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Review of the Australian-Papuan *laevigatus*-group of the genus *Catascopus* Kirby, with description of a new species

(Insecta, Coleoptera, Carabidae, Lebiinae)*

Martin Baehr

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The Australian-Papuan *laevigatus*-group sensu Straneo (1994) of the genus *Catascopus* is reviewed according to newly collected material mainly from New Guinea. The male genitalia of all species are figured for the first time and the description of *C. latus* Darlington is updated and completed as the ♂ is now available. *Catascopus riedeli*, spec. nov. is described from the westernmost part (Vogelkop) of Irian Jaya (New Guinea). It is next related to *C. laticollis* Macleay of Australia.

Dr. Martin Baehr, Zoologische Staatssammlung, Münchhausenstr. 21, D-81247 München.

In a sample of carabids, collected by A. Riedel (München) at several times and localities in western New Guinea (Irian Jaya), and kindly submitted for study by the collector, I detected inter alia a specimen of *Catascopus* of the *laevigatus*-group (called group 6 in Straneo 1994) that I was unable to identify using the key of Darlington (1968), nor by comparison with the other known species of that group. Also Straneo, who was at that time just finishing his review of the genus *Catascopus* in the Oriental and Australian regions, did not know this species and returned it to me undetermined. Repeated comparisons with all known species that possess several lateral pronotal setae convinced me that it represents a new species which is described below.

Thus far few ♂ genitalia have been recorded in the genus *Catascopus*. To give an example that aedeagi in *Catascopus* are by all means useful for species differentiation, the aedeagi of all species of the *laevigatus*-group (including the outstanding *C. latus* Darlington the unknown ♂ of which is now available) have been dissected and are figured herein, and are also used in the key.

Although the brightly coloured, splendid *Catascopus* species make highly prized collectors items and thus have been always eagerly collected and worked on, Straneo (1994) in his review of the Oriental and Papuan *Catascopus* was able to describe as many as 11 new species from these areas. This is evidence that the *Catascopus* fauna of the Oriental and Australian regions even now is certainly not exhaustively recorded. The review of the rather small *laevigatus*-group that certainly forms a well characterized monophyletic unit may show this as an example.

* Results of the entomological collections of A. Riedel (München) in New Guinea in 1993 and 1996.

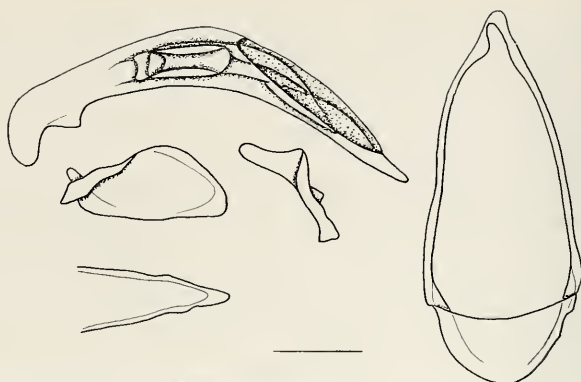


Fig. 1. *Catascopus laevigatus* Saunders. Aedeagus. Scale: 0.5 mm.

Measurements

Measurements were made with a stereo microscope using an ocular micrometer. Length has been measured from apex of labrum to tip of elytra including sutural spines. Length of pronotum was taken along midline. Hence, measurements may slightly differ from those of other authors, especially Darlington (1968).

Abbreviation of collections:

BMNH	The Natural History Museum, London
CBM	Collection M. Baehr, München
ZSM-CBM	Zoologische Staatssammlung, München – as permanent loan in the collection of the author.

Key to the species of the *laevigatus*-group of genus *Catascopus* (group 6 of Straneo 1994)

1. Large species, length >17 mm; aedeagus comparatively short and stout (Fig. 4). New Guinea *C. latus* Darlington
- Smaller species, length <14 mm; aedeagus longer and narrower (Figs 1-3, 5). New Guinea, northern Australia, Aru Islands, eastern Moluccas 2.
2. Humeri projecting, obtusely angulate; elytra distinctly ovalish, with wide lateral margin; striae barely impressed, though markedly punctate; lateral margin of pronotum narrow throughout, anterior angle with several elongate setae; aedeagus markedly elongate and delicate (Fig. 1). New Guinea, Aru Islands, eastern Moluccas *C. laevigatus* Saunders
- Humeri not projecting, evenly rounded; elytra rather parallel, with narrow lateral margins; striae impressed, less distinctly punctate; lateral margin of pronotum widened at least in basal part, anterior angle with 1-2 short hairs only; aedeagus stouter, less elongate (Figs 2-5). New Guinea, Australia 3.
3. Larger species, length >13 mm; striae barely punctate; fore body green with or without golden lustre, elytra green, or blue, or purplish, with or without green humeri; aedeagus stout though fairly elongate, markedly widened in middle (Fig. 3). New Guinea *C. sidus* Darlington
- Smaller species, length <12 mm; striae more or less distinctly punctate; colour either wholly green, or green with brightly purplish humeri; aedeagus less stout, not markedly widened in middle (Figs 2, 5). New Guinea, northern Australia 4.

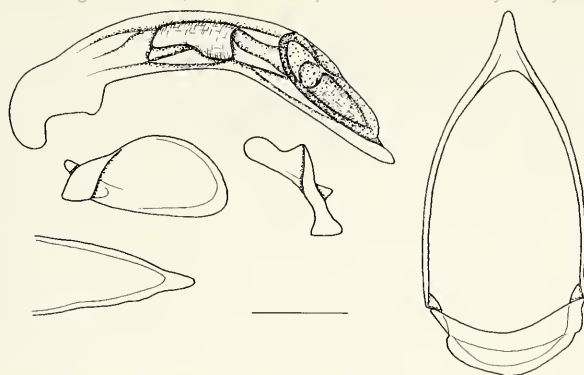


Fig. 2. *Catascopus laticollis* Macleay. Aedeagus. Scale: 0.5 mm.

4. Slightly larger species, length 11-12 mm; colour green or green with indistinctly purplish humeri; elytral striae evenly impressed, barely punctate; lateral margin of pronotum wide in apical half; aedeagus longer, less curved, with shorter orificium and shorter and wider, straight apex (Fig. 2). Northern Queensland, Australia *C. laticollis* Macleay
- Slightly smaller species, length c. 10 mm; colour bright green with markedly purplish humeri; elytral striae impressed in basal half, superficial in apical half, distinctly punctate; lateral margin of pronotum narrow in apical half; aedeagus shorter, more curved, with longer orificium and longer and narrower, at tip slightly downcurved apex (Fig. 5). Western New Guinea *C. riedeli*, spec. nov.

Catascopus laevigatus Saunders

Fig. 1

Saunders, 1863: 465, pl. 18, figs 2a, b; Darlington 1968: 102, 104; Straneo 1994: 170.

This rather common and easily identified species is distributed throughout New Guinea; it occurs also on the Aru Islands and, according to Darlington (1968), on the eastern Moluccas: Batchian, Ternate, Halmahera, Buru, and Seram.

♂ genitalia (Fig. 1). Genital ring narrow and elongate, somewhat asymmetric, with elongate apex and elongate base. Aedeagus narrow and elongate, lower surface almost evenly curved, apex elongate, straight, orificium slightly shifted to left side, very elongate, almost occupying the apical half of aedeagus. Apex of internal sac with gently sclerotized fold. Both parameres comparatively elongate.

New records: I have seen about 15 specimens from various localities in Irian Jaya and Papua New Guinea (CBM, ZSM).

Collecting circumstances. Most specimens have been collected by sieving bark and litter from fallen logs in rain forest, mainly at rather low altitudes.

Catascopus laticollis Macleay

Fig. 2

Macleay, 1883: 410; Darlington 1968: 105; Straneo 1994: 170.

This is the single species of the *laevigatus*-group to occur in Australia. According to Darlington (1968) and Moore (1987) it has been recorded from several localities in northeast Queensland: Cairns, Kuran- da, Iron Range, Coen area.

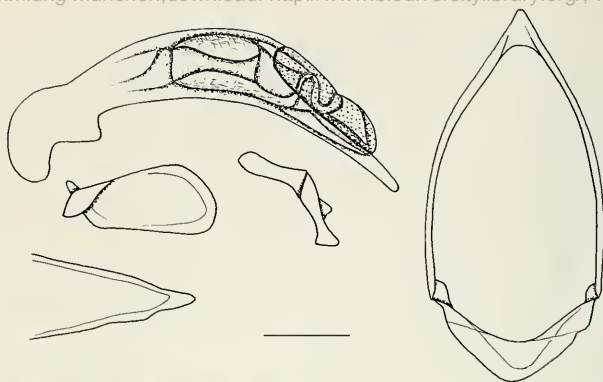


Fig. 3. *Catascopus sidus* Darlington. Aedeagus. Scale: 0.5 mm.

♂ genitalia (Fig. 2). Genital ring rather wide, laterally evenly convex, almost completely symmetric, with narrow, elongate apex and rather short base. Aedeagus comparatively short and stout, lower surface in basal half almost straight, then rather distinctly turned down and straight again, apex short and straight, orificium slightly shifted to left side, rather short, occupying only the apical third of aedeagus. Apex of internal sac with gently sclerotized fold. Both parameres comparatively short.

New record: The single specimen seen is purely labelled "ne. Qld" (CBM).

Collecting circumstances. Unknown, but presumably from under bark of trees and logs in rain forest, like related species.

Catascopus sidus Darlington

Fig. 3

Darlington, 1968: 102, 105, fig. 61; Straneo 1994: 170.

An apparently rather rare though nevertheless widely distributed species that occurs in both political divisions of New Guinea including Japen Island (Darlington 1968).

♂ genitalia (Fig. 3). Genital ring rather wide, laterally evenly convex, almost completely symmetric, with narrow, rather short apex and elongate base. Aedeagus comparatively short and stout, lower surface in basal half almost straight, then rather distinctly turned down and straight again, apex fairly short and straight, orificium slightly shifted to left side, rather short, occupying less than the apical two fifths of aedeagus. Apex of internal sac with gently sclerotized fold. Left paramere comparatively short, right paramere more elongate.

New records: 1♂, Irian Jaya, Pr. Manokwari, Meydoudga, 1200-1400 m, 5.4.1993, leg. A. Riedel (CBM); 1♀, Irian Jaya, Pr. Manokwari, Testega, 1100-1300 m, 30.3.-12.4.1993, leg. A. Riedel (CBM); 1♂, Irian Jaya, Panai-Pr., Epomani-Ugida, km 179, 1350-1400 m, 19.-20.1.1996, leg. A. Riedel (CBM).

Collecting circumstances. The newly recorded specimens have been collected by sieving bark and litter from fallen logs in rain forest, at median altitudes.

Catascopus latus Darlington

Fig. 4

Darlington, 1968: 102, 104, fig. 60; Straneo 1994: 170.

Types. Holotype: ♀, W. Tami R., Pukusan-Humboldt Bay Dist., West New Guinea, June 1937, W. Stüber (BMNH).

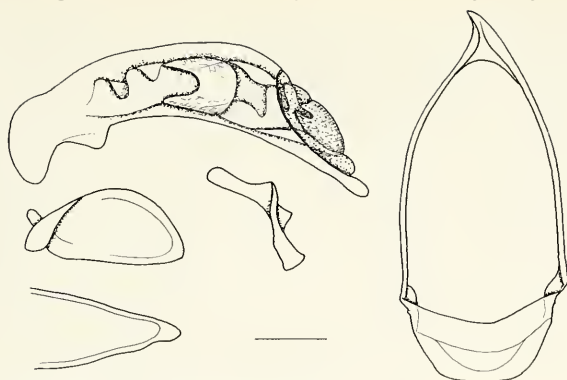


Fig. 4. *Cataspocus latus* Darlington. Adeagus. Scale: 0.5 mm.

Note. Because this species was known only from the ♀ holotype and now a ♂ specimen is available, the description is completely revised.

Revised description

Measurements. Length (measurements of holotype ex Darlington 1968 included): 17.4–17.5 mm; width: 6.1–6.3 mm. Ratios. Width/length of prothorax: 1.55–1.77; width of base/apex of prothorax: 0.97–1.03; width of prothorax/width of head: 1.14–1.15; length/width of elytra: 1.69; width of elytra/width of prothorax: 1.39.

Colour. Head and pronotum green or dark green, elytra blue-purple or purple. Mouth parts, antennae, and legs piceous-black.

Head. Of average size. Eyes large, markedly protruding, orbits very small, oblique. Labrum elongate, anterior margin distinctly excised in middle. Mandibles of average size. Palpi fairly elongate. Mental tooth feeble, wide, obtusely triangular. Antenna comparatively short, median antennomeres $< 2 \times$ as long as wide. Sulcus medially of eyes rather inconspicuous, surpassing posterior border of eye. Frons laterally with a rather deep, linear, oblique impression on either side, laterally of their posterior end with a deep umbilical puncture, frons in middle with some inconspicuous transverse lines. Labrum finely punctate, frons and vertex impunctate, without microreticulation, highly glossy.

Pronotum. Short and wide, rather convex. Apex deeply excised, slightly projecting in middle, anterior angles projecting, rounded off. Lateral border anteriorly evenly rounded, sinuate in posterior fourth, parallel in front of posterior angles. Basal angles rectangular, base gently excised in middle. Apex not margined, lateral margins in anterior half moderate, posteriorly explanate, base margined. Median line shallow, anterior sulcus in middle fairly deep, laterally shallow, posterior sulcus deep throughout. Basal grooves deep, short. Lateral margin in holotype (according to Darlington 1968) with 2 resp. 3, in the recently collected ♂ with 6 marginal setae in anterior $\frac{2}{3}$ and with the posterior marginal seta at basal angle. Surface sparsely and extremely feebly punctate, with some superficial transverse lines, highly glossy.

Elytra. Moderately elongate, rather depressed, almost parallel-sided. Humeri evenly rounded, lateral margin faintly incurved in basal third, then slightly widened. Lateral apical angle angulate to even shortly spinose. Sutural angle spinose, spines fairly elongate, dehiscent, apical margin concave. Elytra fully and evenly striate, striae moderately impressed for their whole length, impunctate. All intervals moderately convex, 7th interval not carinate. Scutellar stria distinct, elongate. 3rd interval tripunctate, anterior puncture and seta adjacent to 3rd stria, median puncture situated in middle of 3rd interval, apical puncture adjacent to 2nd stria, the latter puncture situated far down the apical declivity. Marginal series consisting of 8 punctures behind humerus, 2–3 intercalary punctures in front of middle, 6 punctures in apical third of lateral margin, and 1 puncture near end of 3rd interval. Intervals almost impunctate, with moderately distinct, very fine microreticulation of transverse meshes, fairly glossy. Lower surface. Intercostal process between procoxae and at apex with several short setae. Metepistern-

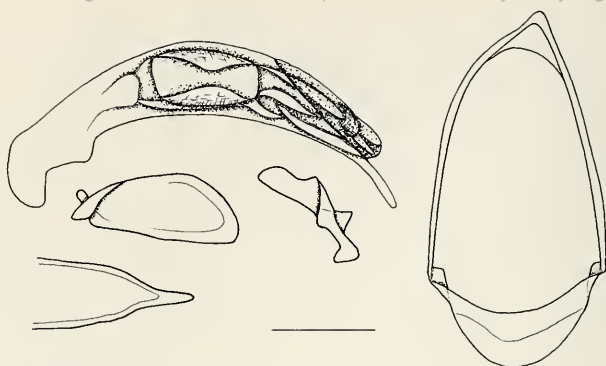


Fig. 5. *Catascopus riedeli*, spec. nov. Aedeagus. Scale: 0.5 mm.

num very elongate, $>2.5 \times$ as long as wide. Terminal sternite of δ bisetose, apex in middle gently excised, excision very shortly pilose. In δ all sternites except for the terminal one laterally with a conspicuous, deep, circular impression, in middle with a large, densely setose patch, outside of this patch impunctate, glossy.

Legs. Of average size. 1st-3rd tarsomeres of δ protarsus biseriately squamose.

δ genitalia (Fig. 4). Genital ring rather narrow, laterally evenly convex, almost completely symmetric, with narrow, elongate, markedly curved apex and rather elongate base. Aedeagus short and stout, lower surface slightly though almost evenly curved, apex short and stout, straight, orificium slightly shifted to left side, short, occupying barely the apical third of aedagus. Apex of internal sac with odd-shaped, gently sclerotized fold. Left paramere comparatively short and small, right paramere fairly elongate.

δ genitalia. Unknown.

Variation. Some variation noted in width of pronotum and in the number of anterior lateral setae of pronotum.

Distribution. The holotype was recorded from northeastern Irian Jaya, the recently collected δ specimen was captured in central Irian Jaya rather close to the southern border of the central mountain range.

Collecting circumstances. Unknown of holotype. The newly captured δ specimen was collected by sieving litter from under fallen logs in rain forest of low altitude.

New record: 1 δ , Irian Jaya, Jayawijaya-Pr. Samboca, 200 m, 10.-14.X.1996, leg. A. Riedel (CBM).

Catascopus riedeli, spec. nov.

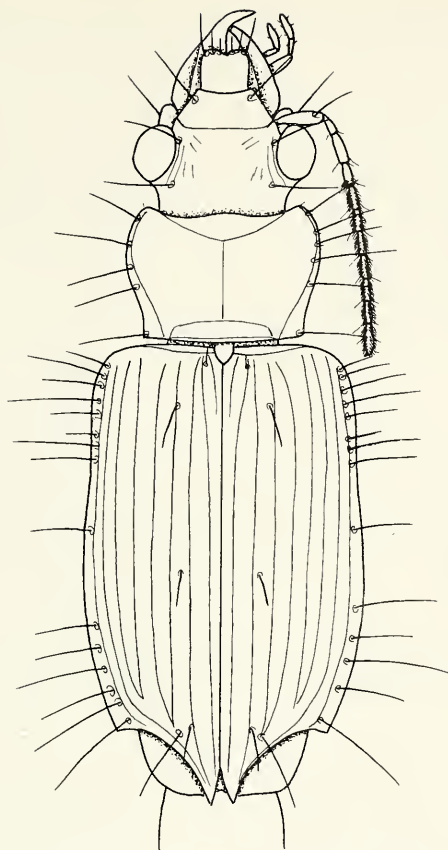
Figs 5, 6

Types. Holotype: δ , Irian Jaya, Pr. Manokwari, Meydoudga, 1200-1400 m, 5.4.1993 leg. A. Riedel (ZSM-CBM).

Diagnosis. Species of the *laevigatus*-group (group 6 of Straneo 1994), that is characterized by the presence of several lateral pronotal setae. Distinguished from the most similar species *C. laticollis* Macleay by lesser size, more contrasting colour, narrow marginal channel in apical half of pronotum, distinctly punctate elytral striae that are deeply impressed only in basal third, and short, markedly curved aedeagus with longer and narrower apex that is slightly pointed down at the very tip.

Description

Measurements. Length (sutural spines included): 10.2 mm; width: 3.9 mm. Ratios. Width/length of prothorax: 1.60; width of base/apex of prothorax: 1.09; width of prothorax/width of head: 1.09; length/width of elytra: 1.65; width of elytra/width of prothorax: 1.43.



Figs 6, 7. *Catascopus riedeli*, spec. nov. Holotype. Length: 10.2 mm.

Colour. Head and pronotum bright green with some golden reflexions, though labrum and mandibles black. Elytra bright green, humeri and lateral part of apex cupreous. Lower surface piceous-black with slight greenish lustre. Palpi piceous with light reddish apex. Antenna piceous, basal antennomere blackish with slight metallic lustre. Legs dark piceous, tarsi slightly lighter.

Head. Of average size. Eyes large, markedly protruding, orbits small, oblique. Labrum elongate, anterior margin slightly excised in middle. Mandibles of average size. Palpi fairly elongate. Mental tooth very feeble, less developed than in other species of the group. Antenna comparatively short, median antennomeres $<1.5 \times$ as long as wide. Sulcus medially of eyes rather inconspicuous, surpassing posterior border of eye. Frons medially near clypeal suture with shallow v-shaped groove, in middle with some inconspicuous transverse lines, near eyes with some longitudinal lines. Surface impunctate, without microreticulation, highly glossy.

Pronotum. Short and wide, rather convex. Apex deeply excised, slightly projecting in middle, anterior angles projecting, rounded off. Lateral border anteriorly evenly rounded, sinuate in posterior fourth, parallel in front of posterior angles. Basal angles rectangular, base gently bisinuate. Apex not margined, lateral margins in anterior half narrow, then explanate, base margined. Median line shallow, connecting the shallow anterior sulcus and the deep posterior sulcus. Basal grooves deep, short. Lateral margin with 4 resp. 5 marginal setae in anterior $\frac{2}{3}$ and with the posterior marginal seta at basal angle.

Apical angle with a tiny hair. Surface very feebly and sparsely punctate, with some superficial transverse lines, without microreticulation, highly glossy.

Elytra. Moderately elongate, rather depressed, almost parallel-sided. Humeri evenly rounded, lateral margin faintly incurved in basal third, then slightly widened. Lateral apical angle angulate, not spinose. Sutural angle spinose, spines rather short and stout, dehiscent, apical margin concave. Elytra fully striate, though striae distinctly impressed only in basal third, in posterior half merely consisting of rows of punctures. Especially 5th-7th striae rather conspicuously impressed near humeri. Striae rather coarsely punctate. Lateral intervals at humerus slightly convex, 7th interval even faintly carinate, all intervals depressed in apical half. Scutellar stria superficial, moderately elongate. 5th-7th intervals in apical fourth with shallow impression. 3rd interval tripunctate, anterior puncture and seta adjacent to 3rd stria, median and apical punctures adjacent to 2nd stria. Marginal series consisting of 8 punctures behind humerus, 1 intercalary puncture in front of middle, 6 punctures in apical third of lateral margin, and 1 puncture at end of 3rd interval. Intervals almost impunctate, with very superficial, extremely fine microreticulation of transverse meshes, highly glossy.

Lower surface. Intercostal process with two short setae. Metepisternum very elongate, $>2.5 \times$ as long as wide. Terminal sternite of δ bisetose, apex in middle gently excised. Surface of abdomen impunctate, glossy.

Legs. Of average size. 1st-3rd tarsomeres of δ protarsus biserially squamose.

δ genitalia (Fig. 5). Genital ring rather short and wide, laterally convex, fairly asymmetric, with very short apex and elongate base. Aedeagus moderately elongate, lower surface almost evenly curved, apex elongate, narrow, at the very tip slightly curved down, orificium slightly shifted to left side, fairly elongate, occupying about the apical two fifth of aedeagus. Apex of internal sac with gently sclerotized fold. Left paramere large and elongate, right paramere comparatively short.

η genitalia. Unknown.

Variation. Unknown.

Distribution. Vogelkop, westernmost New Guinea (Irian Jaya). Known only from type locality.

Collecting circumstances. Largely unknown. The specimen was collected under bark of a log in rain forest at median altitude.

Etymology. Named in honour of the collector.

Relationships. This new species belongs to the *laevigatus*-group (group 6 of Straneo 1994) and is probably most closely related to *C. laticollis* Macleay of northern Queensland and to *C. sidus* Darlington of New Guinea. The differences between the species of this group are tabulated above in a revised key to the *laevigatus*-group. The species-group itself is highly evolved in several aspects: high number of lateral pronotal setae, spined internal and at least angulate external angle of elytra, depressed form. Thus far the group is known only from New Guinea, northern Australia and some islands to the west of New Guinea, which means that it is a genuine Papuan faunal element – another example of the presence of a definite zoogeographic Papuan Subregion.

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