

Studies of Tiger Beetles. CLXXXII. Collecting notes from Sarawak, Malaysia, with description of a new species of *Cylindera* of the subgenus *Leptinomera* (Coleoptera Cicindelidae)

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The 18 tiger beetle taxa collected by the author in Sarawak, Borneo, in March 2008 are reported and briefly commented on. One species, *Cylindera (Leptinomera) pseudokibbyana* n. sp., is new to science and is described herein. It is superficially similar to *C. (L.) kibbyana* Cassola 1983 by having a single subapical spot on each elytron, but differs from it by the partly rufescent legs, the lack of chromatic sexual dimorphism and the lack of an obvious elytral mirror in females. In addition, the third instar larva of *Heptodonta analis* (Fabricius 1801) and the female of *Cylindera (Leptinomera) hammondi* Cassola 1983 are described.

KEY WORDS: Tiger beetles, Coleoptera, Cicindelidae, *Cylindera (Leptinomera)*, new species, Sarawak.

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INTRODUCTION

The Cicindelid fauna of the Malaysian State of Sarawak in Borneo is still incompletely known. Apart from a few early papers by THOMSON (1857), GESTRO (1874), HORN (1897), MOULTON (1910) and BRYANT (1919), subsequent data have been provided by BROUERIUUS VAN NIDEK (1960), CASSOLA (1983, 1995), BOGENBERGER (1984), STORK (1986), WIESNER (1988, 1992, 1996) and NAVIAUX (1995, 2002). Currently 59 taxa have been reliably reported from Sarawak, but records of 11 more species, although generically reported from “Borneo”, may well turn out to refer to Sarawak (Table 1).

Table 1.
Tiger beetle species known to occur or likely occurring in Sarawak.

Species	First references
1. <i>Tricondyla</i> (<i>Tricondyla</i>) <i>brunnea</i> Dokh-touroff 1883	(MOULTON 1910: "Sarawak", sub <i>paradoxa</i> W. Horn 1892; NAVIAUX 2002: "Bornéo")
2. <i>Tricondyla</i> (<i>Tricondyla</i>) <i>wallacei</i> Thomson 1857	(STORK 1986: "Sarawak"; NAVIAUX 2002: "Bornéo")
3. <i>Tricondyla</i> (<i>Tricondyla</i>) <i>weneri</i> Naviaux 2002	(NAVIAUX 2002: "Sarawak")
4. <i>Tricondyla</i> (<i>Tricondyla</i>) <i>beccarii beccarii</i> Gestro 1874	(NAVIAUX 2002: "Sarawak")
5. <i>Tricondyla</i> (<i>Stenotricondyla</i>) <i>doriai</i> Gestro 1874	(STORK 1986: "Sarawak"; NAVIAUX 2002: "Sarawak")
6. <i>Protocollyris bryanti</i> Mandl 1975 *	(NAVIAUX 1995: "Sarawak")
7. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>bonellii</i> (Guérin-M. 1834)	(NAVIAUX 1995: "Bornéo")
8. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>clavipalpis</i> (W. Horn 1901) *	(NAVIAUX 1995: "Bornéo")
9. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>labiomaculata</i> (W. Horn 1892) *	(NAVIAUX 1995: "Bornéo")
10. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>dimidiata</i> (Chaudoir 1864)	(NAVIAUX 1995: "Bornéo")
11. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>diardi</i> (Latreille 1822)	(MOULTON 1910: "Sarawak"; NAVIAUX 1995: "Bornéo")
12. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>albitarsipennis</i> (W. Horn 1925) *	(STORK 1986: "Sarawak"; NAVIAUX 1995: "Sarawak")
13. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>chloroptera</i> (Chaudoir 1860)	(NAVIAUX 1995: "Bornéo?")
14. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>emarginata</i> (Dejean 1825)	(MOULTON 1910: "Sarawak"; NAVIAUX 1995: "Bornéo")
15. <i>Neocollyris</i> (<i>Neocollyris</i>) <i>rufipalpis</i> (Chaudoir 1864)	(NAVIAUX 1995: "Bornéo")
16. <i>Neocollyris</i> (<i>Orthocollyris</i>) <i>bryanti</i> (W. Horn 1922) *	(STORK 1986: "Sarawak"; NAVIAUX 1995: "Sarawak")
17. <i>Neocollyris</i> (<i>Leptocollyris</i>) <i>xanthoscelis</i> (Chaudoir 1864)	(NAVIAUX 1995: "Bornéo")
18. <i>Neocollyris</i> (<i>Stenocollyris</i>) <i>leucodactyla</i> (Chaudoir 1860)	(STORK 1986: "Sarawak"; NAVIAUX 1995: "Bornéo")
19. <i>Neocollyris</i> (<i>Stenocollyris</i>) <i>dohertyi</i> (W. Horn 1895)	(NAVIAUX 1995: "Bornéo")
20. <i>Neocollyris</i> (<i>Stenocollyris</i>) <i>sarawakensis</i> (Thomson 1857)	(THOMSON 1857: "Sarawak"; MOULTON 1910: "Sarawak"; NAVIAUX 1995: "Bornéo")

(continued)

Table 1 (continued)

Species	First references
21. <i>Neocollyris</i> (<i>Stenocollyris</i>) <i>oblita</i> Naviaux 1995	(NAVIAUX 1995: "Bornéo"; WIESNER 1996: "Sarawak")
22. <i>Neocollyris</i> (<i>Stenocollyris</i>) <i>weneri</i> Naviaux 1995 *	(NAVIAUX 1995: "Sarawak")
23. <i>Neocollyris</i> (<i>Stenocollyris</i>) <i>constricticollis</i> (W. Horn 1909)	(STORK 1986: "Sarawak"; NAVIAUX 1995: "Bornéo")
24. <i>Neocollyris</i> (<i>Leiocollyris</i>) <i>lissodera</i> (Chaudoir 1864) *	(MOULTON 1910: "Sarawak"; NAVIAUX 1995: "Sarawak")
25. <i>Neocollyris</i> (<i>Leiocollyris</i>) <i>richteri</i> (W. Horn 1901)	(NAVIAUX 1995: "Sarawak")
26. <i>Neocollyris</i> (<i>Pachycollyris</i>) <i>aptera</i> (Lund 1790)	(MOULTON 1910: "Sarawak", sub <i>apicalis rufothoracica</i> ; NAVIAUX 1995: "Bornéo")
27. <i>Neocollyris</i> (<i>Pachycollyris</i>) <i>acutilabris</i> Naviaux 1995 *	(NAVIAUX 1995: "Sarawak")
28. <i>Neocollyris</i> (<i>Heterocollyris</i>) <i>waterhousei</i> (Chaudoir 1864)	(NAVIAUX 1995: "Bornéo")
29. <i>Neocollyris</i> (<i>Heterocollyris</i>) <i>fleutiauxi</i> (W. Horn 1892) *	(NAVIAUX 1995: "Bornéo")
30. <i>Collyris robusta</i> Dohrn 1891	(STORK 1986: "Sarawak"; NAVIAUX 1995: "Bornéo")
31. <i>Collyris colossea</i> Naviaux 1995	(NAVIAUX 1995: "Sarawak")
32. <i>Heptodonta analis</i> (Fabricius 1801)	(MOULTON 1910: "Sarawak"; WIESNER 1996: "Sarawak")
33. <i>Dilatotarsa tricondyloides</i> (Gestro 1874)	(GESTRO 1874: "Sarawak"; CASSOLA & MURRAY 1979: "Sarawak")
34. <i>Therates rugulosus</i> W. Horn 1900	(WIESNER 1988: "Sarawak")
35. <i>Therates erynmis</i> Bates 1874	(MOULTON 1910: "Sarawak")
36. <i>Therates batesii batesii</i> Thomson 1857	(MOULTON 1910: "Sarawak")
<i>Therates batesii cranstoni</i> Wiesner 1988	(WIESNER 1988: "Sarawak")
37. <i>Therates naidenowi</i> Wiesner 1996 *	(WIESNER 1996: "Sarawak")
38. <i>Therates maindroni</i> W. Horn 1900	(WIESNER 1988: "Sarawak")
39. <i>Therates bryanti</i> W. Horn 1922	(MOULTON 1910: "Sarawak")
40. <i>Therates spinipennis spinipennis</i> Latreille 1822	(WIESNER 1988: "Sarawak")
<i>Therates spinipennis</i> Latreille ssp. <i>versicolor</i> Bates 1878	(WIESNER 1988: "Sarawak")
41. <i>Therates dimidiatus</i> Dejean ssp. <i>rubescens</i> Wiesner 1988	(WIESNER 1988: "Sarawak")

(continued)

Table 1 (continued)

Species	First references
<i>Therates dimidiatus</i> Dejean ssp. <i>dejeanii</i> Chaudoir 1861	(MOULTON 1910: "Sarawak"; WIESNER 1988: "Sarawak", sub <i>wallacei</i>)
<i>Therates dimidiatus</i> Dejean ssp. <i>wallacei</i> Thomson 1857	(THOMSON 1857: "Sarawak"; WIESNER 1988: "Sarawak")
<i>Therates dimidiatus</i> Dejean ssp. <i>brooksi</i> Brouerius van Nidek 1977	(BROUERIIUS VAN NIDEK 1977: "Sarawak"; WIESNER 1988: "Sarawak")
42. <i>Therates schaumianus</i> W. Horn 1905	(WIESNER 1988: "Sarawak")
43. <i>Therates spectabilis spectabilis</i> Schaum 1863	(WIESNER 1988: "Sarawak")
<i>Therates spectabilis flavissimus</i> Schaum 1863	(WIESNER 1988: "Sarawak")
44. <i>Therates princeps princeps</i> Bates 1878	(WIESNER 1988: "Sarawak")
<i>Therates princeps</i> Bates ssp. <i>coeruleipennis</i> Brouerius van Nidek 1960	(WIESNER 1996: "Sarawak")
45. <i>Calomera opigrapha</i> (Dejean 1831)	(MOULTON 1910: "Sarawak"; STORK 1986: "Sarawak")
46. <i>Calomera crespignyi</i> (Bates 1871) *	(STORK 1986: "Sarawak")
47. <i>Cosmodela aurulenta</i> (Fabricius 1801)	(BRYANT 1919: "Sarawak")
48. <i>Cosmodela velata</i> (Bates 1872) *	(STORK 1986: "Sarawak")
49. <i>Lophyra (Spilodia) striolata</i> (Illiger 1800)	(WIESNER 1992: "Borneo")
50. <i>Cylindera (Verticina) versicolor</i> (Macleay 1825)	(MOULTON 1910: "Sarawak"; STORK 1986: "Sarawak")
51. <i>Cylindera (Verticina) ibana</i> (Bogenberg- er 1984) *	(WIESNER 1998: "Sarawak")
52. <i>Cylindera (Leptinomera) filigera</i> (Bates 1878) *	(CASSOLA 1983: "Borneo"; WIESNER 1992: "Sarawak")
53. <i>Cylindera (Leptinomera) catoptroides</i> (W. Horn 1892)	(CASSOLA 1983: "Sarawak")
54. <i>Cylindera (Leptinomera) longipalpis</i> (W. Horn 1892)	(WIESNER 1992: "Sarawak")
55. <i>Cylindera (Leptinomera) plasoni</i> (W. Horn 1903) *	(CASSOLA 1983: "Borneo"; STORK 1986: "Sar- awak")
56. <i>Cylindera (Leptinomera) bryanti</i> Cassola 1983	(CASSOLA 1983: "Sarawak")
57. <i>Cylindera (Leptinomera) hammondi</i> Cas- sola 1983 *	(CASSOLA 1983: "Sarawak")
58. <i>Cylindera (Leptinomera) dieckmanni</i> Cassola 1983 *	(CASSOLA 1983: "Sarawak")

(continued)

Table 1 (continued)

Species	First references
59. <i>Cylindera (Leptinomera) kibbyana</i> Cassola 1983 *	(CASSOLA 1983: "Sarawak")
60. <i>Cylindera (Leptinomera) pseudokibbyana</i> Cassola i.l. *	(CASSOLA, this paper: "Sarawak")
61. <i>Cylindera (Leptinomera) virgulifera</i> Cassola 1995 *	(CASSOLA 1995: "Sarawak")
62. <i>Cylindera (Leptinomera) sarawakensis</i> Wiesner 1996	(WIESNER 1996: "Sarawak")
63. <i>Cylindera (Ifasina) discreta</i> (Schaum 1863)	(MOULTON 1910: "Sarawak"; STORK 1986: "Sarawak")
64. <i>Cylindera (Eugrapha) minuta</i> (Olivier 1790)	(WIESNER 1996: "Sarawak")
65. <i>Myriochile (Myriochile) speculifera</i> (Chevrolat, 1845) ssp. <i>brevipennis</i> (W. Horn 1897)	(WIESNER 1996: "Sarawak")
66. <i>Callytron alleni</i> (W. Horn 1908) *	(MOULTON 1910: "Sarawak")
67. <i>Callytron doriai</i> (W. Horn 1897)	(HORN 1897: "Sarawak")
68. <i>Enantiola hewittii</i> (W. Horn 1908)	(MOULTON 1910: "Sarawak")
69. <i>Enantiola spinicollis</i> (W. Horn 1908) *	(MOULTON 1910: "Sarawak")
70. <i>Abroscelis tenuipes</i> (Dejean) ssp. <i>araneipes</i> (Schaum 1863)	(MOULTON 1910: "Sarawak")

*Bornean endemics: 22 (30.9%)

Excluded species:

<i>Tricondyla (Tricondyla) cyanipes brunnipes</i> Motschulsky 1861	(WIESNER 1998: "Sarawak"; NAVIAUX 2002)
<i>Tricondyla (Tricondyla) cavifrons</i> Schaum 1862	(WIESNER 1998: "Sarawak"; NAVIAUX 2002)
<i>Protocollyris brevilabris</i> (W. Horn) ssp. <i>weyersi</i> (W. Horn 1901)	(STORK 1986: "Sarawak")
<i>Neocollyris (Neocollyris) elongata</i> (Chaudoir)	(MOULTON 1910: "Sarawak")
<i>Neocollyris (Neocollyris) thomsoni</i> (W. Horn 1894)	(HORN 1926: "Sarawak")
<i>Cylindera (Leptinomera) perparva</i> Cassola 1983	(CASSOLA 1983: "British Borneo"; WIESNER 1992: "Borneo: Sabah")
<i>Cylindera (Ifasina) reductula</i> (W. Horn 1915)	(FOWLER 1912: "Sarawak", sub <i>reducta</i> W. Horn 1892)
<i>Callytron terminatum</i> (Dejean 1825)	(WIESNER 1992)

Moreover, several additional species, presently known from adjacent political divisions of the island of Borneo such as Sabah, Brunei and the Indonesian province of Kalimantan, may eventually be found also in Sarawak.

In March 2008 the author, together with his American colleague David W. Brzoska, surveyed several areas in Sarawak for tiger beetles. All the listed specimens are in the author's collection (FCC), except for a few voucher specimens deposited in Brzoska's collection (DBC).

SPECIES LIST

1. *Tricondyla (Stenotricondyla) doriai* Gestro 1874

Sarawak, North-east: Gunung Mulu NP, Trail from R. Melinau to Camp 5, 04°08.0N-114°53.0E, 11.III.2008, F. Cassola, 1 ♀ (FCC).

Specimens collected: 1.

A single specimen was collected while it sat on a leaf along a trail. It superficially resembles the arboreal genus *Neocollyris*. As stated by NAVIAUX (2002), the middle lobe of the pronotum is predominantly reddish.

2. *Neocollyris (Stenocollyris) leucodactyla* (Chaudoir 1860)

Sarawak, North-east: Gunung Mulu NP, Trail from R. Melinau to Camp 5, 04°08.0N-114°53.0E, 11.III.2008, F. Cassola, 4 ♂♂ 2 ♀♀ (FCC). Trail from Camp 5 to R. Melinau, 04°08.0N-114°53.0E, 13.III.2008, F. Cassola, 2 ♂♂ 1 ♀ (FCC), 1 ♂ 1 ♀ (DBC).

Specimens collected: 11.

This species was common in the Gunung Mulu area. Unlike many specimens from continental Malaysia in FCC, these Bornean specimens are more blackish-brown instead of bluish-black, and distinctly more polished and less punctate near the shoulders. The hind legs have the tarsi and more than half the distal tibiae whitish.

3. *Heptodonta analis* (Fabricius 1801)

Sarawak, West: Annah Rais, River Semadang, 01°09.3N-110°16.0E, 1.III.2008, F. Cassola, 2 ♂♂. Retoh, 01°03.8N-110°27.3E, 3.III.2008, F. Cassola, 4 ♂♂ 1 ♀ (FCC), 1 ♂ 1 ♀ (DBC); 5.III.2008, F. Cassola, 1 ♀. Lundu, River Rambungan, 01°39.9N-110°07.4E, 15.III.2008, F. Cassola, 1 ♂ (FCC). Lundu, road to Pandan Beach, 01°44.2N-109°57.6E, 15.III.2008, F. Cassola, 1 ♂ (FCC). 7 km W of Lundu, 01°40.2N-109°48.1E, 16.III.2008, F. Cassola, 3 ♂♂ 4 ♀♀. N of Lundu, River Batu, 01°44.1N-109°51.9E, 17.III.2008, F. Cassola, 1 ♀ (FCC).

Sarawak, North-East: Gunung Mulu NP, Camp 5, Headhunters Trail, 12.III.2008, F. Cassola, 1 ♂ (FCC).
Specimens collected: 21.

A common, widespread species in South-East Asia and Indonesia. Yellow abdominal segments are distinctive. BOUCHARD (1899) wrote a short note on its habits in Sumatra. We encountered it several times in Sarawak, mostly on sloping to vertical surfaces near trails, where larval holes were also usually abundant. Adult specimens are fully winged and fly readily. The genus spans Wallace's line (after MAYR 1944) from South-East Asia and southern China to the Philippines (CASSOLA 1990). Although recorded from Sulawesi (WIESNER 1992), its occurrence there remains hypothetical as we have never found it despite three collecting trips (CASSOLA & BRZOSKA 2008). Several larval specimens were also collected near Retoh. Because the larval form is undescribed (WIESNER 1992, ARNDT & CASSOLA 2000) I provide a brief description. Previously the larvae of only two *Heptodonta* species have been described: *H. melanopyga* Schaum 1862, from the Philippines, and *H. ferrarii shooki* Wiesner 1986, from Thailand (ARNDT & CASSOLA 2000).

Description of the third instar larva. Six specimens collected by the author at Retoh, 01°03.8N-110°27.3E, on 6 March 2008.

Head cupric metallic above, yellow ventrally. Six ocelli present on each side, ocelli I and II hemispherical, very large, protruding upwards. Nasale strongly protruding in front, anterior margin rounded, smooth; mandibles rufescent to blackish-brown, slender, longer than the antenna, rectangular curved, apical part longer than basal one including retinaculum. Antennae and palpi testaceous. Antenna short; antennomere I slightly flattened dorso-ventrally, with 4-6 long light setae near the lateral margins, antennomere II with 3-4 setae apically, antennomere III with two apical setae on the ventral side, antennomere IV (the smallest one) with three subapical setae. Stipes of typical cicindelid shape, with 4-5 long light setae and 3-4 short spiniform setae in the inner lateral sides meso-basally. Palpifer with three long setae dorsally and laterally and one seta ventrally; palpomere I (the shortest one) and palpomere III with no setae, palpomere II with two setae apically; galea with 6-7 long yellow setae, one of which on the apical tip. Gular suture T-shaped.

Thorax. Pronotum shield-shaped, yellow, rounded at sides, transversely briefly straight behind, with acute anterior angles, slightly protruding in front; a fringe of short erect setae on the lateral sides, disc almost glabrous, with just 1-2 erect setae in the middle. Legs of typical cicindelid shape, testaceous, ending in two claws, the anterior one longer and slenderer than the posterior one.

Abdomen. Abdomen white to testaceous; tergite V with two pairs of short hooks; outer hook stout, longer, sickle-shaped, with 3-4 strong setae; inner hook much shorter, almost straight, slightly depressed laterally, with two strong spiniform setae in the middle. Pygopod short, light, testaceous, with several setae towards the apex and a crown of 12-13 more apically.

4. *Therates batesii* Thomson 1857

Sarawak, West: Retoh, River Retoh, 01°03.8N-110°27.3E, 5.III.2008, F. Cassola, 2 ♂♂. River Ngelai (trib. of River Skrang), 8.III.2008, F. Cassola, 3 ♀♀ (FCC).

Sarawak, North-east: Gunung Mulu NP, Trail from R. Melinau to Camp 5, 04°08.0N-114°53.0E, 11.III.2008, F. Cassola, 1 ♀ (FCC). Camp 5, Headhunters Trail, 12.III.2008, F. Cassola, 1 ♂ 5 ♀♀ (FCC), 1 ♂ 1 ♀ (DBC). Trail from Camp 5 to R. Melinau, 04°08.0N-114°53.0E, 13.III.2008, F. Cassola, 1 ♂ (FCC).

Specimens collected: 15.

This small species is readily distinguishable from the other congeners by its black metasternum and the lack of lateral acute spines on the elytral apex. It was found while sitting on leaves of low undergrowth bushes close to the trail.

5. *Therates erynnis* Bates 1874

Sarawak, North-east: Gunung Mulu NP, Trail from R. Melinau to Camp 5, 04°08.0N-114°53.0E, 11.III.2008, F. Cassola, 1 ♂ (FCC). Camp 5, Headhunters Trail, 12.III.2008, F. Cassola, 3 ♂♂ 5 ♀♀ (FCC), 1 ♀ (DBC).

Specimens collected: 10.

This species differs from the preceding one by the larger size, the more reddish appearance and the elytral apex with lateral spines. In Gunung Mulu NP, it occurred syntopically with *Th. batesii*.

6. *Therates s. spinipennis* Latreille 1822

Sarawak, West: Annah Rais, River Semadang, 01°09.3N-110°16.0E, 1.III.2008, F. Cassola, 1 ♂ (FCC). Retoh, River Retoh, 01°03.8N-110°27.3E, 4.III.2008, F. Cassola, 1 ♂ 1 ♀ (FCC), 1 ♂ 1 ♀ (DBC); 5.III.2008, F. Cassola, 2 ♂♂ (FCC). River Ngelai (trib. of River Skrang), 8.III.2008, F. Cassola, 1 ♂ (FCC). Aryar (Sri Aman), 01°06.8N-111°17.4E, 9.III.2008, F. Cassola, 3 ♂♂ 1 ♀ (FCC).

Specimens collected: 12.

This species is superficially very similar to *Th. dimidiatus wallacei* (see below) but it has a much longer sutural spine at the elytral apex. The partly blackish femora and the red labrum are distinctive (WIESNER 1988). It was found in West Sarawak only, in two instances syntopically occurring with *Th. dimidiatus wallacei*. WIESNER (1988) recorded it from Java, Sumatra and West Sarawak (Quop, Retuh, Semongoh).

7. *Therates dimidiatus* Dejean ssp. *dejeanii* Chaudoir 1861

Sarawak, North-east: Gunung Mulu NP, Trail to Deer Cave, 10.III.2008, F. Cassola, 1 ♂ 1 ♀ (FCC). Trail from R. Melinau to Camp 5, 04°08.0N-114°53.0E, 11.III.2008, F. Cassola, 2 ♂♂ 2 ♀♀ (FCC). Camp 5, Headhunters Trail, 12.III.2008, F. Cassola, 23 ♂♂ 8 ♀♀ (FCC). Trail from Camp 5 to R. Melinau, 04°08.0N-114°53.0E, 13.III.2008, F. Cassola, 3 ♂♂ 1 ♀ (FCC), 1 ♂ 1 ♀ (DBC).

Specimens collected: 43.

Th. dimidiatus has a much shorter sutural spine than the preceding species. In Sarawak it exhibits two distinct, apparently vicariant, populations, one in the East (Gunung Mulu), with the base and the apex of the elytra testaceous, which, following BROUERUS VAN NIDEK (1977), is here considered to be ssp. *dejeanii*. It also occurs in Singapore (CASSOLA 2006b).

8. *Therates dimidiatus* Dejean ssp. *wallacei* Thomson 1857

Sarawak, West: Retoh, River Retoh, 01°03.8N-110°27.3E, 5.III.2008, F. Cassola, 1 ♂ (FCC). Tributary of River Skrang, 7.III.2008, F. Cassola, 1 ♀ (FCC). River Ngelai (trib. of River Skrang), 8.III.2008, F. Cassola, 1 ♂. N of Lundu, River Batu, 01°44.1N-109°51.9E, 17.III.2008, F. Cassola, 1 ♀ (FCC).

Specimens collected: 4.

In West Sarawak, a distinct *dimidiatus* population has fully cyaneous elytra and almost entirely blackish legs, as well as a small humeral reddish spot on shoulders. I consider this population to belong to ssp. *wallacei* ("ssp." *brooksi* BROUERUS VAN NIDEK 1977 is likely a junior synonym of it). However, similar *wallacei* specimens have been collected from Sumatra and Malacca, as well as from East Kalimantan (Tabang), but not from Singapore (where only *dejeanii* seems to occur: CASSOLA 2006b). It is possible that *wallacei* is a separate species from *dimidiatus* (problems raised by several *Therates* "subspecies": CASSOLA 1985). However, the actual taxonomic situation is unclear, and further samples from all the intervening areas are needed to clarify this problem.

9. *Cosmodela a. aurulenta* (Fabricius 1801)

Sarawak, West: Annah Rais, River Semadang, 01°09.3N-110°16.0E, 1.III.2008, F. Cassola, 7 ♂♂ 1 ♀ (FCC), 1 ♂ 1 ♀ (DBC). 5.5 km S Annah Rais, 01°06.3N-110°16.4E, 2.III.2008, F. Cassola, 5 ♂♂ 6 ♀♀ (FCC). Retoh, 01°03.8N-110°27.3E, 3.III.2008, F. Cassola, 2 ♂♂ 2 ♀♀; 4.III.2008, F. Cassola, 1 ♂ (FCC). Retoh, River Retoh, 01°03.8N-110°27.3E, 5.III.2008, F. Cassola, 1 ♂ 2 ♀♀ (FCC). River Skrang, 01°30.2N-111°40.6E, 7.III.2008, F. Cassola, 1 ♂ (FCC). River Ngelai (trib. of River Skrang), 8.III.2008, F. Cassola, 1 ♂ (FCC). River Skrang, Tapang Rumpit, 01°04.2N-111°17.4E, 9.III.2008, F. Cassola, 3 ♂♂ 2 ♀♀ (FCC). Lundu, road to Pandan Beach, 01°44.2N-109°57.6E, 15.III.2008, F. Cassola, 1 ♂ 1 ♀ (FCC). Lundu, Sematan Beach, 01°40.2N-109°46.2E, 16.III.2008, F. Cassola, 1 ♀ (FCC). 7 km W of Lundu, 01°40.2N-109°48.1E, 16.III.2008, F. Cassola, 1 ♂ 1 ♀ (FCC). N of Lundu, River Batu, 01°44.1N-109°51.9E, 17.III.2008, F. Cassola, 1 ♂ 2 ♀♀ (FCC).

Specimens collected: 45.

This common species was found in a variety of habitats, ranging from riverbars to forest trails. The Bornean specimens belong to the typonominal subspecies, which occurs in Malaysia and Indonesia, while from India eastwards to southern China the ssp. *juxtata* Acciavatti & Pearson 1989 occurs (ACCIAVATTI & PEARSON 1989).

10. *Calomera crespignyi* (Bates 1871)

Sarawak, West: River Skrang, 01°30.2N-111°40.6E, 7.III.2008, F. Cassola, 7 ♂♂ 3 ♀♀ (FCC), 1 ♂ 1 ♀ (DBC). River Ngelai (trib. of River Skrang), 8.III.2008, F. Cassola, 1 ♀ (FCC).

Sarawak, North-east: Gunung Mulu NP, River Melinau, 04°04.0N-114°49.6E, 11.III.2008, F. Cassola, 2 ♀♀ (FCC).

Specimens collected: 15.

This species is a riverbar inhabitant and apparently a north-western Bornean endemic, known to occur only in Brunei and the Malaysian states of Sabah and Sarawak (WIESNER 1992, 1998).

11. *Cylindera (Leptinomera) catoptroides* (W. Horn 1892)

Sarawak, West: Retoh, River Retoh, 01°03.8N-110°27.3E, 4.III.2008, F. Cassola, 1 ♂ (FCC). River Ngelai (trib. of River Skrang), 8.III.2008, F. Cassola, 5 ♂♂ 2 ♀♀ (FCC).

Specimens collected: 8.

The small *Cylindera* species of the subgenus *Leptinomera* are primarily Bornean in distribution, with a few species known from Java, Sumatra, Malacca and Thailand (CASSOLA 1983, 1995; NAVIAUX 1991; CASSOLA & PROBST 1995; MATALIN & CASSOLA 2000). *C. (L.) catoptroides* is perhaps the most widely distributed one, as it was described from Sumatra but is also known to inhabit Peninsular and Bornean Malaysia (CASSOLA 1983, 1995). As with most *Leptinomera* species, specimens were collected while sitting on leaves overhanging running water. This necessitated entering the water and hiking along the river beds. Occasionally, some species are found along moist jungle trails.

12. *Cylindera (Leptinomera) bryanti* Cassola 1983

Sarawak, West: 8.9 km S Annah Rais, vill. Sibakac, River Tunai, 01°05.1N-110°16.8E, 3.III.2008, F. Cassola, 1 ♀ (FCC). Retoh, 01°03.8N-110°27.3E, 3.III.2008, F. Cassola, 1 ♀ (FCC); 4.III.2008, F. Cassola, 1 ♂ 2 ♀♀ (FCC). Retoh, River Retoh, 01°03.8N-110°27.3E, 5.III.2008, F. Cassola, 1 ♀ (FCC).

Specimens collected: 6.

This species, easily distinguished from all other *Leptinomera* species by the golden-green elytra and yellow legs, was described based on specimens collected in 1914 at "Retuh" by G.E. Bryant (CASSOLA 1983), one of the sites of our collection during this trip.

13. *Cylindera (Leptinomera) hammondi* Cassola 1983

Sarawak, North-East: Gunung Mulu NP, Camp 5, Headhunters Trail, 12.III.2008, F. Cassola, 1 ♂ 3 ♀♀ (FCC). Trail from Camp 5 to R. Melinau, 04°08.0N-114°53.0E, 13.III.2008, F. Cassola, 1 ♂ (FCC).

Specimens collected: 5.

This species was described based on two male specimens in the British Museum collection, respectively coming from the Gunung Mulu NP area in Sarawak and from Brunei (CASSOLA 1983). It is very small (6 mm) but not the smallest in the genus. *C. (L.) perparva* Cassola 1983 (from "British Borneo", thus probably from Sabah) is even smaller (5 mm) (CASSOLA 1983). Apart from its size, *C. (L.) hammondi* is distinguished from *perparva* by its slightly longer labrum and the last joint of the maxillary palpi much elongated, approximately more than 2 times the length of the penultimate segment. Because the female was previously undescribed, I provide some details here.

Description of the female. Same general characters as the male. Polished, shiny elytral shoulders, and a roundish, shiny mirror in the anterior third of the elytral length (slightly obliquely positioned). Labrum short, transverse, 6-haired, slightly triangularly raised in front middle.

14. *Cylindera (Leptinomera) dieckmanni* Cassola 1983

Sarawak, West: 8.9 km S Annah Rais, vill. Sibakac, Tunai River, 01°05.1N-110°16.8E, 3.III.2008, F. Cassola, 1 ♀ (FCC).

Specimens collected: 1.

This species was described originally from three specimens collected from Mt Matang in West Sarawak and a female specimen also from West Sarawak (Quop) (CASSOLA 1983). The specimen recorded above is apparently the first since the species' description. Consequently, the species is likely a West Sarawak endemic.

15. *Cylindera (Leptinomera) pseudokibbyana* n. sp. (Figs 1-5)

Type material. Holotype, ♂, and six paratypes (2 ♂♂ 4 ♀♀), from Sarawak, West: Retoh, River Retoh, 01°03.8N-110°27.3E, 4.III.2008, F. Cassola (FCC). Five additional paratypes (1 ♂ 4 ♀♀) from same locality, 5.III.2008, F. Cassola (FCC). Specimens collected: 12. Two paratypes ♂♀ deposited in DBC. One further paratype specimen, ♂, was found in FCC, ranged under *kibbyana*, labeled "Indonesia, West Kalimantan, Mt Bawang, 250-300 m, October 1990", indicating that this species also occurs in West Kalimantan, N of Pontianak.

Diagnosis. A small *Leptinomera* which, like *kibbyana*, exhibits only a single round subapical spot on the elytra (sometimes doubled by a tiny, poorly visible discal dot below the middle). Unlike *C. (L.) kibbyana*, however, sexes are similarly coloured, dark blackish-green (instead of olive-green in males and blue-violet in females). Labrum mostly testaceous at anterior sides (almost fully testaceous in some specimens), more or less darkened (sometimes metallic greenish-black) on basal middle. Femora yellow-rufescent, briefly darkened on "knees", tibiae distally darker, tarsi mostly bluish-black. No elytral mirror in females (just a small, poorly evident trace in one specimen). Male aedeagus similar to that of *kibbyana*, but slenderer, slightly more hooked dorsally.

Description. Head mostly black, with bluish-green reflections on clypeus, antennal plates, lateral sides of vertex, orbital declivities and genae; glabrous, only two setigerous punctures at fixed loci near the edge of each eye.

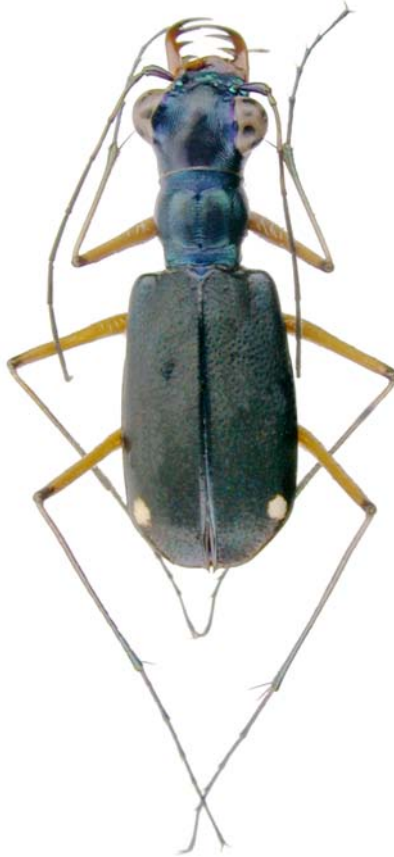
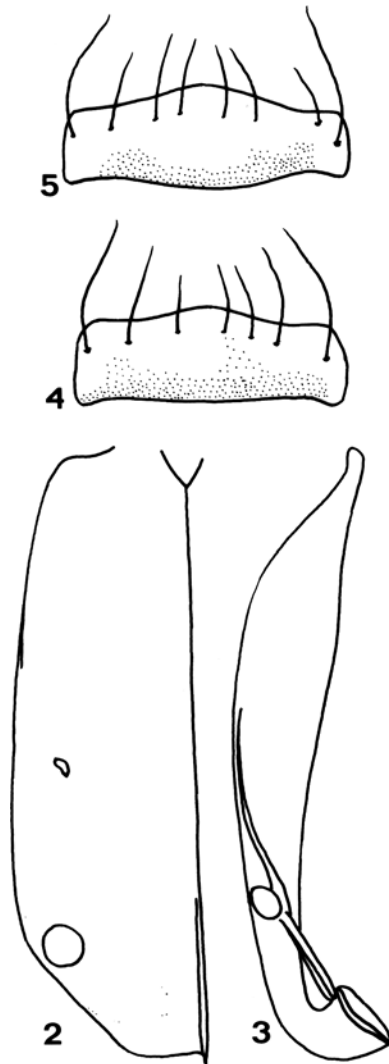


Fig. 1. — *Cylindera (Leptinomera) pseudokibbyana* n. sp., paratype F: habitus (photograph by A. Oesterle, corrections by R. Lizler).

Surface smooth, finely and concentrically striated on frons, a few longitudinal striae on the lateral sides of vertex, the orbital declivities and the genae. Eyes hemispherical, mostly yellowish with some blackish areoles. Labrum short, transverse, yellowish-rufescent in front half, especially laterally, darkened to metallic bluish-black basally, with six submarginal setae near anterior edge. Mandibles long, yellowish-rufescent basally, darkened to shiny black in front and on teeth. Labial and maxillary palpi pale yellow with the last joint distally darkened to metallic green. Antennae nearly as long as the ely-



Figs 2-5. — *Cylindera* (*Leptinomera*) *pseudokibbyana* n. sp., paratype ♀: 2, left elytron; 4, labrum; paratype ♂: 3, aedeagus; 5, labrum.

tral length in male, shorter in female; scape and antennomeres 2-4 metallic bluish-green to violet, almost glabrous (a single seta on tip of scape), antennomeres 5-11 dull black, finely and evenly pubescent.

Pronotum and head concoloured, pronotum smooth, approximately as long as wide, with strong bluish-green reflections on front and hind lobes and on the lateral sides. Proepisterna shiny black with bluish-violet reflections, glabrous in the middle, with long semi-erect hairs near the front sulcus and in the hind sulcus. Mesepisterna almost glabrous, mesepisternal female coupling sulcus a distinct pit below the middle, close to the mesepimeral rim. Mesepimera, metepisterna and sides of sternum covered with white recumbent pubescence.

Elytra dull bronze, sometimes nearly dull black, with some metallic hue on shoulders; base and shoulders shiny metallic greenish-black in females. A single round subapical spot in the rear, sometimes doubled by a tiny, poorly visible discal dot below the middle. No elytral mirror in females (just a small, poorly evident trace of it in two specimens). A tiny sutural spine apically in both sexes. Epipleura metallic black.

Abdominal sternites metallic green, evenly covered with fine white recumbent hairs on the lateral sides. Trochanters yellow; femora mostly yellow-rufescent, briefly darkened on "knees"; tibiae distally darker; tarsi mostly bluish-black. Male aedeagus similar to that of *kibbyana*, but slenderer and slightly more hooked dorsally.

Length: 6.5-7 mm (without labrum).

Remarks. The name proposed for this species emphasizes its similarity to *C. (L.) kibbyana*. The single round subapical spot is distinctive for both species, as all other known *Leptinomera* species clearly have two spots on each elytron. The new species, however, lacks the chromatic sexual dimorphism characteristic of *kibbyana*. Moreover, *kibbyana* apparently is restricted to East Sarawak and Sabah, and *pseudokibbyana* n. sp. inhabits West Sarawak and West Kalimantan.

Accordingly, couplets 3-5 in the 1983 key, recently modified by CASSOLA (2006a), are further modified as follows:

3	Legs metallic.....	4
—	Legs at least partly testaceous-rufescent.....	4a
4	Inner teeth of mandibles flattened, halberd-shaped.....	
 <i>macrodonta</i> Cassola & Probst 1995	
—	Inner teeth of mandibles normally shaped	5
4a	Mandibles strongly bent downwards	<i>bryanti</i> Cassola 1983
—	Mandibles normally shaped	<i>pseudokibbyana</i> n. sp.
5	Two subapical spots on elytra	<i>kibbyana</i> Cassola 1983
—	Four roundish spots on elytra	6

16. *Cylindera (Ifasina) discreta* (Schaum 1863) ssp. *subfasciata* (W. Horn 1892)

Sarawak, West: Annah Rais, River Semadang, 01°09.3N-110°16.0E, 1.III.2008, F. Cassola, 1 ♂ (FCC). Retoh, River Retoh, 01°03.8N-110°27.3E, 4.III.2008, F. Cassola, 2 ♂♂ 2 ♀♀ (FCC); 5.III.2008, F. Cassola, 3 ♂♂ 2 ♀♀ (FCC). River Skrang, 01°30.2N-111°40.6E,

7.III.2008, F. Cassola, 1 ♂ (FCC). Tributary of River Skrang, 7.III.2008, F. Cassola, 1 ♀ (FCC). River Ngelai (trib. of River Skrang), 8.III.2008, F. Cassola, 7 ♂♂ 1 ♀ (FCC), 1 ♂ 1 ♀ (DBC). Aryar (Sri Aman), 01°06.8N-111°17.4E, 9.III.2008, F. Cassola, 1 ♂ 1 ♀ (FCC).

Specimens collected: 24.

C. discreta constitutes a widely distributed, polytypic complex. Several supposed "subspecies" have been described (HORN 1926), but some of these have subsequently been elevated to full species. The true *discreta* (lacking any apical lunule on elytra) was described from Sulawesi (SCHAUM 1863, CASSOLA & BRZOSKA 2008), while the populations from Borneo, Sumatra and Malacca, which exhibit a complete apical lunule on the elytra, should rather be ascribed to ssp. *subfasciata*.

17. *Callytron alleni* (W. Horn 1908)

Sarawak, West: Lundu, River Rambungan, 01°39.9N-110°07.4E, 15.III.2008, mangroves, F. Cassola, 2 ♀♀ (FCC). Lundu, River Huih, 01°41.5N-110°05.5E, 15.III.2008, mangroves, F. Cassola, 3 ♂♂ 2 ♀♀ (FCC), 1 ♂ (DBC); 17.III.2008, mangroves, F. Cassola, 1 ♂ 1 ♀ (FCC).

Specimens collected: 10.

This species, unlike *C. doriai* (W. Horn 1897), which occurs also in Sumatra and was recently found in peninsular Malaysia (WIESNER 2007), is a Bornean endemic (HORN 1908). As most of its congeners, it is found on muddy, wet soils near water, among mangroves.

18. *Abroscelis tenuipes* (Dejean) ssp. *araneipes* (Schaum 1863)

Sarawak, West: Lundu, Pandan Beach, 01°45.7N-109°52.7E, 15.III.2008, F. Cassola, 7 ♂♂ 1 ♀ (FCC). Lundu, Sematan Beach, 01°40.2N-109°46.2E, 16.III.2008, F. Cassola, 7 ♂♂ 4 ♀♀ (FCC), 1 ♂ 1 ♀ (DBC).

Specimens collected: 21.

This small species with exceedingly long, slender legs (SCHAUM 1863) is a sandy sea beach inhabitant. It was found on two beaches in the Lundu area where it was difficult to observe and even more difficult to collect.

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