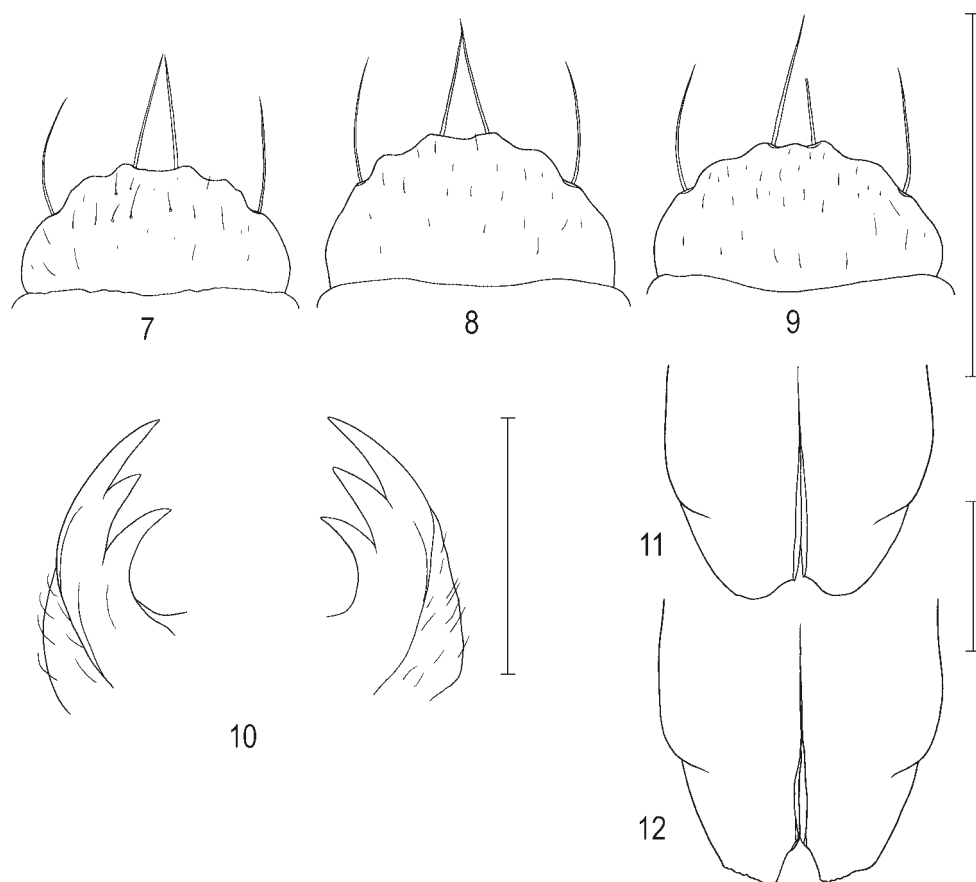
Maxillae. Galea entirely black (except for unpigmented orifices); lacinia shiny-black with testaceous setae, elongate-spatulate, slightly bilobed anteriorly, 0.18-0.20 mm wide.

Palpi (both maxillary and labial) black, apices of terminal palpomeres brownish, long palpomeres covered with long whitish to ochre setae and stiff mahogany-brown bristles.

Mandibles (Fig. 10) black-brown with dark cinnamon-brown teeth and basal-middle area; lateral edges arcuate, basolateral lower portions notably large, asymmetrical (arcuate in left mandible, longer and more elongate in the right), terminal teeth rather long (that of left mandible slightly shorter than that of the right); inner teeth asymmetrical: second tooth of left mandible much smaller than the third, while in right mandible the second tooth is slightly larger and wider than the third.

Antennae in both sexes shorter than body (more distinctly in female), normally shaped and with usual microtrichia, black except for more or less paler brownish to ochre-testaceous base of antennomeres 4-6.

Thorax. Pronotum (Fig. 2) entirely black, notably elongate, length 1.65-1.80 mm, width 1.05-1.10 mm; anterior lobe narrower than the posterior; lateral margins of disc subparallel; notopleural sutures in male barely obvious in dorsal view, in female visible in posterior half of disc; median line indistinct, merging with coarse surface sculpture; surface of anterior lobe and disc very coarsely rugose, sculpture consisting of large, mostly transverse, partly wavy ridges occasionally anastomosing in middle, more commonly on lateral areas towards notopleural sutures where the ridges nearly form irregular, subreticulate sculpture; whole pronotal surface covered with comparatively long, blonde to ochre setae which are shorter



Figs. 7-12. Characters of *Pogonostoma (Microstenocera) zombitsynense* sp. nov. 7-9 – labrum: 7 – male, HT, (NHMW); 8 – female, AT (CJVB); 9 – female, PT (CCJM). 10 – mandibles, male, HT. 11-12 – elytral apex: 11 – male, HT; 12 – female PT (CJVB). Scale bars = 1 mm.

and decumbent on disc, but notably long and protruding on lateral areas of disc and anterior lobe; surface of posterior lobe covered with coarse, irregular, mostly transverse-wavy and anastomosing rugae, setae sparser; proepisterna large, shiny, with uneven surface, more or less distinctly, but shallowly parallel-rugose mostly on juxta-notopleural and anterior areas, nearly glabrous, or covered with sparse, but longish setae; prosternum covered with rather dense, long, blonde hairlike setae which are sparser on mesosternum; metasternum glabrous in middle, with sparse and shorter hairlike setae on lateral areas; mesepisterna in both sexes with rather deep and somewhat elongate anteromedian pit, irregularly rugulose, with few long, hairlike setae on ventral area; mesepimeron deeply impressed; metepisterna with sparse microtrichia.

Elytra (Figs. 4, 11-12) elongate, 4.20-4.40 mm long, convex or slightly flattened on disc, with distinct or moderately deep discal impression; humeri rather narrow, moderately arcuate; lateral margins in basal third subparallel, slightly narrower in the middle and then enlarged

towards distinct anteapical convexity; shape of apices dimorphic: apex in male rounded in middle, deeply emarginate towards suture with very small sutural spine; apex in female with deep and rather steep sutural emargination forming right-angled inner tooth, obliquely truncate towards arcuate or blunt right-angled external angle; elytra nearly regularly and relatively shallowly punctate on virtually entire elytral surface, punctures larger and deeper on disc and within distinct discal impression, shallower and sparser on base and nearly effaced on basohumeral area; intervals between punctures on basodiscal convexity smooth and shiny, finely asperate-coriaceous and velvety-shiny in middle on elytral disc, narrow juxtasutural area within discal impression impunctate (coriaceous-asperate); elytral setal vestiture consisting of dense, short to medium-long, appressed ornamental setae which are blonde to ochraceous or pale ferrugineous on posterior declivity; much sparser, feeble, long, hairlike sensory setae are scattered mostly on humeral and anteapical area.

Legs. Coxae black; trochanters shiny-black, or faintly brown-tinged, all other segments black; profemora rather densely covered with white, feeble setae which are much sparser on mesofemora and metafemora; pro- and mesotibiae and corresponding tarsi densely covered with blonde microtrichia; metatibiae and predominantly also metatarsi densely covered with very short, greyish microtrichia (which appear blackish); claws ochraceous.

Abdomen. Ventrites metallic black, covered with short, appressed, whitish hairlike setae.

Aedeagus (Fig. 3) brown, comparatively long, length 1.90 mm, width 0.20 mm, in its lateral aspect with markedly bent, very long basal portion, arcuate-bent in middle with moderately arcuate-convex dorsal margin, and apical portion attenuated towards cylindrical, slightly sinuous, narrow but rounded apex; in dorsal view the apical portion appears conical-constricted to narrow, blunt apex.

Variability. Only very slight variability in shape of the labrum and elytral apices.

Etymology. Named after the type locality “Parcelle Zombitsy” in the Zombitse-Vohibasia National Park (as in many other Malagasy places, the spelling of the name is diverse).

Biology and distribution. The new species was recently found by the second author in the Zombitsy forest (“Parcelle Zombitsy”), 10 km northeast of the Sakaraha, along the road RN 7 towards Tuléar (= Toliara), a margin of the Zombitse-Vohibasia National Park. The locality is a primary subhumid forest, consisting both of dry xerophyllous wood, and trees which occur also in other (both western and eastern) parts of Madagascar, and thus appears to be a transition between wet and dry forest. The adults were caught on a rather coarse bark of the trunks of two young trees (15 cm in diam.). The beetles run along the trunks on the basal portion of the trees (up to 1 m from the tree base).

Remarks. As the new species was discovered more than two years after the monograph of the genus *Pogonostoma* was issued (MORAVEC 2007), the following key was compiled in order to supplement the key of the *P. (M.) pusillum* species group, which was published in the monograph.

SUPPLEMENTAL KEY

TO *POGONOSTOMA* (*MICROSTENOCERA*) *PUSILLUM* SPECIES-GROUP

- 1 Pronotal disc ellipsoid to subglobose with more or less distinctly rounded lateral margins, surface sculpture consisting of mostly very coarse, transverse-wavy ridges. Elytral surface shiny, with perfectly smooth intervals between punctures. Body and all segments of legs black. Antennae either black or testaceous-maculate. Aedeagi with subacute to acute apex of "pusillum shape".....2
- Pronotum elongate, lateral margins of disc subparallel or more or less constricted towards anterior lobe, surface sculpture either coarse, or denser and finer. Elytral surface shiny or matt. Legs and antennae either black or testaceous-maculate. Aedeagi variously shaped.....4
- 2 Pronotal disc widely ellipsoid or subglobose; notopleural sutures markedly obvious in dorsal view. Lacinia spatulate-dilated and more or less bilobed. Antennae black or black-brown. Apex of aedeagus acute.3
- Pronotal disc narrower, with lateral margins subparallel in middle; notopleural sutures barely obvious in dorsal view; ridges on discal surface predominantly continuous. Pronotal posterior lobe almost smooth, shiny. Elytral apex in male rounded. Lacinia with simple, moderately and gradually dilated apex. Antennae black-brown, scape ventrally subtestaceous, antennomeres 4-6 with inconspicuously testaceous basal spot. Apex of aedeagus narrow but obtuse.*P. (M.) laportei* W. Horn, 1900
- Elytral apex in both sexes with acute teeth. Ridges on discal surface predominantly continuous. Ornamental microtrichia on elytra mostly ochraceous.....*P. (M.) pusillum* (Laporte de Castelnau & Gory, 1835)
- Elytral apex in male rounded. Ridges on discal surface more irregular and vermicular-anastomosing. Ornamental microtrichia on elytra white.....*P. (M.) vybirali* Moravec, 2000
- 4 Antennae black (black-brown) when also legs are black; indistinctly or notably testaceous-maculate when also leg "knees" are testaceous.5
- Antennae with testaceous-maculate antennomeres 4-6. Notopleural sutures barely visible in dorsal view, or only in basal half of disc. Elytra with distinct discal impression and basodiscal convexity. All segments of legs black (brown in old specimens).6
- 5 Body with metallic-blue lustre. Legs black. Surface sculpture of pronotal disc and propisterna of very coarse ridges; notopleural sutures merging with sculpture. Elytra with indistinct to moderate discal impression, elytral surface matt, intervals between punctures finely asperate (but not bumpy). Aedeagus with ventrally turned apical portion which is conical-constricted towards ventrally arcuate, dorsally very slightly emarginate acute apex.....*P. (M.) dohnali* Moravec, 2000
- Body black except for usually testaceous pronotal posterior lobe. Legs with trochanters, apices of femora and bases of tibiae ("knees") yellow-testaceous. Elytra with deep discal impression, surface shiny, elytral punctuation effaced on base and large discal area.....7
- 6 Pronotal disc elongate with parallel lateral margins, surface coarsely transverse-rugose. Surface of vertex extremely coarsely scabrous-areolate sculptured. Elytral surface shiny in anterior third only, other areas velvety-coriaceous. Testaceous areas on antennomeres 4-6 restricted to antennomere bases only, on antennomere 4 usually indistinct or absent. Aedeagus with apical portion attenuated towards slightly sinuous, narrow but rounded apex with markedly bent and very long basal half.....*P. (M.) zombitsynense* **sp. nov.**
- Pronotal disc markedly long, elongate-ellipsoidal, surface densely and irregularly transverse-wavy rugulose. Sculpture on vertex much finer, vermicular- to scabrous-rugulose. Elytral surface shiny. Testaceous areas on antennomeres 4-6 more extended. Aedeagus with dorsally emarginate apical portion towards cylindric, rounded apex, almost straight.....*P. (M.) inerme* Jeannel, 1946
- 7 Pronotal disc generally notably elongate-ovoid, finely transverse-striate, notopleural sutures flat, barely obvious in dorsal view. Elytral setal vestiture distinct and rather dense in both sexes. Aedeagus nearly straight with ventrally directed, elongate, thorn-like apex.*P. (M.) flavomaculatum* W. Horn, 1892
- Pronotal disc ellipsoid, coarsely transverse-striate, notopleural sutures distinctly elevated, clearly obvious in dorsal view. Elytral ornamental setae indistinct, very sparse, female elytra nearly glabrous with only few microtrichia on posterior declivity. Aedeagus almost regularly conical-tapering towards ventrally directed, subacute apex.....*P. (M.) sawadai* Moravec, 2007

REFERENCES

- JEANNEL R. 1946: *Coléoptères Carabiques de la région Malgache (première partie). Faune de l'empire français. VI.* Librairie Larousse, Paris, 372 pp.
- MORAVEC J. 2007: *Tiger beetles of Madagascar 1. A monograph of the genus Pogonostoma (Coleoptera: Cicindelidae).* Kabourek, Zlín, 499 pp.
- RIVALIER E. 1970: Le genre *Pogonostoma* (Col. Cicindelidae). Révision avec description d'espèces nouvelles. *Annales de la Société Entomologique de France (N.S.)* **6**: 269-338.