

A new species of the genus *Chlaenius* Bonelli, 1810 from Aru Islands (Indonesia) and recent check-list of the subgenus *Haplochlaenius* Lutshnik, 1933

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Abstract. A new species of the genus *Chlaenius* Bonelli, 1810 from South East Asia, Indonesia, belonging to the subgenus *Haplochlaenius* namely *Chlaenius* (*Haplochlaenius*) *aruensis* sp. nov. is described. The newly described species and its position in the species group is discussed, it is compared with the most closely related known species. A check-list of the subgenus *Haplochlaenius* Lutshnik, 1933 is added.

INTRODUCTION

According to a number of current authors, the tribe Chlaeniini Brullé, 1834 is divided into three subtribes with 20 genera and almost 1200 species described so far (Lorenz 2005; Sciaky & Facchini 2019). The genus *Chlaenius* Bonelli, 1810, as one of the most species-rich genera of ground beetles ever, with more than 1050 known species, is further divided into more than 65 subgenera and subgeneric species groups and inhabits all zoogeographical regions with the exception of the polar ones. The species of the subgenus *Haplochlaenius* Lutshnik, 1933 are widespread in the East Palaearctic Region, the Oriental Region as far as Papua and the Moluccas in the Australian Region (Uéno 1964; Kirschenhofer 1998, 2003, 2012, 2014; Darlington 1968, Deuve & Tian 2005; Wrase 2012; Terada et al. 2016). In their revision (2019), Azadbakhsh and Kirschenhofer place 16 species described so far in the subgenus *Haplochlaenius*, among which a *Ch. moluccensis* complex inhabits the south-eastern part of the range of the subspecies, the Moluccas and New Guinea. The newly described species represents one of the two easternmost living species of this group closer to Australia. The authors are convinced that findings of other new species of this group can also be expected from the tropical north of the Australian continent.

MATERIAL AND METHODS

The classification of the group is primarily based on external structural details of the adult, with species-level taxonomy relying also on structural details of the expanded endophallus.

The aedeagi were dissected, preserved, studied dry and glued on cards appended beneath the dissected specimens. For study of the endophallus, the aedeagus was soaked 48 hours in 1:1 solution of water and 8% acetic acid, and then the endophallus was inflated using a small Heavy Duty (12V) compressor normally used to inflate tires, set at medium pressure. Fixation of the endophallus morphology was secured by slow drying on a portable electric (220V) single-plate heater, and the whole aedeagus-endophallus preparation was then glued on a paper card. The preparations were photographed by Canon EOS 1100D Digital Compact with Canon Macro lens EF-S 60 mm with diode lamps. Aedeagi with expanded endophalli were photographed in the lateral and in two different oblique views. Images were composed in the Helicon program.

The acronyms used for the entomological collections where the examined material is deposited are as follows:

cMH Private Collection of M. Häckel, Praha, Czech Republic;
cMP Private Collection of M. Pašek, Třebotov, Czech Republic;
cRS Private Collection of R. Sehnal, Unhošť, Czech Republic;
NMPC National Museum, Praha, Czech Republic (J. Hájek);
NMWC Naturhistorisches Museum Wien, Austria (H. Schillhammer).

Other abbreviations:

EL length of elytra
EW width of elytra
ES3L length of metepisternum
ES3W width of metepisternum
HW head width
HT holotype
PL pronotum length
PT paratype
PW pronotum width

OR Oriental zoogeographic region
PA Palearctic zoogeographic region
CHI China, provinces:
Fuj Fujian
Gdg Guangdong
Gui Guizhou
Gux Guangxi
Jix Jiangxi
Hkg Hongkong
Sch Sichuan
Yun Yunnan
IDN Indonesia
IND India
JAP Japan
MLS Malaysia

| | |
|-----|--------------------|
| MYA | Myanmar |
| NCO | North Korea |
| NEP | Nepal |
| PHI | Philippines |
| PNG | Papua-New Guinea |
| RUS | Russian Federation |
| SCO | South Korea |
| TWA | Taiwan |

SYSTEMATICS

Subgenus: *Haplochlaenius* Lutschnik, 1933 (Azadbakhsh & Kirschenhofer 2019)

Characters. Large species (18-25 mm), alate. Antennae with first three segments smooth or with some sparse setae and 3rd antennomere longer than 4th. Elytra each with basal margin not angular at shoulder and obliterate inside, intervals ribbed.

Differential diagnosis. The species of the subgenus *Haplochlaenius* closely resemble the species of the subgenus *Vacchinius* Casale, 1984 or possibly *Sphodromimus* Casale, 1984 by their size, shape of the pronotum, apex of the elytra in both sexes and their structure of the mentum. Both groups differ mainly in the structure of elytra. In the species of the first group (subgenera *Vacchinius* and/or *Sphodromimus*) the elytra are smooth, the intervals flat but punctate and pubescent, and the basal margin complete and not obliterated inside, while in the species of *Haplochlaenius*, the elytral intervals are ribbed, completely pubescent or with one or several rows of small bristles on striae, and the basal margin of elytra is obliterate inside.

***Chlaenius (Haplochlaenius) moluccensis* Kirschenhofer, 2003** (Figs. 1a, b, 3a, b, 4a, 5a, b)

Material examined: 1 ♂, 1 ♀ Indonesia, N Moluccas, Bacan Isl, 500-750 m alt / se slopes of Mt Sibela / 5 km se of Makian villemale (NHMW); 2 ♂♂, 2 ♀♀ Indonesia, Centr. Moluccas / Obi Isl, south coast / Seribu Mts, 1200-1500 m / 22 km n of Tapaya vill (Figs 1a, b, cMH).

***Chlaenius (Haplochlaenius) aruensis* sp. nov.** (Figs. 2a, b, 3c, d, 4b, 6a, b)

Type locality. “Wokam Island, Aru Islands, Maluku Province, Indonesia”.

Type material. Holotype (♂): “AU, E-Indonesia, Maluku Province / Aru Isl., Wokam Is., 10-15 km NEE Waigual vill. / 5°51.864 S 134°36.275 E”, (NMPC). Paratypes: (18 ♂♂, 25 ♀♀): same data as holotype (MNHN, NMPC, NHMW, cMH, cRS, cMP).

Description of holotype. BL 25.0 mm, EW 8.8 mm. Proportions. Head and pronotum (PW/PL 1.09, PW/HW 1.27), elytra (EW/PW 1.65, EL/EW 1.77).

Colouration. Body black, shiny, opaque. Palps, clypeus and antennae black, mandibles distally and tarsi brown, legs except tarsi ferruginous, genae brown.

Head almost quadrate (length to width ratio 1.15) and flat; eyes large and bulging, tempora short, about 1/4 the length of the eyes. Mandibles long and narrow, hooked and pointed at apex. Frontal sulci shallow and very finely wrinkled, frons subconvex, smooth; occiput slightly depressed; neck smooth; mentum with bifid tooth, gently emarginate at anterior margin; clypeus with three pairs of longer setae at anterior margin, lateral pair at outer margin of clypeus, medial two pairs near midlength and with 5-6 shorter setae at outer margin and outer part of anterior margin of clypeus (Figs. 3c, d). Both maxillar and labial terminal palpomere feebly triangularly dilated in male as in female. Antennae long, filiform, extending to elytral midlength; scape twice-, antennomere 3 more than twice as long as pedicel (AR = 0.57 : 0.5 : 0.86).

Pronotum almost quadrate, slightly wider than long, slightly wider than head across eyes, widest before midlength; sides converging anteriorly from the widest point, and almost directly converging posteriorly from the widest point, very distinctly sinuate near the posterior angle; lateral margins narrowly emarginate; anterior margin slightly shorter than base, straight, with angles rounded but distinct and weakly protruded; basal margin straight, not serrated, basal angles almost rectangular, without denticulation; disc weakly convex, surface smooth, shiny; median line clearly visible; microsculpture isodiametric and weakly distinct.

Elytra connate, almost elliptical, 1.77 times as long as wide, convex, widening posteriorly, widest at midlength, almost 1.65 times as wide as pronotum; humeri indistinct; lateral margins flattened and elevated, preapical emargination shallow, apices rounded combined; striae shallow, indistinct, interrupted by 2-3 rows of pits; intervals narrower, convex, smooth, scutellum large, 2 scutellar lines reaching a quarter of the length of the elytra and interrupted series of coarse pits; microsculpture isodiametric and weakly distinct.

Ventral side smooth, except for mesosternum paramedially and metepisternum sparsely and nominally pitted, both densely covered by short golden setae, the latter longer, almost trapezoidal (ES3L / ES3W 1.55); ventrites also smooth and without crenulation anteriorly. Legs long and slender.

Fig. 1. *Chlaenius (Haplochlaenius) moluccensis* Kirschenhofer, 2003: a- male, habitus of imago; b- female, habitus of imago.

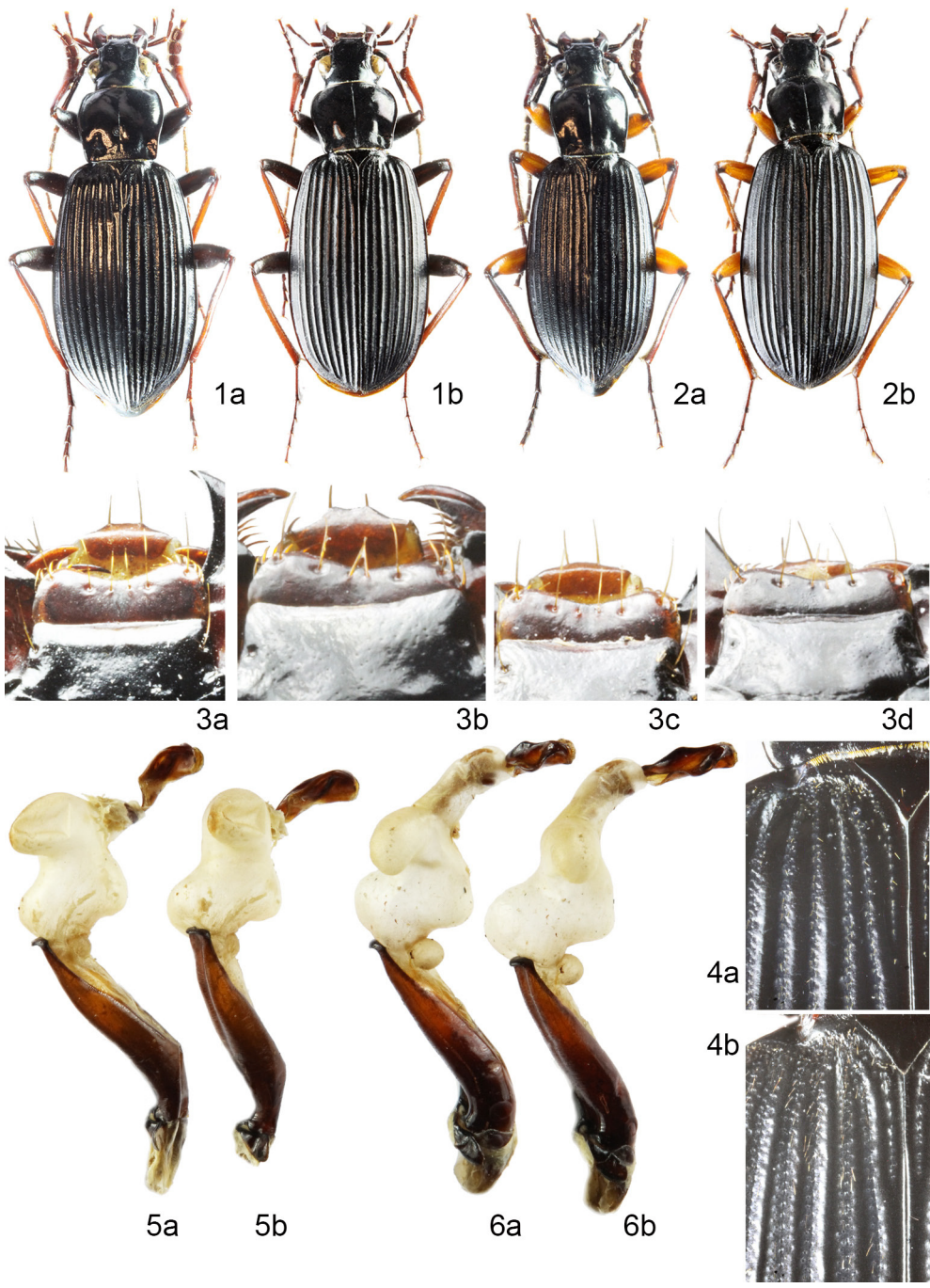
Fig. 2. *Chlaenius (Haplochlaenius) aruensis* spec. nov.: a- HT, habitus of imago; b- PT, female, habitus of imago.

Fig. 3. Head with clypeus (detail): a- *Chlaenius (Haplochlaenius) moluccensis* Kirschenhofer, 2003, male; b- female; c- *Chlaenius (Haplochlaenius) aruensis* sp. nov., HT, male; d- PT, female.

Fig. 4. Left elytron (detail): a- *Chlaenius (Haplochlaenius) moluccensis* Kirschenhofer, 2003, female; b- *Chlaenius (Haplochlaenius) aruensis* sp. nov., PT, female.

Fig. 5. *Chlaenius (Haplochlaenius) moluccensis* Kirschenhofer, 2003, male, edeagus with expanded endophallus: a- lateral view; b- oblique ventrolateral view.

Fig. 6. *Chlaenius (Haplochlaenius) aruensis* sp. nov.: HT, edeagus with expanded endophallus: a- lateral view; b- oblique ventrolateral view.



Differential diagnosis. This species closely resembles *Chlaenius moluccensis* Kirschenhofer, 2003, but shows narrower body (EL/EW 1.70 in males and 1.72 in females of *Ch. moluccensis* to EL/EW 1.77 in males and 1.83 in females of *Ch. aruensis*) with less transverse pronotum (PW/PL 1.2 in males and 1.3 in females of *Ch. moluccensis* to 1.1 in males and 1.2 in females of *Ch. aruensis*); elytra with a slightly coarser sculpture with deeper and more densely placed pits (Figs. 4a, b), femora with ferrugineous colouration in both sexes (Figs. 2a, b). Both species differs also in the shape of aedeagus and expanded endophallus (Figs. 5, 6).

Etymology. Named after Aru Islands in Maluku Province, Indonesia.

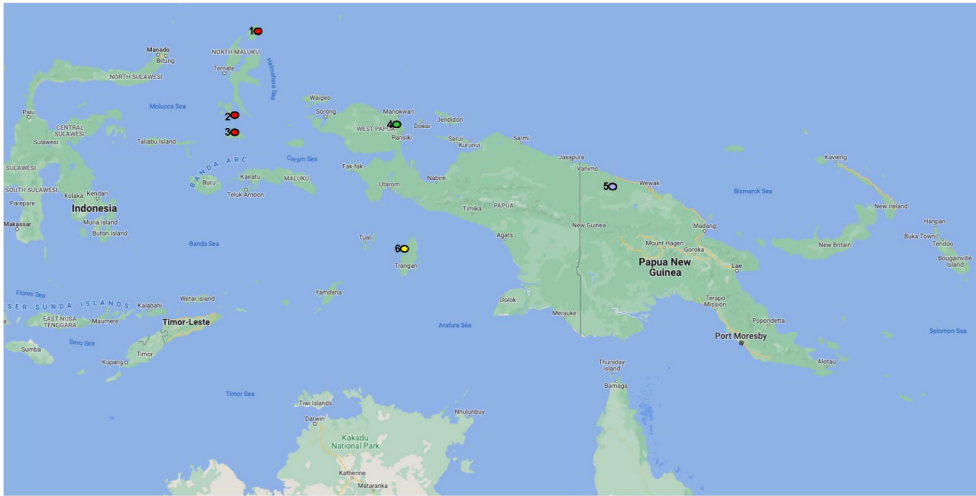


Fig. 7. Map Distribution of the *Chlaenius moluccensis* species complex.
Chlaenius (Haplochlaenius) moluccensis Kirschenhofer, 2003 (red circle):
 1. Halmahera Is., Maluku Utara Prov., Indonesia.
 2. Bacan Is., Maluku Utara Prov., Indonesia.
 3. Obi Is., Maluku Utara Prov., Indonesia.
 4. *Chlaenius (Haplochlaenius) ramezani* Azadbakhsh & Kirschenhofer, 2019 (green circle):
 Arfak Mts., Manokwari district, West Papua, Indonesia.
 5. *Chlaenius (Haplochlaenius) pan* Darlington, 1968 (violet circle): Toricelli Mts., East Sepik Prov., Papua-New Guinea.
 6. *Chlaenius (Haplochlaenius) aruensis* spec. nov.: Wokam Is., Aru, Maluku Prov., Indonesia

A CHECK-LIST OF THE GENUS *CHLAENIUS* BONELLI, 1810

SUBGENUS *HAPLOCHLAENIUS* LUTSHNIK, 1933

subfamily Licininae Bonelli, 1810

tribe Chlaeniini Brullé, 1834

subtribe Chlaeniina s. str.

genus *Chlaenius* Bonelli, 1810: tab. syn. type species *Carabus festivus* Panzer, 1796

subgenus *Haplochlaenius* Lutshnik, 1993: 109 type species *Chlaenius costiger* Chaudoir, 1896

baehri (Kirschenhofer, 1998: 322) as *Vachinius* OR: IDN (Sulawesi Tengah Prov.) “C-Sulawesi, Lindi N.P., 45km se. Palu, 01.12°S, 120.08°E, 900m”

costiger costiger Chaudoir, 1856: 258 PA: CHI (Hkg, Sch, Yun), JAP, NCO, SCO, TWA “Hongkong”

=*costatus* Laferté-Sénectere, 1851: 251 “Java”

=*marani* Jedlička, 1930: 133 “Szetchuan-Kiating-See [probably CHI: Sch: Jiajin Lake”

costiger almorae Andrewes, 1920: 239 PA: IND (Uttarakhand, West Bengal), NEP “United Provinces, W. Almora Division, Sunderdhunga, 8000-12000 ft”

costiger bhamoensis Bates, 1892: 311 PA: MYA “Bhamò”

costiger nigrotibitarsis Mandl, 1978: 98 PA: NEP “Gebiet von Jumla, Westnepal”

evae Wrase, 2012: 1196 PA: CHI (Sch) “China, Sichuan prov., Quingcheng Hou Shan, 70 km NW Chengdu, 1500 m”

femoratus femoratus Dejean, 1826: 328 OR: IND (Java, Sumatra) “Java”

=*cupreatus* Jedlička, 1935: 6 “Java”

=*nigrofemoratus* Jedlička, 1935: 6 “Java”

=*piceofemoratus* Jedlička, 1935: 6 “Java”

femoratus philippinus Jedlička, 1935: 6 OR: PHI (Luzon Is) “Philippinen”

hutiaoxiaensis Kirschenhofer, 2011: 10 PA: CHI (Yun) “China, Yunnan, Lijiang Hutiaoxia, 1950-2150 m”

insularis (Uéno, 1964: 259) as *Haplochlaenius* PA: JAP (Rykyu Isl.), RUS (Far East, Sakhalin Is.) “Mt. Yuwan-daké, 550m, Amami-Oshima Is., Ryu-Kyus.”

klapperichi klapperichi Jedlička, 1956: 208 PA: CHI (Fuj, Jix) “Prov. Fukien: Kuantun [=Guadun, Fujian]”

klapperichi taiwanus Terada, Yeh & Wu, 2016: 19 PA: TWA “Taiwan, Yilan County, Chilan Forest Recreation Area, 500~600 m”

nanlingensis Deuve & Tian, 2005: 118 PA: CHI (Gdg, Gui, Gux) “Guangdong, Nanling Nature reserve (Dadongshan, Lianzhou)”

pantarensis pantarensis Kirschenhofer, 2014: 6 OR: IDN (East Nusa Tenggara Prov., Alor Isl., Pantar Is.) “Alor Isl.: Pantar Is., Tanah Labang 350 m”

pantarensis moradinae Azadbakhsh S. & Kirsch. E., 1919: 15 OR: IDN (E.N.Tenggara Prov.) “W. Timor, 350 m/Buraen, 50 km south of Kupang”

pecirkai Jedlička, 1932: 44 PA: CHI (Yun) “Prov. Yunnan, Pe Jen Tsin”
peltastes Jedlička, 1935: 6 OR: PHI (Luzon Is.) “Philippinen”
sabahensis Kirschenhofer, 1998: 318 OR: MLS (Borneo Is., Sabah Prov.) “Borneo,
 Sabah, Kinabalu”
wegneri Louwerens, 1953: 312 OR: IDN (Flores Is.) “West Flores: Rana Mese, 1300 m”

Ch. moluccensis complex:

aruensis sp. nov. OR: IDN (Aru Isl.)
moluccensis Kirschenhofer, 2003: 31 OR: IDN (Maluku Prov., Halmahera Is.) “Halmahera
 Is., N. Moluccas, mt. Talagaranu, 15 km SE Baru, 1°12 N, 127°32E, 600m”
pan Darlington, 1968: 23 OR: IDN (Papua Prov.), PNG (East Sepik, Sandaun Prov.)
 “Toricelli Mts., Mokai village”
ramezani Azadbakhsh & Kirschenhofer, 2019: 11 OR: IDN (West Papua) “West Papua/
 Arfak Mts, 1190 m alt/Duebei env., 21.1-8.2.2008/cca 20 km S of Warmere/Manokwari
 distr”

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