

Studies on Tiger Beetles. LXXVII. New data on the species of the genus *Cylindera* Westwood, 1831, subgenus *Leptinomera* Rivalier, 1961 (Coleoptera: Cicindelidae)

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Distributional and ecological new data are provided on 10 out of the 14 known *Cylindera* species of the subgenus *Leptinomera* Rivalier, 1961. Moreover, a new species, *C. (L.) virgulifera* spec. nov., is described from Sabah and Sarawak, northern Borneo.

Introduction

Since the revision of the small *Cylindera* species of the subgenus *Leptinomera* Rivalier, 1961, published over ten years ago (Cassola, 1983), a certain number of additional new data have been accumulated so far. New records for five species from northern Borneo have been given by Wiesner (1989), and a new species, *C. (L.) brendelliana* Naviaux, 1991, has also been described from Thailand, extending the known range of the subgenus north of the Malacca peninsula (Naviaux, 1991).

However the bulk of the group is found in the Sunda archipelago: Sumatra (6 species), Java (1 species) and especially Borneo (9 species out of the 15 known ones). Below, resulting from recent collecting by several researchers, a few new distributional and ecological data are given for 10 of the 14 previously known species, and moreover a new species is described from northern Borneo.

The material studied belongs to the following collections, whose curators and/or owners I thank very much for their helpful co-operation: Nationaal Natuurhistorisch Museum, Leiden, Nederland (RMNH); PHYLLODROM, International Dokumentationszentrum Ökosystem Tropischer Regenwald, Leipzig, Germany (PHY); Museum of Zoology of Lund University, Lund, Sweden (MZL); Arnaldo Bordononi, Firenze, Italy (AB); Hideo Akiyama, Yokohama, Japan (HA); Johann Probst, Wien, Austria (JP); Hirofumi Sawada, Aomori, Japan (HS); Karl Werner, Peiting, Germany (KW). Material from my own collection is included under FC.

New data

Cylindera (Leptinomera) filigera (Bates, 1878)
(fig. 1)

Material.— Sabah. 1 ♂ (RMNH), between Long Pa Sia and Long Samado (2 km from Sarawak border), at 4°20'N-115°41'E, 23-24.x.1986, leg. J. Huisman (small stream, wet mossy forest, podz sand).

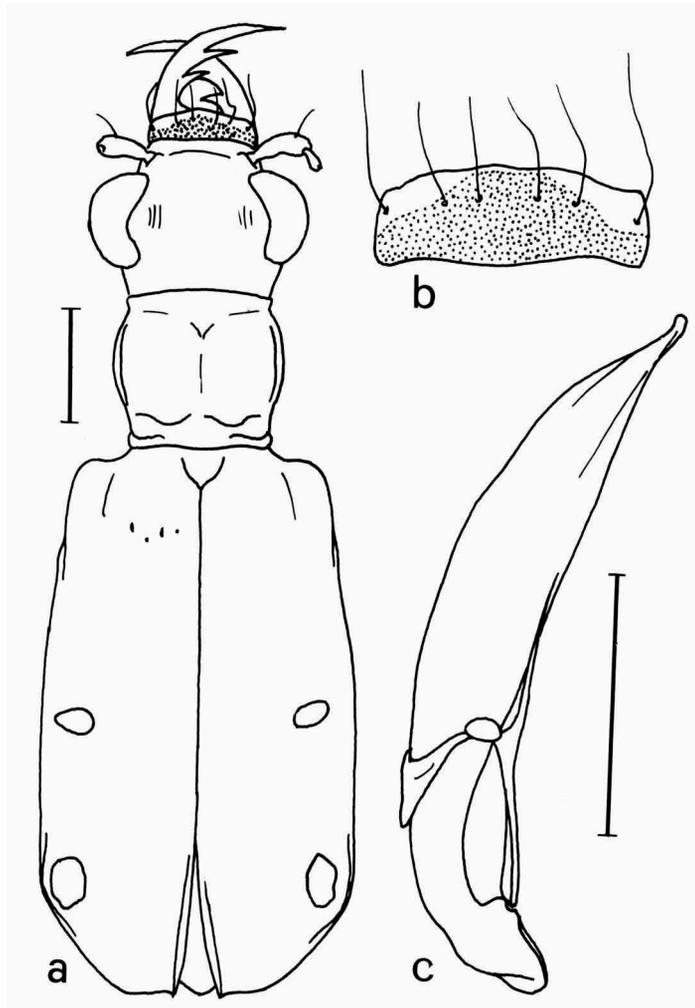


Fig. 1. *Cylindera (Leptinomera) filigera* (Bates, 1878), male, Sabah, Long Pa Sia: a. habitus, b. labrum, c. aedeagus. Scale-line: 1 mm.

Note.— A male specimen in the RMNH, 7 mm long, appears to belong to this poorly collected Bornean species (Cassola, 1983; Wiesner, 1989). Especially diagnostic appear to be its steel blue colour and the short transverse shape of pronotum. Unlike the prototype specimen, however, its elytral markings include a roundish middle spot in addition to the subapical one, as also Wiesner (1989) had noticed. The aedeagus (which was partially damaged in the prototype specimen) appears to be moderately long, slender, with a pointed apex.

Cylindera (Leptinomera) catoptroides (W. Horn, 1892)

Material.— **Malaysia.** 1 ♂ (HS), Cameron Highlands, nr. 19 mile Point, ix.1987. **Sumatra.** 1 ♂ (AB), W. Sumatra, 1978, leg. de Rougemont; 1 ♀ (AB), iii.1981, leg. de Rougemont. 1 ♂ (PHY), Zufluß des Sing-

galang, Kleines Dorf, Eisenbahn- und Autobrücke verläuft dort parallel, ca. 12 km nach dem Wasserfall von Lembah Anei und 3 km von Padang Panjang (Tagfang), 15.ix.1991, leg. W. Guidetti; 1 ♀ (PHY), 10.x.1991, leg. W. Guidetti.

Cylindera (Leptinomera) brendelliana Naviaux, 1991

Material.— **Burma.** 1 ♀ (JP), S. E. Burma, Dawna Range, 29.ix. 1990. **Thailand.** 2 ♀♀ (FC), S. Thailand, Betong, Gunung Cang dun vill., Yala distr., 23.iii- 22.iv.1993, leg. J. Strnad; 1 ♀ (FC), 25.iii-22.iv.1993, leg. J. Horak.

Note.— This species has been described after two female specimens from the Thung Yai Wildlife Sanctuary, Tak Province, Thailand (Naviaux, 1991). As far as I know, no male specimens have been collected so far. I am only able to add two new localities, one of which extends the known range of this species to neighbouring Burmese area.

Cylindera (Leptinomera) longipalpis (W. Horn, 1892)

Material.— **Sumatra.** 1 ♂ (PHY), W. Sumatra, Zufluß des Singgalang, Kleines Dorf, Eisenbahn- und Autobrücke verläuft dort parallel, ca. 12 km nach dem Wasserfall von Lembah Anei und 3 km von Padang Panjang (Tagfang), 15.ix.1991, leg. W. Guidetti.

Note.— The male specimen indicated above appears to be one of the few recently collected specimens recorded so far (Wiesner, 1986). The species is known both from Java and Sumatra, while its occurrence in Borneo still remains doubtful.

Cylindera (Leptinomera) maxillaris (W. Horn, 1895)

Material.— **Sumatra.** 1 ♂ (AB), W. Sumatra, 1978, leg. de Rougemont. 1 ♀ (PHY), W. Sumatra, Zufluß des Singgalang, Kleines Dorf, Eisenbahn- und Autobrücke verläuft dort parallel, ca. 12 km nach dem Wasserfall von Lembah Anei und 3 km von Padang Panjang (Tagfang), 6.ix.1991, leg. W. Guidetti.

Note.— This Sumatran endemic was known to me based only on a few specimens from the Horn collection, which all were collected over a century ago (Cassola, 1983). Wiesner (1986), however, has already recorded nine other specimens, coming from recent collecting, to which I am able to add the ones mentioned above.

Cylindera (Leptinomera) plasoni (W. Horn, 1903)

Material.— **Sabah.** 1 ♂ 1 ♀ (RMNH), Danum Valley, Danum Valley Field Centre, alt. 100-200 m, 18-19.x.1987, leg. J. Krikken & Rombaut (multistrate evergreen forest along river, at light); 1 ♀ (RMNH), nr. Danum Valley Field Centre, E2, c. 175 m, Malaise trap 8, 15-25.iii.1987, leg. C. v. Achterberg. 1 ♂ (RMNH), Poring nr. Hot Spring, 525 m, 14.iii.1987, leg. C. v. Achterberg et al. (at light along road). 51 ♂♂ 87 ♀♀ (MZL), 5 ♂♂ 10 ♀♀ (FC), Sipitang, Mendolong, 16.iii-5.v.1988, leg. S. Adebratt. 1 ♀ (FC), Crocker Range, V.1987; 1 ♀ (KW), V.1988, leg. Khoo. 9 ♂♂ 19 ♀♀ (FC), Gunung Emas-Crocker Mt., 15-27.iv.1993, leg. M. Strba & I. Jenis. 1 ♀ (FC), Borneo, near Keningau, 27.v.1988, leg. M. Ito.

Note.— Until recently this species was known by two female specimens only,

from the Mt. Kinabalu area (Cassola, 1983). Wiesner (1989), however, subsequently recorded some additional specimens and described the male, also from Sabah. Many more specimens, indicated above, have been collected in recent years.

Cylindera (Leptinomera) discovelutinosa (W. Horn, 1931)

Material.— **Sabah.** 1 ♂ (FC), Kinabalu National Park Headquarter, 6°03'N-116°32'E, 1650 m, 29.viii-4.ix.1978, leg. J. Bogenberger. 1 ♀ (RMNH), Long Pa Sia, road to Long Samado (2 km from Sarawak border), 4°20'N-115°41'E, 1520 m, 23-24.x.1986, leg. J. Huisman (small stream, wet mossy forest, podz sand). 1 ♂ 1 ♀ (RMNH), Ulu Rurun, 4°22'N-115°40'30E, 21-22.xii.1986, leg. J. Huisman. 1 ♀ (RMNH), S. Sabah, Beaufort, 105 km S of Long Sa Pia area, confluence Sg. Pa Sia-Maga, 4°26'N-115°40'E, 2.iv.1987, leg. J. van Tol & J. Huisman (undisturbed evergreen tropical rainforest). 1 ♀ (KW), Crocker Range, V. 1988, leg. Khoo.

Note.— This interesting species was known so far by means of two type specimens only, both of which were collected on April 1929 on Mt. Kinabalu, Borneo. I am able to provide the few additional data indicated above.

Cylindera (Leptinomera) bryanti Cassola, 1983

Material.— **Sarawak.** 1 ♀ (AB), Shrang River, xii.1978, leg. de Rougemont.

Note.— This species was described (Cassola, 1983) on the basis of a series of specimens collected in Sarawak (Retuh, Mt. Merinjak) by G. E. Bryant, in 1914. The female specimen listed above is also from Sarawak, and is, as far as I know, the only one collected thereafter.

Cylindera (Leptinomera) perparva Cassola, 1983

Material.— **Sabah.** 1 ♀ (HS), Keningau, 800 m, 10.V.1985, leg. T. Hasegawa. 1 ♂ (RMNH), E. Sabah, Lahad Datu, 60 km W of Danum Valley Field Centre at junction Sg. Segama and Sg. Palum Tambun, 4°58'N-117°48'E, 150 m, 25.iii.1987, leg. J. van Tol & J. Huisman (brooklet above lotus pond, untouched evergreen lowland rainforest, at light).

Note.— This species was described (Cassola, 1983) on the basis of a single male specimen labelled just "British Borneo". Subsequently Wiesner (1989) added two male specimens from Bukit Monkobo and Danum Valley, Sabah. I am able to provide now two additional well identified localities.

Cylindera (Leptinomera) kibbyana Cassola, 1983

Material.— **Sabah.** 2 ♀♀ (RMNH), Long Pa Sia, 14.x.1986, leg. J. Huisman. 6 ♂♂ 2 ♀♀ (RMNH), Long Pa Sia, road to Long Samado (2 km from Sarawak border), 4°20'N-115°41'E, 1520 m, 23-24.x.1986, leg. J. Huisman (small stream, wet mossy forest, podz sand). 1 ♂ 2 ♀♀ (RMNH), Sg. Malabit, road Long Pa Sia-Long Semado, 4°21'N-115°41'E, 19.xii.1986, leg. J. Huisman. 1 ♀ (RMNH), Kinabalu Park, W slope of Kinabalu, between Kiau Satu-Marai Parai, 6°04'N-116°30'E, 11.iii.1987, leg. J. van Tol & J. Huisman (at light along Sg. Tahuban, 1030 m, untouched submontane evergreen rainforest). 1 ♀ (RMNH), S. Sabah, Beaufort, 105 km S of Long Pa Sia area, Sg. Ritan, 1160 m, 4°24'N-115°42'E, 9.iv.1987, leg. J. van Tol & J. Huisman (at light, undisturbed evergreen tropical rainforest). 1

♂ 1 ♀ (MZL), Sipitang, Mendolong, 16-18.iv.1988, leg. S. Adebratt. 3 ♀♀ (KW), Crocker Range, v-viii.1988, leg. Khoo. 1 ♂ 1 ♀ (FC), Gunung Emas-Crocker Mt., 15-27.iv.1993, leg. M. Strba & I. Jenis. Kalimantan. 1 ♂ (FC), W. Kalimantan, Mt. Bawang, alt. 250-300 m, iv.1990; 1 ♂ (FC), x.1990.

Note.— A nice species, easily recognizable by the remarkable chromatic sexual dimorphism (males olive-green, females blue-green to deep violet). Described from the Sarawak (Gunung Mulu National Park), it occurs also in Sabah (Wiesner, 1989), and it is here above recorded for the Kalimantan as well.

Cylindera (Leptinomera) virgulifera spec. nov.
(fig. 2)

Material.— Holotype ♂, allotype ♀ and 19 paratypes (12 ♂♂ 7 ♀♀) from Sabah: 1 ♂ (RMNH) holotype, 1 ♂ (RMNH), Mt. Kinabalu, Liwagu River x trail, 1450 m, viii.1986, montane forest, leg. J. Huisman; 1 ♂ (RMNH), Mt. Kinabalu, Liwagu R. trail, 1450 m, 24.vii.1986, leg. J. Huisman (montane forest, riverside); 1 ♂ (RMNH), 1 ♂ 1 ♀ (FC), Mt. Kinabalu, Liwagu, Silau Silau, 6°00'05N-116°32'08E, 1425 m, 1.x.1986, UV lamp, leg. J. Huisman; 1 ♀ (RMNH) allotype, 1 ♂ (RMNH), 1 ♂ (FC), Gn. Kinabalu, Liwagu x SS trail, 6°00'N-116°33'E, 15.xi.1986, UV lamp, leg. J. Huisman; 1 ♀ (RMNH), Gn. Kinabalu, Sg. Liwagu nr. Kundasang bridge, 6°00'N-116°34'E, 1185 m, 23.xi.1986, ML, leg. J. Huisman; 1 ♂ (RMNH), 1 ♂ (FC), Kinabalu Park, W slope of Kinabalu, between Kg Kiau Satu-Marai Parai, 6°04'N-116°30'E, 11.iii.1987, leg. J. van Tol & J. Huisman (at light along Sg. Tahuban, 1030 m, untouched sub-montane evergreen rainforest); 1 ♂ (FC), Mt. Kinabalu, 1550 m, 28.iv.1987, leg. Burckhardt-Löbl; 2 ♂♂ (HA), 1 ♀ (FC), Gaya Is., 17.xi.1993, leg. A. Yagishita; 1 ♂ 1 ♀ (FC), 3 ♀♀ (HA), Sayap, 19.xi.1993, leg. A. Yagishita. An additional paratype from Sarawak: 1 ♀ (HA), Bukab, 25.xi.1993, leg. A. Yagishita.

Diagnosis.— A quite large *Leptinomera*, larger than *kibbyana* but smaller than *maxillaris*, narrow, elongate, with a small submarginal middle dot and a larger, comma-shaped subapical spot. Colour silky emerald-green, sometimes with some slight bluish reflections.

Description.— Head emerald-green with some bronze or cupric reflections on frons, vertex and border of eyes; surface finely striated, completely glabrous, two long sensorial setae near both eyes. Labrum short, transverse, slightly rounded in front edge, metallic blackish-green at base and middle, testaceous in front and sides; six long hairs near forward edge (seven to nine hairs in some specimens). Mandibles very long and narrow, typical of the subgenus, metallic brown-black with greenish reflections, testaceous at base; teeth rufescent apically. Labial and maxillary palpi testaceous, the apical half of last joint metallic green. Antennae very long in the male, reaching the apical spot of elytra, shorter in the female; scape metallic green, a single long seta on its top, joints 2-4 mostly metallic red-violet; antennomeres 5-11 dull black, elongate, finely and evenly pubescent, the fifth one much longer than fourth.

Thorax: pronotum subsquared, parallel-sided, slightly longer than wide, a bit narrowed in front; colour emerald-green with cupreous reflections near forward margin and on disk. Surface glabrous, very finely striated, with some oblique irregular wrinkles at sides. Proepisterna largely glabrous, smooth, with long erect white setae in front half and near the hind rim; mesepisterna glabrous, with a few white setae near the lower border; mesepimera, mesepisterna and sides of metasternum sparsely covered with white sub-decumbent pubescence; some much finer erect setae in the middle of sternum. Female coupling sulci a small deep pit in the lower part of mesepisterna.

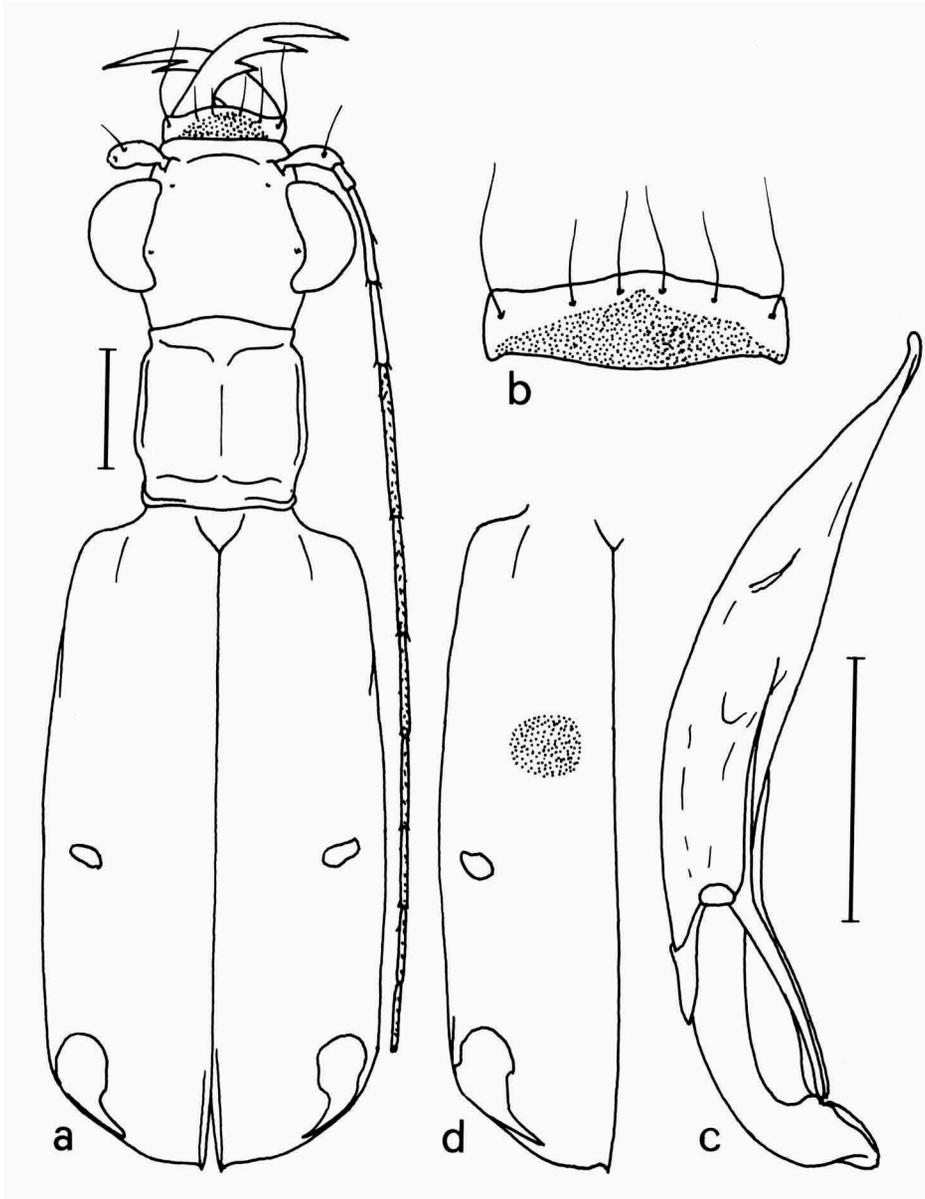


Fig. 2. *Cylindera (Leptinomera) virgulifera* spec. nov., holotype, ♂: a. habitus, b. labrum, c. aedeagus; allotype, ♀: d. left elytron. Scale-line: 1 mm.

Elytra elongated, subparallel, slightly narrowed at shoulders, silky emerald-green with some bronze-cupric (rarely bluish) reflections on disk. Shoulders shining golden green in both sexes, sometimes narrowly rufescent in the corner but lacking a humeral spot. Elytral markings constituted by a small white roundish dot in the middle of elytra, some distance from the side margin, and a larger comma-shaped spot in the subapical angle, which extends for a while along the subapical margin. Female

elytral mirror roundish, shining golden-green, well apart from the suture. Sutural spine small but evident in both sexes.

Underside golden green with some cupreous or bluish reflections. Sides of hind coxae and abdominal sternites covered with white decumbent hairs, more finely and sparsely pubescent in the middle. Legs thin, long, metallic green, usually darkened on apex of femora and tibiae; trochanters rufous.

Male aedeagus arc-shaped, elongate, ending in a long narrow point, slightly bent upwards apically.

Length: 8-9 mm (without labrum).

Etymology.— The name of the new species comes from the Latin words “virgula” (= comma) and “fero, ferre” (= to bear, to bring). Thus it means “comma bearer”.

Remarks.— *C. (L.) virgulifera* spec. nov. is easily recognizable from the other *Leptinomera* species by its emerald-green colour and the comma-shaped subapical spot. In my key (Cassola, 1983) it sorts out in couplet 11, which should be modified as follows:

11. Dark bronze green; elytra shorter in proportion (Malacca, Sumatra, Borneo)
 *C. catoptroides* (W. Horn)
 - Emerald-green, elytra longer in proportion 14
 14. Smaller (7.5-8 mm), subapical spot roundish (Sumatra) *C. gestroi* (W. Horn)
 - Larger (8-9 mm), subapical spot comma-shaped (Borneo)
 *C. virgulifera* spec. nov.

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