

Studies of tiger beetles. CXLIX. Three new species for the fauna of Vietnam (Coleoptera: Cicindelidae)

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Three tiger beetle species, *Therates differens* Sawada & Wiesner, 1999, *Calomera brevipilosa* (W. Horn, 1908) and *Cosmodela separata* (Fleutiaux, 1893), are recorded from Vietnam for the first time. The known tiger beetle fauna of this country is thus raised to a total of 132 species (45, or 34% of which are endemic), what definitely ranges Vietnam among the countries of the world with the richest outstanding entomological biodiversity (km²/species ratio: 2.507).

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Due to heavy long-lasting wars and subsequent political situations, Vietnam is still a poorly explored country, as far as its entomological fauna is concerned. After Walther Horn's (1913, 1914) preliminary lists of species (which, however, were related to the whole of Indochina), updated counts have summed up to 93 the number of tiger beetle species known from Vietnam itself (25 of which endemic to the country) (Pearson & Cassola, 1992). However, a few more species have been described and some additional data have been provided afterwards (Cassola, 2002a, 2000b; Cassola & Probst, 1996; Cassola & Werner, 1995; Deuve, 2002; Naviaux, 1995a, 1995b, 1995c, 1996a, 1996b, 1999, 2002, 2004; Naviaux & Matalin, 2003; Sawada & Wiesner, 1999a, 1999b, 2002; Tscherkasov, 1992; Werner, 1992; Wiesner, 1996). My own reckoning presently indicates a total of 132 species (45, or 34% of which are endemics) (see Table), what definitely ranges Vietnam among the countries of the world with the richest outstanding entomological biodiversity (km²/species ratio: 2.507) (Cassola & Pearson, 2000).

During a recent visit to the Zoological Institute of Russian Academy of Sciences, St.Petersburg (ZISP) in November 2003, I had the good opportunity of briefly examining the tiger beetle collection of this institution. Among other things, two species appeared to be new to the fauna of Vietnam, and they are the main subject of this note. One additional species, also new to the Vietnam fauna, was later discovered among unidentified material kindly sent to me by the Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium (IRSNB).

Therates differens Sawada & Wiesner, 1999

Therates differens Sawada & Wiesner, 1999a: 34.

Material. N Vietnam: 1 ♀, Lao Kay (Tonkin), Coll.^{on} Le Moul't (IRNSB).

This species was described from northern Laos, but the IRSNB specimen proves it to be present in northern Vietnam too. The identification of the specimen was made by comparison with a paratype specimen in my own collection.

Calomera brevipilosa (W. Horn, 1908)

Cicindela brevipilosa W. Horn, 1908: 33.

Cicindela kaiyaensis Kanφ & Chô, 1933: 11. *Cicindela brevipilosa klapperichi* Mandl, 1942: 88. *Habrodera (Lophyridia) brevipilosa*: Schilder, 1953: 553. *Lophyridia brevipilosa*: Rivalier, 1961: 132. *Calomera brevipilosa*: Lorenz, 1998: 48; Putschkov & Matalin, 2003: 99.

Material. SW Vietnam: 1 ♂, Bay-Tuong, 300 m, 10. VII.1962, Kabakov (ZISP).

This rare species was described from northern China (Schan Tung = Shandong) and was later recorded from other Chinese provinces as well: Tschi Li (= Hebei), Tsche Kiang (= Zhejiang), Fukien (= Fujian) (Horn, 1930), and Gansu (Werner et al., 2002). Mandl (1942) described a ssp. *klapperichi* from Fukien (= Fujian) (Mandl, 1954), later recorded by him (Mandl, 1981) from Zhejiang and Taiwan. The species is known to occur also in North and South Korea (ssp. *kaiyaensis* Kanφ & Chô, 1933: Kim, 1978; Wiesner, 1992; Putschkov & Matalin, 2003). Useful colour pictures have been published of the holotype of

C. brevopilosa (Werner, 1991a, pl. 30), a paratype of *C. b. kaiyaensis* (Werner, 1991b, pl. 31) and a paratype of *C. b. klapperichi* (Werner et al., 2002, fig. 15). However, the validity of these subspecies appears to deserve confirmation, based on larger well-labelled material.

The occurrence of *C. brevopilosa* is SW Vietnam not only considerably enlarges the known geographical range of the species but it seems to strengthen the Taiwanese record as well.

Cosmodela separata (Fleutiaux, 1893)

Cicindela separata Fleutiaux, 1893 : 491.

Calochroa separata: Schilder, 1953: 554.

Cosmodela separata: Rivalier, 1961: 128; Putchkov & Matalin, 2003: 108.

Material. W Vietnam: 1 ♀, Bak-Kuang, 500 m, 14.VII. 1963, Kabakov (ZISP).

This species was described from China (“Che-Kiang, Chine boréale, Formose, Shangai”). Previously, Bates (1872), when describing the closely related *C. velata* from Borneo, had erroneously cited this species as *Cicindela aurulenta* Fabr. var. *flavomaculata* Chevr., 1845, a third congeneric species [in present day taxonomy: *Cosmodela aurulenta juxtata* (Acciavatti & Pearson, 1989)]. All these species were later moved to the genus *Cosmodela* by Rivalier (1961). Horn

(1926) summarized the geographical range of *C. separata* as follows: “Das Gebiet zwischen Shanghai, Yunnan u. Fu-Kien”. Mandl (1954) recorded it from “Kwangtseh, Shaowu und den Kuatunbergen”, and later (Mandl 1981) again from Zhejiang. More recently, Wiesner (1992) indicated the following distribution: “China: Kiang Su (= Jiangsu), Tsche Kiang (= Zhejiang), Yun Nan (= Yunnan), Fu Kien (= Fujian)”, and Putchkov & Matalin (2003) did the same. Thus, the general known distribution indicates this species to inhabit the whole of southern China. However, as to the occurrence of *C. separata* in Taiwan (Formosa), firstly quoted by Fleutiaux himself (1893), it was not confirmed by Werner et al. (2002).

Compared to several specimens (in my own collection) from several Chinese localities (Zhejiang: Wenzhou, Siming-shan; Foochow to Kuatun), this Vietnamese specimen (incorrectly labelled in ZISP collection “*Cicindela oberthuri* Fleut., Kabakov det. II. 1964”) has green, instead of cupric-red, metallic parts of head, pronotum and elytra, and as a matter of fact it is a bit reminiscent of *C. fleutiauxi* (W. Horn, 1915) (= *oberthuri* Fleutiaux, 1893). However, the individual or subspecific value of such characters cannot, of course, be determined based on a single specimen only.

Table. Checklist of tiger beetle species (Coleoptera: Cicindelidae) of Vietnam

Species	Reference
<i>Tricindyla (Tricindyla) pulchripes</i> White, 1844	Naviaux, 2002
<i>Tricindyla (Tricindyla) stricticeps</i> Chaudoir, 1864	Naviaux, 2002
<i>Tricindyla (Tricindyla) ledouxii</i> Naviaux, 2002 *	Naviaux, 2002
<i>Tricindyla (Tricindyla) deuvei</i> Naviaux, 2002 *	Naviaux, 2002
<i>Tricindyla (Tricindyla) distincta</i> Fleutiaux, 1893	Naviaux, 2002
<i>Tricindyla (Tricindyla) mourzinei</i> Naviaux, 2002 *	Naviaux, 2002
<i>Tricindyla (Tricindyla) gestroi</i> Fleutiaux, 1920	Naviaux, 2002
<i>Tricindyla (Tricindyla) ovaligrossa</i> W. Horn, 1922	Naviaux, 2002
<i>Tricindyla (Tricindyla) mellyi</i> Chaudoir, 1850	Naviaux, 2002
<i>Tricindyla (Tricindyla) annulicornis</i> Schmidt-Goebel, 1846	Naviaux, 2002
<i>Tricindyla (Tricindyla) proxima</i> Fleutiaux, 1893	Naviaux, 2002
<i>Protocollyris grossepunctata</i> (W. Horn, 1935)	Naviaux, 1995a
<i>Protocollyris annamensis</i> Naviaux, 1996 *	Naviaux, 1996a, 2004
<i>Neocollyris (Brachycollyris) brevis</i> Naviaux, 1994 *	Naviaux, 1995a
<i>Neocollyris (Isocollyris) grandisubtilis</i> (W. Horn, 1935)	Naviaux, 1995a
<i>Neocollyris (Isocollyris) fruhstorferi</i> (W. Horn, 1902)	Naviaux, 1995a
<i>Neocollyris (Isocollyris) resplendens</i> (W. Horn, 1902) *	Naviaux, 1995a
<i>Neocollyris (Isocollyris) grandivadosa</i> (W. Horn, 1935) *	Naviaux, 1995a, 2004
<i>Neocollyris (Isocollyris) septentrionalis</i> Naviaux, 1999 *	Naviaux, 1999, 2004
<i>Neocollyris (Isocollyris) purpurascens</i> Naviaux, 1992 *	Naviaux, 1995a
<i>Neocollyris (Isocollyris) convergentefrontalis</i> (W. Horn, 1923) *	Naviaux, 1995a
<i>Neocollyris (Isocollyris) auripennis</i> (W. Horn, 1902) *	Naviaux, 1995a
<i>Neocollyris (Isocollyris) moravecii</i> Naviaux, 2004 *	Naviaux, 2004
<i>Neocollyris (Isocollyris) modica</i> Naviaux, 1994 *	Naviaux, 1995a
<i>Neocollyris (Paracollyris) brevipronotalis</i> (W. Horn, 1929) *	Naviaux, 1995a
<i>Neocollyris (Neocollyris) b. bonellii</i> (Guérin, 1834)	Naviaux, 1995a

- Neocollyris (Neocollyris) moesta* (Schmidt-Goebel, 1846) Naviaux, 1995a
Neocollyris (Neocollyris) cruentata (Schmidt-Goebel, 1846) Naviaux, 1995a
Neocollyris (Neocollyris) stiengensis (W. Horn, 1914) * Naviaux, 1995a
Neocollyris (Neocollyris) impressifrons (Chaudoir, 1864) Naviaux, 1995a¹
Neocollyris (Neocollyris) o. orichalcina (W. Horn, 1896) Naviaux, 1995a
Neocollyris (Neocollyris) intermedia Naviaux, 1994 Naviaux, 1995a, 2004
Neocollyris (Neocollyris) fuscitarsis (Schmidt-Goebel, 1846) Naviaux, 1995a
Neocollyris (Neocollyris) compacta Naviaux 1994 * Naviaux, 1995a
Neocollyris (Neocollyris) deveui Naviaux, 1991 * Naviaux, 1995a
Neocollyris (Neocollyris) similis (Lesne, 1891) Naviaux, 1995a
Neocollyris (Neocollyris) rufipalpis (Chaudoir, 1864) Sawada & Wiesner, 1999a, 2002
Neocollyris (Neocollyris) pseudosignata Naviaux, 1995 Naviaux, 1995a, 2004
Neocollyris (Orthocollyris) crassicornis (Dejean, 1825) Naviaux, 1995a
Neocollyris (Orthocollyris) karli Naviaux, 1996 * Naviaux, 1996a, 2004
Neocollyris (Orthocollyris) labiopalpalis (W. Horn, 1932) * Naviaux, 1995a
Neocollyris (Orthocollyris) rapillyi Naviaux, 1992 * Naviaux, 1995a
Neocollyris (Leptocollyris) l. linearis (Schmidt-Goebel, 1846) Naviaux, 1995a
Neocollyris (Leptocollyris) discretogrossesculpta (W. Horn, 1942) Naviaux, 1995a
Neocollyris (Leptocollyris) concinna Naviaux, 1995 * Naviaux, 1995c, 2004
Neocollyris (Leptocollyris) varicornis (Chaudoir, 1864) Naviaux, 1995a
Neocollyris (Leptocollyris) juergenwiesneri Naviaux, 1995 * Naviaux, 1995c, 2004
Neocollyris (Leptocollyris) v. variitarsis (Chaudoir, 1860) Naviaux, 1995a
Neocollyris (Leptocollyris) ampliata Naviaux, 1995 * Naviaux, 1995c, 2004
Neocollyris (Leptocollyris) cylindripennis (Chaudoir, 1864) Naviaux, 1995a
Neocollyris (Leptocollyris) globicollis Naviaux, 1995 * Naviaux, 1995c, 2004
Neocollyris (Mesocollyris) kabakovi Naviaux & Matalin, 2003 * Naviaux & Matalin, 2003
Neocollyris (Stenocollyris) compressicollis (W. Horn, 1909) Naviaux, 1995a
Neocollyris (Stenocollyris) signata (W. Horn, 1902) Naviaux, 1995a
Neocollyris (Pachycollyris) bipartita unicolor (W. Horn, 1935) Naviaux, 1995a
Neocollyris (Pachycollyris) inflata Naviaux, 1999 * Naviaux, 1999, 2004
Neocollyris (Pachycollyris) bicolor (W. Horn, 1902) * Naviaux, 1995a
Neocollyris (Pachycollyris) feae vitalisi (W. Horn, 1924) Naviaux, 1995a
Neocollyris (Pachycollyris) biimpressa (W. Horn, 1937) * Naviaux, 1995a
Neocollyris (Pachycollyris) vietnamensis Mandl, 1970 * Naviaux, 1995a, sub *rivalieri* Nav., 1995c, 2004
Neocollyris (Pachycollyris) sawadai Naviaux, 1991 * Naviaux, 1995a
Neocollyris (Pachycollyris) murzini Naviaux, 1992 * Naviaux, 1995a
Neocollyris (Pachycollyris) strangulata Naviaux, 1991 Naviaux, 1995a
Neocollyris (Pachycollyris) mouhotii nagaii Naviaux & Sawada, 1992 Naviaux, 1995a²
Neocollyris (Pachycollyris) pseudocontracta (W. Horn, 1937) * Naviaux, 1995a
Neocollyris (Pachycollyris) nitida Naviaux, 1995 * Naviaux, 1995a
Collyris mniszewi Chaudoir, 1864 Naviaux, 1995a
Prothyma (Paraprothyma) exornata Schmidt-Goebel, 1846 Rivalier, 1964; Wiesner, 1992
Prothyma (Paraprothyma) s. schmidtgoebeli W. Horn, 1895 Rivalier, 1964; Wiesner, 1992
Prothyma (Genoprothyma) heteromalla (Macleay, 1825) Rivalier, 1964; Wiesner, 1992
Prothyma (Genoprothyma) b. bouvieri W. Horn, 1896 Rivalier, 1964; Wiesner, 1992
Prothyma (Genoprothyma) annamica Deuve, 2002 * Deuve, 2002
Prothyma (Genoprothyma) f. fallaciosa Rivalier, 1964 Wiesner, 1992
Heptodonta pulchella (Hope, 1831) Wiesner, 1992
Heptodonta eugenia Chaudoir, 1865 Wiesner, 1992
Pronyssa nodicollis Bates, 1874 Wiesner, 1992; Sawada & Wiesner, 1999b
Therates clavicornis W. Horn, 1902 * Wiesner, 1992
Therates confluens Wiesner, 1988 Sawada & Wiesner, 2003³
Therates differens Sawada & Wiesner, 1999a Cassola, this paper
Therates rugifer W. Horn, 1902 Wiesner, 1992
Therates topali Mandl, 1972 * Wiesner, 1992
Therates probsti Wiesner, 1988 Wiesner, 1992
Therates tonkinensis W. Horn, 1902 * Wiesner, 1992
Therates angustatus W. Horn, 1902 * Wiesner, 1992
Therates rugosoangustatus W. Horn, 1929 * Wiesner, 1992
Therates fruhstorferi W. Horn, 1902 Wiesner, 1992
Calochroa f. flavomaculata (Hope, 1831) Wiesner, 1992
Calochroa pseudosiamensis (W. Horn, 1913) Wiesner, 1992; Sawada & Wiesner, 1999a, 2002

<i>Calochroa elegantula</i> (Doktouroff, 1882)	Wiesner, 1992; Sawada & Wiesner, 1999a, 2002
<i>Calochroa interruptofasciata</i> (Schmidt-Goebel, 1846)	Wiesner, 1992
<i>Calochroa harmandi</i> (Fleutiaux, 1893)	Wiesner, 1992
<i>Calochroa bramani</i> (Doktouroff, 1882)	Wiesner, 1992
<i>Cicindela (Sophiodela) c. chinensis</i> De Geer, 1774	Wiesner, 1992
<i>Calomera brevipilosa</i> (W. Horn, 1908)	Cassola, this paper
<i>Calomera a. angulata</i> (Fabricius, 1798)	Wiesner, 1992
<i>Calomera plumigera scoliographa</i> (Rivalier, 1953)	Wiesner, 1992
<i>Calomera f. funerea</i> (Macleay, 1825)	Wiesner, 1992
<i>Cosmodela separata</i> (Fleutiaux, 1893)	Cassola, this paper
<i>Cosmodela duponti</i> (Dejean, 1826)	Wiesner, 1992
<i>Cosmodela aurulenta juxtata</i> (Acciavatti & Pearson, 1989)	Wiesner, 1992; Sawada & Wiesner, 2002
<i>Cosmodela virgula</i> (Fleutiaux, 1893)	Wiesner, 1992
<i>Lophyra (Lophyra) fuliginosa</i> (Dejean, 1826)	Wiesner, 1992
<i>Lophyra (Lophyra) c. cancellata</i> (Dejean, 1825)	Wiesner, 1992
<i>Lophyra (Lophyra) kuznetzowi</i> (Tscherkasov 1992) *	Tscherkasov, 1992; Werner 1992, sub <i>L. murzini</i>
<i>Lophyra (Spilodia) s. striolata</i> (Illiger, 1800)	Wiesner, 1992
<i>Lophyra (Spilodia) lineifrons</i> (Chaudoir, 1865)	Wiesner, 1992
<i>Naviauxella rufovittata</i> Cassola & Werner, 1995 *	Cassola & Werner, 1995
<i>Naviauxella snowiana</i> Cassola, 2002 *	Cassola, 2002
<i>Naviauxella acciavattii</i> Naviaux, 1996 *	Naviaux, 1996b
<i>Naviauxella labiosa</i> Naviaux, 1996 *	Naviaux, 1996b
<i>Probstia triumphalis</i> (W. Horn, 1902)	Wiesner, 1992; Cassola, 2002
<i>Cylindera (Cylindera) delavayi</i> (Fairmaire, 1886)	Wiesner, 1992
<i>Cylindera (Cylindera) pseudocylindriciformis</i> (W. Horn, 1913)	Horn, 1929 ⁴ ; Wiesner, 1992; Cassola, 2002b
<i>Cylindera (Verticina) antoni</i> Cassola & Probst, 1996	Cassola & Probst, 1996
<i>Cylindera (Ifasina) foveolata</i> (Schaum, 1863)	Wiesner, 1992
<i>Cylindera (Ifasina) viduata</i> (Fabricius, 1801)	Wiesner, 1992
<i>Cylindera (Ifasina) fallaciosa</i> (W. Horn, 1897)	Wiesner, 1992
<i>Cylindera (Ifasina) pronotalis</i> (W. Horn, 1922)	Wiesner, 1992
<i>Cylindera (Ifasina) s. spinolae</i> (Gestro, 1889)	Wiesner, 1992; Sawada & Wiesner, 1999a
<i>Cylindera (Ifasina) p. psilica</i> (Bates, 1866)	Wiesner, 1992
<i>Cylindera (Ifasina) lesnei</i> (Babault, 1923) *	Wiesner, 1992
<i>Cylindera (Ifasina) decempunctata</i> (Dejean, 1825)	Wiesner, 1992; Sawada & Wiesner, 1999a, 2002
<i>Cylindera (Ifasina) k. kaleea</i> (Bates, 1866)	Wiesner, 1992
<i>Cylindera (Eugrapha) minuta</i> (Olivier, 1790)	Wiesner, 1992
<i>Cylindera (Eugrapha) mutata</i> (Fleutiaux, 1893)	Wiesner, 1992
<i>Myriochile (Myriochile) sinica</i> (Fleutiaux, 1899)	Wiesner, 1992
<i>Myriochile (Myriochile) s. speculifera</i> (Chevrolat, 1845)	Wiesner, 1992
<i>Abroscelis a. anchoralis</i> (Chevrolat, 1845)	Wiesner, 1992
<i>Abroscelis t. tenuipes</i> (Dejean, 1826)	Wiesner, 1992
<i>Callytron nivicinctum</i> (Chevrolat, 1845)	Wiesner, 1992
<i>Callytron andersoni</i> (Gestro, 1889)	Wiesner, 1992
<i>Enantiola hewittii</i> (W. Horn, 1908)	Wiesner, 1992

Notes. * Endemic.¹ Described from “Cochinchine”, thus from southern Vietnam. ² Endemic subspecies. ³ Described from peninsular Malaysia, this species is not known from the intervening areas. Therefore, this record deserves confirmation. ⁴ Recorded from Vietnam (Chapa), most probably erroneously (Cassola, 2002b).

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