

Chloropid flies of the genus *Cadrema* (Diptera: Chloropidae) of Thailand with description of a new species

Злаковые мухи рода *Cadrema* (Diptera: Chloropidae) из Таиланда с описанием нового вида

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Chloropid flies of the genus *Cadrema* Walker occurring Thailand are reviewed. *Cadrema thailandica* sp. nov. is described. *Cadrema minor guizhouensis* Yang & Yang, 1990 is synonymized with the nominate subspecies. Variation in the shape and number of black marks on the scutum in both species is discussed and illustrated.

Дан обзор злаковых мух рода *Cadrema* Walker Таиланда. Описан новый вид *C. thailandica*. Подвид *C. minor guizhouensis* Yang & Yang, 1990 сведен в синонимы к номинативному. Обсуждаются и иллюстрируются вариации формы и количества черных пятен на скutуме у обоих видов.

Key words: Vietnam, Thailand, Diptera, Chloropidae, *Cadrema*, new species

Ключевые слова: Вьетнам, Таиланд, Diptera, Chloropidae, *Cadrema*, новый вид

INTRODUCTION

Numerous chloropid flies of the genus *Cadrema* Walker, 1859 were collected in Thailand and sent to me in the scope of the TIGER project. Flies belonging to *Cadrema* are the second most numerous among chloropids collected from Thailand in the scope of this project, after the members of the genus *Rhodesiella* Adams, 1905. Seventeen species of the genus *Cadrema* are listed in the Catalog of the Diptera of the Oriental Region, but only one, *C. minor* (de Meijere, 1908) was recorded from Thailand, and no species were known from Vietnam (Sabrosky, 1977). Later on, Nartshuk (1992) recorded *C. minor* from Vietnam. The Thailand material includes two species of *Cadrema*, one of which is described here as a new species. Both species were collected with Malaise and pan traps, and *C. minor* was found also in a litter sample.

TAXONOMIC PART

Cadrema (Anadrema) minor

(de Meijere, 1908)
(Figs 1, 2, 18, 19)

de Meijere, 1908: 168 (as *Hippelates*) – Java (Semarang).

Becker, 1911: 105 – Java, India (Bombay), Singapore, Taiwan.

Becker & de Meijere, 1913: 295 – Java (Semarang).

Lamb, 1918: 387 – Sri Lanka.

Frey, 1923: 100 – Philippines (Luzon).

Becker, 1924: 121 – Taiwan.

Duda, 1930: 279 – Taiwan.

Duda, 1934: 61, 62 (as *Liohippelates*) – minor var. *nigritibia* – Sumatra.

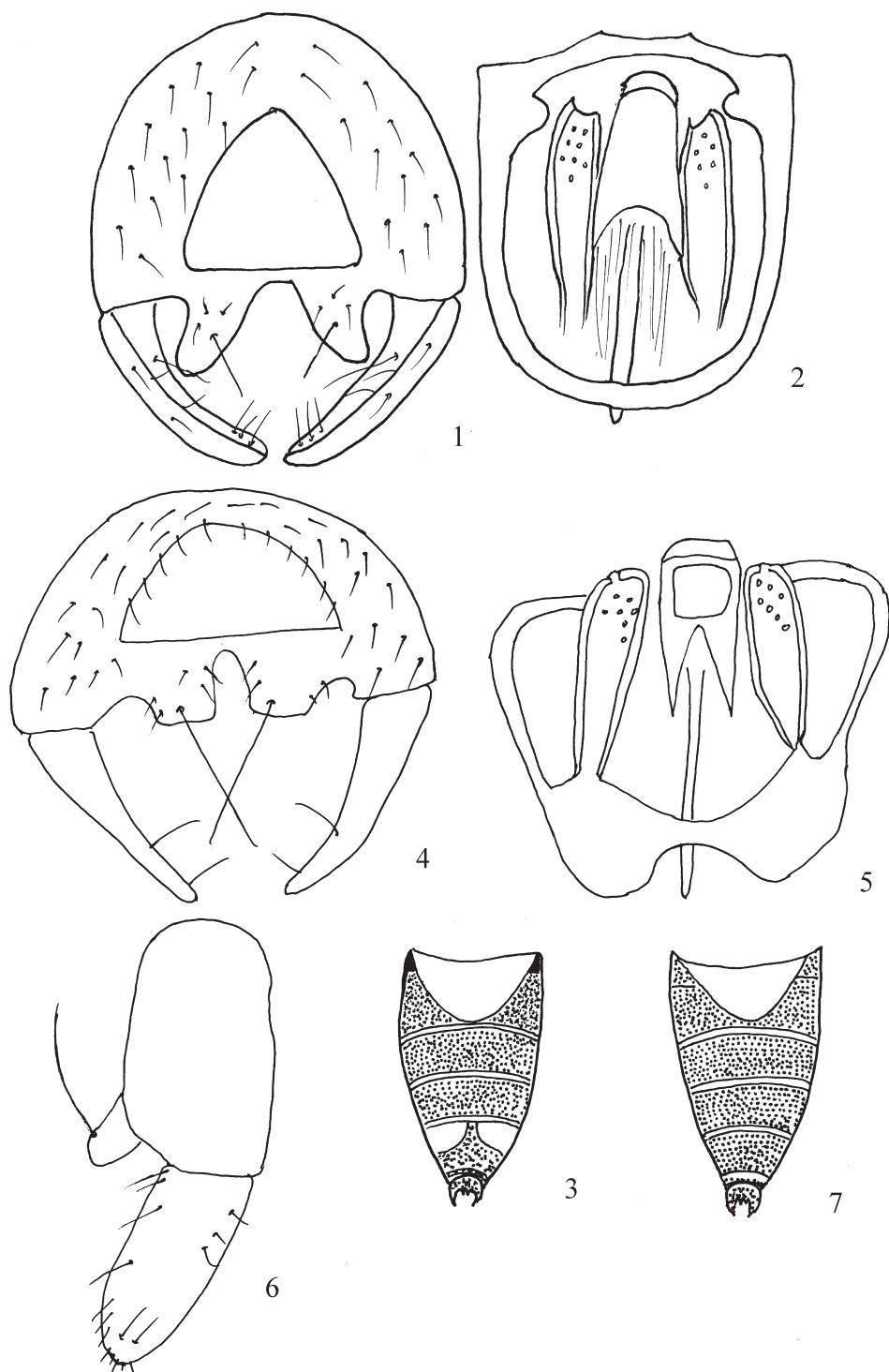
Hennig, 1941: 166 – Taiwan.

Nishijima, 1960: 126 – the Amami Islands (Japan).

Sabrosky, 1977: 279 – many Oriental records, including Thailand.

Kanmiya, 1983: 69 – Japan (Okinawa, Ishigaki Is.); figures of male genitalia and hind tibia.

Kanmiya, 1989: 165 – Taiwan.



Figs 1–7. Male genitalia and abdomen of *Cadrema*. **1–3.** *C. minima*: 1, epandrium, posterior view; 2, hypandrium; 3, abdomen, dorsal view; **4–7.** *C. thailandica* sp. nov.: 4, epandrium, posterior view; 5, hypandrium; 6, epandrium, lateral view; 7, abdomen, dorsal view.

Yang & Yang, 1990: 3 – China (Guizhou) – *C. minor guizhouensis* (**new synonym**).

Nartshuk, 1992: 83 – Vietnam; figure of hind leg.

Yang & Yang, 1996: 562 – China.

Nartshuk, 2002: 252 – Sri Lanka, India (Bengal), Mauritius; figures of male genitalia, scutum and antenna.

Vietnam. Hanoi, park, 14 Oct. 1990, Belokobylskij, 1 female.

Thailand. Khonkaen Province. Phu Pha Man National Park: T2, Disturb (Tum Moob Cave), 16°44.837' N 102°0.160' E, 296 m, 13–20 June 2006, Malaise trap, Rabeab Phatai, 2 females; T6, Num Pood, 16°44.902' N 102°0.182' E, 245 m, 14–21 June 2006, Malaise trap, Rabeab Phatai, 2 females; T7, Disturb (Tum Moob Cave), 16°43.241' N 101°59.580' E, 296 m, 6–13 June 2006, Malaise trap, Vinaai Boonma, 1 male, 1 female. Nam Pong National Park: T104, office, 16°37.341' N, 102°34.467' E, 26 July 2006–2 Aug. 2006, Malaise traps, Khamphol Jaidee, 4 males, 10 females; T111, office, 16°37.377' N 102°34.454' E, 19–26 July 2006, Malaise traps, Khamphol Jaidee, 11 males, 6 females.

Chaiyaphum Province. Tat Tone National Park: T10, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 25–27 June 2006, Malaise trap, Michael Sharkey, 110 males, 101 females.

T14, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 26 June 2006, Malaise trap, Somchai Chatchumnan, 14 males, 12 females; T16, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 28 June 2006, Malaise trap, Chalermphon Nichumnan, 6 males, 5 females; T18, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 28 June 2006, Malaise trap, Pong Sandown, 13 males, 7 females; T19, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 28 June 2006, Malaise trap, Vinlon Khongnara, 10 males, 2 females; T20, dry dipterocarp forest, 15°59.037' N, 102°2.103' E, 250 m, 28 June 2006, Malaise trap, Khamphol Jaidee, 1 female; T22, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 26 June 2006, Malaise trap, Boonnak Nongpeu, 2 males, 2 females; T23, dry dipterocarp forest, 15°59.037' N, 02°2.103' E, 250 m, 28 June 2006, Malaise trap, Patikhom Thumtip, 13 males, 2 females; T24, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 28 June 2006, Malaise trap, Manop Ngoychanee, 1 male, 2 females; T25, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 28 June 2006, Malaise trap, Tawit Charuphan, 4 males, 4 females; T27, dry dipterocarp forest, 15°59.037' N, 102°2.103' E,

250 m, 26 June 2006, Malaise trap, Lumyai Ittichan, 12 males, 12 females; T30, dry dipterocarp forest, 15°59.037' N, 102°2.103' E, 250 m, 29 June 2006, Malaise trap, Lumyai Ittichan, 15 males, 8 females; T32, dry dipterocarp forest, 15°59.037' N 102°2.103' E, 250 m, 28 June 2006, Malaise trap, Lumyai Ittichan, 4 males, 2 females; T212, near stream, 15°58.538' N 102°02.153' E, 7 July 2006, pan traps, Orawan Budsawong, 1 female; T215, near stream, 15°58.538' N 102°02.153' E, 10 July 2006, pan traps, Orawan Budsawong, 2 females; T216, near stream, 15°58.538' N 102°02.153' E, 11 July 2006, pan traps, Tawit Jaruphan, 1 female; T220, Phu Hang Sing, 15°58.723' N 102°02.231' E, 5 July 2006–12 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 1 male, 2 females; T221, near stream, 15°58.771' N 102°02.397' E, 12–19 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 1 male; T222, near stream, 15°58.538' N 102°02.153' E, 12–19 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 8 males, 12 females; T223, Phu Hang Sing, 15°58.723' N 102°02.231' E, 12–19 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 86 males, 35 females; T224, near stream, 15°58.771' N 102°02.397' E, 19–26 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 2 females; T225, near stream, 15°58.538' N 102°02.153' E, 19–26 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 2 females; T226, Phu Hang Sing, 15°58.723' N 102°02.231' E, 19–26 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 59 males, 86 females; T228, near stream, 15°58.538' N 102°02.153' E, 26 July – 7 Aug. 2006, Malaise traps, T. Jaruphan & O. Budsawong, 1 female; T229, Phu Hang Sing, 15°58.723' N 102°02.231' E, 26 July – 7 Aug. 2006, Malaise traps, T. Jaruphan & O. Budsawong, 16 males, 6 females; T541, Lam Pa Tao / dry evergreen forest head water, 15°58.486' N 102°02.239' E, 270 m, 8–9 Aug. 2006, pan traps, Tawit Jaruphan & Orawan Budsawong, 2 females; T546, Lam Pa Tao / dry evergreen forest head water, 15°58.486' N 102°02.239' E, 270 m, 5–12 Aug. 2006, Malaise trap, Tawit Jaruphan & Orawan Budsawong, 1 male, 1 female; T547, nursery near head water, 15°58.344' N 102°02.169' E, 257 m, 5–12 Aug. 2006, Malaise trap, Tawit Jaruphan & Orawan Budsawong, 3 males, 5 females; T553, nursery near head water, 15°58.344' N 102°02.169' E, 257 m, 19–26 Aug. 2006, Malaise trap, Tawit Jaruphan & Orawan

Budsawong, 1 male, 2 females; T556, Tat Tone NP, nursery near head water, $15^{\circ}58.344'N$ $102^{\circ}02.169'E$, 257 m, 26 Aug. – 5 Sept. 2006, Malaise trap, Tawit Jaruphan & Orawan Budsawong, 3 females. *Pa Hin Ngam National Park*: T329, creek at Tung Dok Grajeaw, $15^{\circ}38.391'N$ $101^{\circ}23.609'E$, 750 m, 6–12 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 3 males, 6 females; T330, car park at Tung Dok Grajeaw, $15^{\circ}38.438'N$ $101^{\circ}23.576'E$, 780 m, 6–12 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 1 male, 2 females; T331, Tung Dok Grajeaw, $15^{\circ}38.208'N$ $101^{\circ}23.556'E$, 720 m, 6–12 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 3 males, 2 females; T332, creek at Tung Dok Grajeaw, $15^{\circ}38.391'N$ $101^{\circ}23.609'E$, 750 m, 12–18 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 1 male; T334, Tung Dok Grajeaw, $15^{\circ}38.208'N$ $101^{\circ}23.556'E$, 720 m, 12–18 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 2 males; T336, car park at Tung Dok Grajeaw, $15^{\circ}38.438'N$ $101^{\circ}23.576'E$, 780 m, 19–24 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 1 female; T338, creek at Tung Dok Grajeaw, $15^{\circ}38.391'N$ $101^{\circ}23.609'E$, 750 m, 24–30 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 5 males, 4 females; T340, Tung Dok Grajeaw, $15^{\circ}38.208'N$ $101^{\circ}23.556'E$, 720 m, 24–30 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 1 female; T439, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.132'N$ $101^{\circ}23.922'E$, 698 m, 11–12 Aug. 2006, pan traps, Katae Sa-nog & Buakaw Adnafai, 2 males; T440, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.100'N$ $101^{\circ}23.857'E$, 700 m, 5–11 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 male, 2 females; T441, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.132'N$ $101^{\circ}23.922'E$, 698 m, 5–11 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 4 males, 6 females; T442, dry dipterocarp, $15^{\circ}38.099'N$ $101^{\circ}23.921'E$, 698 m, 5–11 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 male, 20 females; T443, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.100'N$ $101^{\circ}23.857'E$, 700 m, 11–18 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 2 males; T444, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.132'N$ $101^{\circ}23.922'E$, 698 m, 11–18 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 2 males, 4 females; T445, dry dipterocarp, $15^{\circ}38.099'N$ $101^{\circ}23.921'E$, 698 m, 11–18 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 female; T446, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.100'N$ $101^{\circ}23.857'E$, 700 m, 18–24 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 8 females; T447, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.132'N$ $101^{\circ}23.922'E$, 698 m, 18–24 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 2 males, 2 females; T449, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.100'N$ $101^{\circ}23.857'E$, 700 m, 24–30 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 6 males, 3 females; T450, ecotone between mix deciduous and dry dipterocarp, $15^{\circ}38.132'N$ $101^{\circ}23.922'E$, 698 m, 24–30 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 3 males, 4 females; T451, dry dipterocarp, $15^{\circ}38.099'N$ $101^{\circ}23.921'E$, 698 m, 24–30 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 4 females; T1024, dry evergreen forest at waterfall, $15^{\circ}34.802'N$ $101^{\circ}25.990'E$, 430 m, 12–13 Nov. 2006, pan traps, Katae Sa-nog & Buakaw Adnafai, 1 female; T1025, dry evergreen forest at waterfall, $15^{\circ}34.802'N$ $101^{\circ}25.990'E$, 430 m, 13–14 Nov. 2006, pan traps, Katae Sa-nog & Buakaw Adnafai, 1 female; T1026, dry evergreen forest at waterfall, $15^{\circ}34.802'N$ $101^{\circ}25.990'E$, 430 m, 14–15 Nov. 2006, pan traps, Katae Sa-nog & Buakaw Adnafai, 26 males, 58 females; T1031, ecotone between mixed deciduous and dry dipterocarp forest, $15^{\circ}34.913'N$ $101^{\circ}25.658'E$, 444 m, 10–16 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 12 males, 22 females; T1032, dry evergreen forest at waterfall, $15^{\circ}34.802'N$ $101^{\circ}25.990'E$, 430 m, 10–16 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 male; T1034, ecotone between mixed deciduous and dry dipterocarp forest, $15^{\circ}34.913'N$ $101^{\circ}25.658'E$, 444 m, 16–22 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 13 males, 6 females; T1035, dry evergreen forest at waterfall, $15^{\circ}34.802'N$ $101^{\circ}25.990'E$, 430 m, 16–22 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 7 males, 7 females; T1037, ecotone between mixed deciduous and dry dipterocarp forest, $15^{\circ}34.913'N$ $101^{\circ}25.658'E$, 444 m, 22–28 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 10 males, 17 females; T1038, dry evergreen forest at waterfall, $15^{\circ}34.802'N$ $101^{\circ}25.990'E$, 430 m, 22–28 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 male, 1 female; T1039, mixed deciduous forest, $15^{\circ}34.686'N$ $101^{\circ}26.082'E$, 419 m, 22–28 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 female; T1040, ecotone between mixed deciduous and

dry dipterocarp forest, 15°34.913'N 101°25.658'E, 444 m, 28 Nov. – 4 Dec. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 2 males, 7 females.

Chiang Mai Province. *Doi Inthanon National Park:* T51, Vachiratharn Falls, 18°32.311'N 98°36.048'E, 700 m, 2–8 July 2006, Malaise trap, Y. Areeluck, 1 male; T68, Vachiratharn Falls, 18°32.311'N 98°36.048'E, 700 m, 15–22 July 2006, Malaise trap, Y. Areeluck, 1 male; T242, Vachiratharn Falls, 18°32.311'N 98°36.048'E, 700 m, 6–13 Sept. 2006, Malaise trap, Y. Areeluck, 1 male; T252, summit marsh, 18°35.361'N 98°29.157'E, 2500 m, 13–21 Sept. 2006, Malaise trap, Y. Areeluck, 1 female; T345, summit marsh, 18°35.361'N 98°29.157'E, 2500 m, 21–27 Sept. 2006, Malaise trap, Y. Areeluck, 1 male, 4 females.

Nong Bua Lampoo Province. *Phu Kao-Phu Phan Kham National Park:* T76, 16°48.576'N 102°36.869'E, 8 July 2006, pan traps, Rakkiat Singhapit, 7 females.

Nakhon Nayok Province. *Khao Yai National Park:* T143, behind vegetable garden, 14°24.761'N, 101°22.815'E, 5–12 July 2006, Malaise traps, Pong Sandao, 1 male; T145, behind football field, 14°24.619'N, 101°22.778'E, 12–19 July 2006, Malaise traps, Pong Sandao, 1 male, 2 females; T997, moist evergreen forest near reservoir, 14°27.119'N 101°21.482'E, 699 m, 19–26 Nov. 2006, Malaise trap, Wirat Sookkho, 1 female.

Phetchabun Province. *Khao Kho National Park:* T163, office, 16°39.479'N, 101°08.105'E, 5–12 July 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 11 males, 8 females, T166, office, 16°39.479'N 101°08.105'E, 12–19 July 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 5 males, 1 female; T167, office, 16°39.550'N, 101°08.123'E, 12–19 July 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 7 males, 11 female; T172, office, 16°39.479'N 101°08.105'E, 26 July – 2 Aug. 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 1 male, 1 female; T578, view point at Klump stream, 16°39.120'N 101°07.810'E, 246 m, 9–12 Sept. 2006, litter sample, Somchai Chatchumnan & Saink Singtong, 1 female; T588, view point at Klump stream, 16°39.120'N 101°07.810'E, 246 m, 5–12 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 1 female; T589, Thanthip Waterfall, 16°39.087'N 101°07.777'E, 210 m, 5–12 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 4 females; T591, view point at Klump stream, 16°39.120'N

101°07.810'E, 246 m, 12–19 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 2 females; T597, view point at Klump stream, 16°39.120'N 101°07.810'E, 246 m, 26 Sept. – 2 Oct. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 1 male; T970, mixed deciduous forest at Ta Phol River, 16°32.546'N 101°02.501'E, 274 m, 5–12 Nov. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 1 male. *Nam Nao National Park:* T264, helicopter landing ground, 16°43.156'N 101°35.118'E, 890 m, 6–7 July 2006, pan traps, Noopean Hongyothi & Leng Janteab, 1 female; T271, helicopter landing ground, 16°43.184'N 101°35.137'E, 875 m, 10–17 July 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 female; T275, helicopter landing ground, 16°43.156'N 101°35.118'E, 890 m, 17–24 July 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 female; T277, helicopter landing ground, 16°43.184'N 101°35.137'E, 875 m, 24–30 July 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 female; T278, helicopter landing ground, 16°43.156'N 101°35.118'E, 890 m, 24–30 July 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 male, 2 females; T279, helicopter landing ground, 16°43.113'N 101°35.134'E, 889 m, 24–30 July 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 3 males, 6 females; T413, Tham Pra Laad forest unit, 16°44.963'N 101°27.833'E, 711 m, 31 July – 1 Aug. 2006, pan traps, Noopean Hongyothi & Leng Janteab, 1 female; T420, Tham Pra Laad forest unit, 16°44.999'N 101°27.804'E, 715 m, 31 July – 7 Aug. 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 male, 5 females; T421, Tham Pra Laad forest unit, 16°44.963'N 101°27.833'E, 711 m, 31 July – 7 Aug. 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 male, 11 female; T422, Tham Pra Laad forest unit, 16°44.986'N 101°27.874'E, 711 m, 31 July – 7 Aug. 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 male, 3 females; T424, Tham Pra Laad forest unit, 16°44.963'N 101°27.833'E, 711 m, 7–14 Aug. 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 4 females; T425, Tham Pra Laad forest unit, 16°44.986'N 101°27.874'E, 711 m, 7–14 Aug. 2006, Malaise trap, Noopean Hongyothi & Leng Janteab, 1 male, 4 females; T427, Tham Pra Laad forest unit, 16°44.963'N 101°27.833'E, 711 m, 14–21 Aug. 2006, Malaise trap, Leng Janteab, 1 male, 5 females; T429, Tham Pra Laad forest unit, 16°44.999'N 101°27.804'E, 715 m, 21–28 Aug. 2006, Malaise trap, Leng

Janteab, 1 male, 3 females; T430, Tham Pra Laad forest unit, 16°44.963'N 101°27.833'E, 711 m, 21–28 Aug. 2006, Malaise trap, Noopean Hongyothi, 1 male, 5 females.

Sakon Nakhon Province. *Phu Phan National Park:* T191, behind office, 17°03.521'N 103°58.450'E, 10 July 2006, pan traps, Sailom Tongboonchai, 2 Sept. 2006, 2 females; T196, behind office, 17°03.521'N 103°58.450'E, 15 July 2006, pan traps, Sailom Tongboonchai, 2 females; T197, behind office, 17°03.543'N 103°58.452'E, 8–14 July 2006, Malaise traps, Winlon Kongnara, 1 male; T198, behind office, 17°03.521'N 103°58.450'E, 8–14 July 2006, Malaise traps, Winlon Kongnara, 5 females; T200, behind office, 17°03.543'N 103°58.452'E, 15–21 July 2006, Malaise traps, Sailom Tongboonchai, 2 females; T202, behind office, 17°03.488'N 103°58.497'E, 15–21 July 2006, Malaise traps, Sailom Tongboonchai, 1 male, 1 female; T204, behind office, 17°03.521'N 103°58.450'E, 21–27 July 2006, Malaise traps, Sailom Tongboonchai, 24 males, 14 females; T205, behind office, 17°03.488'N 103°58.497'E, 21–27 July 2006, Malaise traps, Sailom Tongboonchai, 1 male, 4 females; T206, behind office, 17°03.543'N 103°58.452'E, 27 July 2006–2 Aug. 2006, Malaise traps, Winlon Kongnara, 4 males, 1 female; T207, behind office, 17°03.521'N 103°58.450'E, 27 July 2006–2 Aug. 2006, Malaise traps, Winlon Kongnara, 1 male; T208, behind office, 17°03.488'N 103°58.497'E, 27 July 2006–2 Aug. 2006, Malaise traps, Sailom Tongboonchai, 2 females. *Phu Pha Yon National Park:* T282, reservoir, 16°55.655'N 104°10.658'E, 280 m, 5–6 July 2006, pan traps, Manop Ngoyjansri & Chatree Cheaukamjan, 1 female; T284, reservoir, 16°55.655'N 104°10.658'E, 280 m, 7–8 July 2006, pan traps, Manop Ngoyjansri & Chatree Cheaukamjan, 2 males; T286, reservoir, 16°55.655'N 104°10.658'E, 280 m, 9–10 July 2006, pan traps, Manop Ngoyjansri & Chatree Cheaukamjan, 2 females; T288, reservoir, 16°55.655'N 104°10.658'E, 280 m, 11–12 July 2006, pan traps, Manop Ngoyjansri & Chatree Cheaukamjan, 1 male, 2 females; T289, channel, 16°55.639'N 104°10.748'E, 295 m, 5–11 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 3 males, 4 females; T290, reservoir, 16°55.655'N 104°10.658'E, 280 m, 5–11 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 9 males, 20 females; T291, deciduous dipterocarp forest, 16°55.449'N 104°10.757'E, 295 m, 5–11 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan,

16 males, 21 female; T292, channel, 16°55.639'N 104°10.748'E, 295 m, 11–17 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 3 males, 19 females; T293, reservoir, 16°55.655'N 104°10.658'E, 280 m, 11–17 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 23 males, 38 females; T295, channel, 16°55.639'N 104°10.748'E, 295 m, 17–23 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 1 male, 6 females; T296, reservoir, 16°55.655'N 104°10.658'E, 280 m, 17–23 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 2 males, 4 females; T297, deciduous dipterocarp forest, 16°55.449'N 104°10.757'E, 295 m, 17–23 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 22 males, 24 females; T298, channel, 16°55.639'N 104°10.748'E, 295 m, 23–29 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 4 males, 3 females; T299, reservoir, 16°55.655'N 104°10.658'E, 280 m, 23–29 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 2 males, 2 females; T300, deciduous dipterocarp forest, 16°55.449'N 104°10.757'E, 295 m, 23–29 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 14 females, 13 females; T506, behind Huay Wien Prai forest unit, 17°06.810'N 104°00.318'E, 318 m, 8–15 Aug. 2006, Malaise trap, Vinlon Khongnara, 1 female; T512, Behind Huay Wien Prai Forest Unit, 17°06.810'N 104°00.318'E, 318 m, 21–27 Aug. 2006, Malaise trap, Sailom Tongboonchai, 1 female; T619, Kam Hom Waterfall at Haew Sin Chai, 17°07.415'N 104°01.179'E, 347 m, 22–30 Sept. 2006, Malaise trap, Sailom Tongboonchai, 1 male, 1 female; T1094, creek at entrance of Huay Nam Pung forest unit, 16°54.630'N 103°54.266'E, 281 m, 6–13 Nov. 2006, Malaise trap, Sailom Tongboonchai, 1 female; T1095, forest near Huay Nam Pung Dam, 16°54.713'N 103°54.294'E, 289 m, 6–13 Nov. 2006, Malaise trap, Sailom Tongboonchai, 3 males, 4 females; T1096, creek at north end of Huay Nam Pung forest unit, 16°55.789'N 103°54.158'E, 305 m, 6–13 Nov. 2006, Malaise trap, Sailom Tongboonchai, 1 male; T1101, forest near Huay Nam Pung Dam, 16°54.713'N 103°54.294'E, 289 m, 19 Nov. 2006–25 Nov. 2006, Malaise trap, Sailom Tongboonchai, 1 female.

Loei Province. *Phu Ruea National Park:* T304, office, 17°28.826'N 101°21.330'E, 860 m, 6–7 July 2006, pan traps, Patikhom Tamtip, 1 female; T310, Subhnonghin, 17°28.772'N 101°21.308'E, 860 m, 5–12 July 2006, Malaise

trap, Patikhom Tamtip, 1 female; T312, office, 17°28.805'N 101°21.242'E, 870 m, 5–12 July 2006, Malaise trap, Patikhom Tamtip, 2 males; T313, Subhnonghin, 17°28.772'N 101°21.308'E, 860 m, 12–19 July 2006, Malaise trap, Patikhom Tamtip, 2 males, 5 females; T314, office, 17°28.826'N 101°21.330'E, 860 m, 12–19 July 2006, Malaise trap, Patikhom Tamtip, 32 males, 74 females; T315, office, 17°28.805'N 101°21.242'E, 870 m, 12–19 July 2006, Malaise trap, Patikhom Tamtip, 2 females; T318, office, 17°28.805'N 101°21.242'E, 870 m, 19–26 July 2006, Malaise trap, Nukoonchai Jaroenchai, 1 female; T319, Subhnonghin, 17°28.772'N 101°21.308'E, 860 m, 26 July – 2 Aug. 2006, Malaise trap, Nukoonchai Jaroenchai, 2 males, 4 females; T482, Phu Kradueng NP, Koke Hin Ngam, 16°51.958'N 101°50.668'E, 280 m, 9–16 Aug. 2006, Malaise trap, Sutin Khonglasae, 1 female; T485, Phu Kradueng NP, Huay Ta Hack, 16°51.958'N 101°50.668'E, 280 m, 16–23 Aug. 2006, Malaise trap, Sutin Khonglasae, 1 male, 1 female; T487, Phu Kradueng NP, Huay Lao Kao, 16°52.442'N 101°50.706'E, 280 m, 16–23 Aug. 2006, Malaise trap, Sutin Khonglasae, 1 male, 3 females; T490, Phu Kradueng NP, Huay Lao Kao, 16°52.442'N 101°50.706'E, 280 m, 23–30 Aug. 2006, Malaise trap, Sutin Khonglasae, 2 females; T491, Phu Kradueng NP, Huay Ta Hack, 16°51.958'N 101°50.668'E, 280 m, 30 Aug. – 6 Sept. 2006, Malaise trap, Sutin Khonglasae, 3 males, 3 females; T524, Phu Ruea NP, Nern Wibaak ditch, 17°29.907'N 101°20.483'E, 1196 m, 5–12 Aug. 2006, Malaise trap, Nukoonchai Jaroenchai, 1 female; T525, Pan Hin Khan Maak ditch, 17°30.042'N 101°20.474'E, 1219 m, 5–12 Aug. 2006, Malaise trap, Nukoonchai Jaroenchai, 2 females; T527, Nern Wibaak ditch, 17°29.907'N 101°20.483'E, 1196 m, 12–19 Aug. 2006, Malaise trap, Nukoonchai Jaroenchai, 2 males; T533, Nern Wibaak ditch, 17°29.907'N 101°20.483'E, 1196 m, 26 Aug. – 2 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 4 females; T535, Huay Taey ditch, 17°30.128'N 101°20.339'E, 1233 m, 26 Aug. – 2 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 1 male; T818, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 6–7 Sept. 2006, pan traps, Nukoonchai Jaroenchai, 1 male, 4 females; T819, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 7–8 Sept. 2006, pan traps, Nukoonchai Jaroenchai, 1 male, 1 female; T821, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 9–10 Sept. 2006, pan traps, Nukoonchai Jaroenchai, 1 female; T824, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 5–12 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 2 males, 1 female; T825, nature trail, 17°30.740'N 101°20.650'E, 1353 m, 5–12 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 2 males, 2 females; T826, Sa Sawan, 17°30.735'N 101°20.601'E, 1352 m, 5–12 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 2 males, 3 females; T827, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 12–19 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 1 male, 5 females; T828, nature trail, 17°30.740'N 101°20.650'E, 1353 m, 12–19 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 1 male; T829, Sa Sawan, 17°30.735'N 101°20.601'E, 1352, 12–19 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 3 males, 3 females; T831, nature trail, 17°30.740'N 101°20.650'E, 1353 m, 19–26 Sept. 2006, Malaise trap, Nukoonchai Jaroenchai, 1 female. *Phu Kradueng National Park*: T782, mixed deciduous forest behind office, 14–21 Oct. 2006, Malaise trap, 1 male, 2 females; T1070, mixed deciduous forest south of Na Noy forest unit, 16°49.099'N 101°47.624'E, 275 m, 18–19 Nov. 2006, pan traps, Suthin Gong-lasae, 1 male; T1073, road to Ta Krong Waterfall of Na Noy forest unit, 16°48.913'N 101°47.634'E, 265 m, 14–20 Nov. 2006, Malaise trap, Suthin Gong-lasae, 1 male; T1074, Mixed deciduous forest south of Na Noy forest unit, 16°49.099'N 101°47.624'E, 275 m, 14–20 Nov. 2006, Malaise trap, Suthin Gong-lasae, 11 males, 15 females; T1075, mixed deciduous forest north of Na Noy forest unit, 16°48.170'N 101°47.666'E, 276 m, 14–20 Nov. 2006, Malaise trap, Suthin Gong-lasae, 2 males; T1076, road to Ta Krong Waterfall of Na Noy forest unit, 16°48.913'N 101°47.634'E, 265 m, 20–26 Nov. 2006, Malaise trap, Daorueng Sinhpreecha, 1 male, 2 females; T1077, mixed deciduous forest south of Na Noy forest unit, 16°49.099'N 101°47.624'E, 275 m, 20–26 Nov. 2006, Malaise trap, Daorueng Sinhpreecha, 1 male, 1 female; T1079, road to Ta Krong Waterfall of Na Noy forest unit, 16°48.913'N 101°47.634'E, 265 m, 26 Nov. – 2 Dec. 2006, Malaise trap, Suthin Gong-lasae, 2 males, 5 females; T1080, mixed deciduous forest south of Na Noy forest unit, 16°49.099'N 101°47.624'E, 275 m, 26 Nov. – 2 Dec. 2006, Malaise trap, Suthin Gong-lasae, 3 females; T1081, mixed deciduous forest north of Na Noy forest unit, 16°48.170'N 101°47.666'E, 276 m, 26 Nov. – 2 Dec. 2006, Malaise trap, Suthin Gong-lasae, 1 male; T1082, road to Ta Krong Waterfall of Na Noy forest unit, 16°48.913'N 101°47.634'E, 265 m, 2–8 Dec. 2006, Malaise trap, Suthin

Gong-lasae, 1 female; T1107, Hua Dong Tham Sun, 17°29.540'N 101°20.995'E, 1130 m, 16–19 Nov. 2006, Patikhom Tumtip, 1 male, 1 female.

Ubon Ratchathani. Pha Taem National Park: T454, Don Rong pond, 15°24.582'N 105°30.935'E, 250 m, 5–6 Aug. 2006, pan traps, Bunlu Subsiri, 1 female; T461, Pah Mhon, 15°24.304'N 105°31.258'E, 230 m, 5–12 Aug. 2006, Malaise trap, Bunlu Subsiri, 2 males, 5 females; T463, Kua Nang Nee, 15°24.258'N 105°30.855'E, 193 m, 5–12 Aug. 2006, Malaise trap, Bunlu Subsiri, 7 males, 21 female; T466, Kua Nang Nee, 15°24.258'N 105°30.855'E, 193 m, 12–18 Aug. 2006, Malaise trap, Bunlu Subsiri, 3 males, 4 females; T468, Don Rong pond, 15°24.582'N 105°30.935'E, 250 m, 18–25 Aug. 2006, Malaise trap, Bunlu Subsiri, 1 male; T469, Kua Nang Nee, 15°24.258'N 105°30.855'E, 193 m, 18–25 Aug. 2006, Malaise trap, Bunlu Subsiri, 3 males, 1 female.

Half of specimens was deposited in the Entomology Section of QSBG (Queen Sirikit Botanical Garden; P.O. Box 7, Mae Rim Chiang Mai 50180, Thailand), and another half, in the Zoological Institute of the Russian Academy of Sciences (St.Petersburg, Russia). All specimens are in ethanol.

Differential diagnosis. The body is small and yellow. The species is characterized by the presence of a short subapical spur on the hind tibia, a black spot on the anepisternum, and in some specimens, by small brownish black longitudinal lines on the scutum. In contrast to many other species, the scutellum is considerably shorter than its basal width. Rather large cerci, which are more or less square in lateral view, are characteristic of the male genitalia.

Description. Body yellow, with black spot on pleura and in some specimens with small black stripes on scutum. Head yellow; occiput with a black, apically emarginate spot. Frons slightly narrowed anteriorly. Ocellar triangle shining, yellow, with a small black spot on ocellar tubercle; rest of frons matt. Head setae yellow. Gena narrow, no wider than diameter of fore tibia, yellow, with silvery pruinosity. First flagellomere bud-shaped, yellow, slightly darkened around the insertion of rather long pubescent aris-

ta; arista longer than frons. Eyes with short dense pubescence.

Scutum reddish yellow, shining. Some specimens with two small brownish black stripes on dorsocentral line, behind notopleura. Scutellum yellow, its basal width 1.25 times its length. Apical setae on scutellum significantly longer than scutellum; lateral setae as long as scutellum. Distance between apical and corresponding lateral seta longer than that between apical setae. All thoracic setae dark brown to black. Pleura yellow, shining, with oblique oval black spot in lower part of anepisternum; this spot not reaching notopleural setae. Postnotum shining, yellow to brown.

Abdomen black with pale base and with two pale lateral spots on tergite 5 (Fig. 3). Wing slightly greyish. Ratios of costal sections 2, 3 and 4 as 32:23:12. Veins R_{4+5} and M_{1+2} parallel. Transverse vein $r-m$ situated in the middle of posterior basal cell. Posterior transverse vein $dm-cu$ oblique. Halteres yellow. Hind tibia sometimes darkened in the middle, with yellow tips. Spur on hind tibia short, black, situated subapically, only slightly longer than half of basitarsus. Sensory spot on hind tibia longer than diameter of tibia, situated in the middle of tibia.

Male genitalia. Cerci rather large, slightly narrowed and rounded apically, strongly divergent. Cerci nearly square in lateral view. Surstyli rather narrow, as long as height of epandrium. Hypandrium closed; apodeme of phallus short. Phallus cylindrical; gonites elongate-oval, emarginate apically (Figs 1, 2).

Body length 1.5–1.9 mm.

Variation in colour. Some specimens with two short black stripes on scutum laterally behind notopleura (Fig. 18). Rarely, small darkening also visible before scutellum and on basal corners of scutellum (Fig. 19). Hind tibia entirely yellow or almost black with yellow tips.

Colour variation of the hind tibia was also mentioned by Kanmiya (1983). Yang and Yang (1990) described a new subspecies *C. minor guizhuensis* from China. The

new subspecies was distinguished from the nominate one only by "mesonotum with two pairs of black marking". Previously I described colour variation of the scutum in *C. minor* (Nartshuk, 2002). These black marks are variable in size and completely absent in some specimens. *Cadrema minor guizhuensis* herewith is synonymized with *C. minor* and may be considered only as a colour form without any nomenclatural rank.

Distribution. Widely distributed in the Oriental Region.

***Cadrema (Anadrema) thailandica* sp. nov.**
(Figs 4–7, 8–16)

Holotype. Male. **Thailand.** Phetchabun, Khao Kho National Park, Thanthip Waterfall, 16°39.087'N 101°07.777'E, 210 m, 12 Sept. 2006–19 Sept. 2006, Malaise trap, Somchai Chachumnan & Saink Singtong (T592).

Paratypes. **Thailand. Khonkaen Province.** Phu Pha Man National Park: T1, Teak plantation, 16°44.837'N 102°00.160'E, 265 m, 13–20 June 2006, Malaise trap, Rabeab Phatai, 2 females; T4, Sum Can plantation, 16°43.680'N 101°59.772'E, 293 m, 19 June 2006, pan trap, Prayoon Chummag, 2 females; T6, Num Pood, 16°44.902'N 102°0.182'E, 245 m, 14–21 June 2006, Malaise trap, Rabeab Phatai, 3 males, 4 females; T34, Num Pood, 16°44.902'N 102°0.182'E, 245 m, 21–28 June 2006, Malaise trap, Rabeab Phatai, 1 male, 1 female.

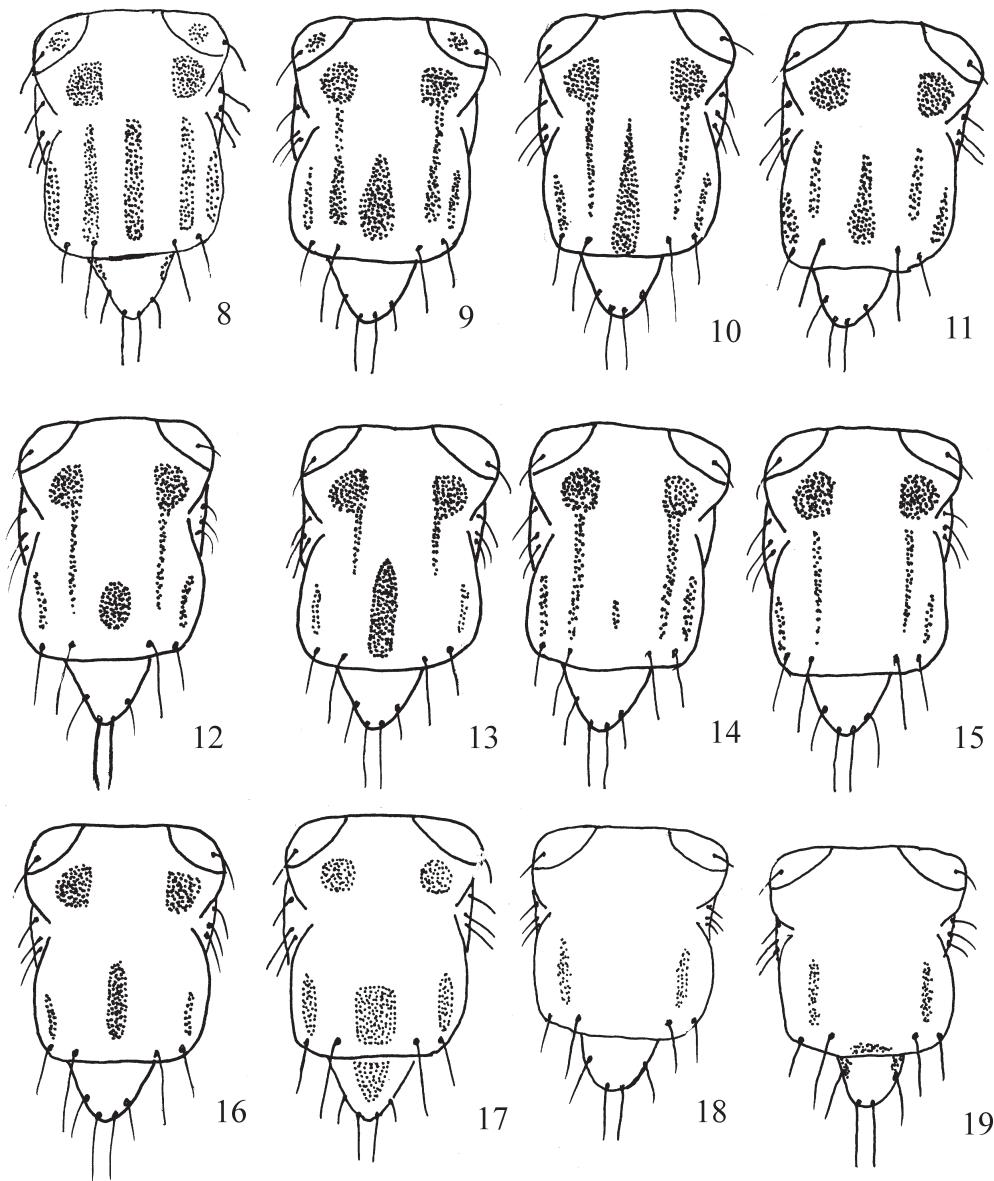
Chaiyaphum Province. Tat Tone National Park: T10, dry dipterocarp forest, 15°59.037'N 102°2.103'E, 250 m, 25–27 June 2006, Malaise trap, Michael Sharkey, 1 female; T19, dry dipterocarp forest, 15°59.037'N 102°2.103'E, 250 m, 28 June 2006, Malaise trap, Vinlon Khongnara, 1 female; T30, dry dipterocarp forest, 15°59.037'N 102°2.103'E, 250 m, 29 June 2006, Malaise trap, Lumyai Ittchan, 1 male; T222, near stream, 15°58.538'N 102°02.153'E, 12–19 July 2006, Malaise traps, T. Jaruphan & O. Budsawong, 1 female. Pa Hin Ngam National Park: T332, creek at Tung Dok Grajeaw, 15°38.391'N 101°23.609'E, 750 m, 12–18 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 1 female; T337, Tung Dok Grajeaw, 15°38.208'N 101°23.556'E, 720 m, 19–24 July 2006, Malaise trap, Kratae Sa-nog & Buakaw Adnafai, 1 female; T451, dry dipterocarp, 15°38.099'N 101°23.921'E, 698 m, 24–30 Aug. 2006, Malaise trap, Katae Sa-nog & Buakaw Ad-

nafai, 1 female; T1033, mixed deciduous forest, 15°34.686'N 101°26.082'E, 419 m, 10–16 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 male; T1034, ecotone between mixed deciduous and dry dipterocarp forest, 15°34.913'N 101°25.658'E, 444 m, 16–22 Nov. 2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 2 males.

Chiang Mai Province. Doi Inthanon National Park: T40, Vachiratharn Falls, 18°32.311'N 98°36.048'E, 700 m, 29 June – 2 July 2006, Malaise trap, Y. Areeluck, 5 females.

Nakhon Nayok Province. Khao Yai National Park: T145, behind football field, 14°24.619'N 101°22.778'E, 12–19 July 2006, Malaise traps, Pong Sandao, 5 males, 7 females; T997, moist evergreen forest near reservoir, 14°27.119'N 101°21.482'E, 699 m, 19–26 Nov. 2006, Malaise trap, Wirat Sookkho, 1 male.

Phetchabun Province. Khao Kho National Park: T163, office, 16°39.479'N 101°08.105'E, 5–12 July 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 1 male; T166, office, 16°39.479'N 101°08.105'E, 12–19 July 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 1 female; T167, office, 16°39.550'N 101°08.123'E, 12–19 July 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 19 males, 12 females; T169, office, 16°39.479'N 101°08.105'E, 19–26 July 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 1 female; T174, office, 16°39.550'N 101°08.134'E, 26 July – 2 Aug. 2006, Malaise trap, Somchai Chatchumnan & Sa-ink Singtong, 2 males, 2 females; T584, view point at Klump stream, 16°39.120'N 101°07.810'E, 246 m, 9–10 Sept. 2006, pan traps, Somchai Chatchumnan & Saink Singtong, 1 male, 1 female; T587, mixed deciduous forest at Klump stream, 16°39.257'N 101°07.945'E, 186 m, 5–12 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 1 male, 1 female; T588, view point at Klump stream, 16°39.120'N 101°07.810'E, 246 m, 5–12 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 42 males, 19 females; T589, Thanthip Waterfall, 16°39.087'N 101°07.777'E, 210 m, 5–12 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 43 males, 34 females; T591, view point at Klump stream, 16°39.120'N 101°07.810'E, 246 m, 12–19 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 39 males, 13 females; T592, Thanthip Waterfall, 16°39.087'N 101°07.777'E, 210 m, 12–19 Sept. 2006, Malaise trap, Somchai Chatchumnan & Saink Singtong, 28 males,



Figs 8–19. Scutum and scutellum of *Cadrema*. 8–16, *C. thailandica* sp. nov., variation in colour of scutum; 17, *C. ocellata* from Sri Lanka; 18, 19, *C. minima*, variation in colour of scutum.

15 females; T594, view point at Klump stream, 16°39.120'N 101°07.810'E, 246 m, 19–26 Sept. 2006, Malaise trap, Somchai Chachumnan & Saink Singtong, 35 males, 10 females; T595, Thanthip Waterfall, 16°39.087'N 101°07.777'E, 210 m, 19–26 Sept. 2006, Malaise trap, Somchai Chachumnan & Saink Singtong, 30 males, 11 female; T597, view point at Klump stream,

16°39.120'N 101°07.810'E, 246 m, 26 Sept.–2 Oct. 2006, Malaise trap, Somchai Chachumnan & Saink Singtong, 18 males, 7 females; T598, Thanthip waterfall, 16°39.087'N 101°07.777'E, 210 m, 26 Sept.–2 Oct. 2006, Malaise trap, Somchai Chachumnan & Saink Singtong, 8 males, 10 females; T969, mixed deciduous forest at Ta Phol River, 16°32.539'N 102°02.483'E,

242 m, 5–12 Nov. 2006, Malaise trap, Somchai Chachumnan & Saink Singhtong, 6 females; T974, mixed deciduous forest at Ta Phol River, 16°32.561'N 101°02.479'E, 242 m, 19–26 Nov. 2006, Malaise trap, Somchai Chachumnan & Saink Singhtong, 1 female.

Sakon Nakhon Province. *Phu Phan National Park:* T191, behind office, 17°03.521'N 103°58.450'E, 10 July 2006, pan traps, Sailom Tongboonchai, 1 female; T192, behind office, 17°03.521'N 103°58.450'E, 11 July 2006, pan traps, Sailom Tongboonchai, 1 female; T202, behind office, 17°03.488'N 103°58.497'E, 15–21 July 2006, Malaise traps, Sailom Tongboonchai, 1 male, 1 female; T204, behind office, 17°03.521'N 103°58.450'E, 21–27 July 2006, Malaise traps, Sailom Tongboonchai, 4 males, 8 females; T205, behind office, 17°03.488'N 103°58.497'E, 21–27 July 2006, Malaise traps, Sailom Tongboonchai, 1 female; T206, behind office, 17°03.543'N 103°58.452'E, 27 July – 2 Aug. 2006, Malaise traps, Winlon Kongnara, 2 males; T610, Kam Hom Waterfall at Haew Sin Chai, 17°07.415'N 104°01.179'E, 347 m, 4–10 Sept. 2006, Malaise trap, Sailom Tongboonchai, 1 female; T611, car park at Kam Hom Waterfall, 17°07.411'N 104°01.016'E, 347 m, 10–16 Sept. 2006, Malaise trap, Sailom Tongboonchai, 1 female; T1095, forest near Huay Nam Pung Dam, 16°54.713'N 103°54.294'E, 289 m, 6–13 Nov. 2006, Malaise trap, Sailom Tongboonchai, 1 male; T1100, creek at entrance of Huay Nam Pung forest unit, 16°54.630'N 103°54.266'E, 281 m, 19–25 Nov. 2006, Malaise trap, Sailom Tongboonchai, 2 males. *Phu Pha Yon National Park:* T288, reservoir, 16°55.655'N 104°10.658'E, 280 m, 11–12 July 2006, pan traps, Manop Ngoyjansri & Chatree Cheaukamjan, 1 female; T295, channel, 16°55.639'N 104°10.748'E, 295 m, 17–23 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 1 female; T297, deciduous dipterocarp forest, 16°55.449'N 104°10.757'E, 295 m, 17–23 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 2 females; T298, channel, 16°55.639'N 104°10.748'E, 295 m, 23–29 July 2006, Malaise trap, Manop Ngoyjansri & Chatree Cheaukamjan, 1 female.

Loei Province. *Phu Ruea National Park:* T309, office, 17°28.826'N 101°21.330'E, 860 m, 11–12 July 2006, pan traps, Patikhom Tamtip, 1 male; T316, Subhnonghin, 17°28.772'N 101°21.308'E, 860 m, 19–26 July 2006, Malaise trap, Nukoonchai Jaroenchai, 1 female; T318, office, 17°28.805'N 101°21.242'E, 870 m, 19–26 July 2006, Mal-

aise trap, Nukoonchai Jaroenchai, 1 female. *Phu Kradueng National Park:* T488, Huay Ta Hack, 16°51.958'N 101°50.668'E, 280 m, 23–30 Aug. 2006, Malaise trap, Sutin Khonglasae, 1 female; T491, Huay Ta Hack, 16°51.958'N 101°50.668'E, 280 m, 30 Aug. – 6 Sept. 2006, Malaise trap, Sutin Khonglasae, 1 male.

Phitsanulok Province. *Thung Salaeng Luang National Park:* T568, mixed deciduous forest, 16°50.319'N 101°51.792'E, 479 m, 11–18 Aug. 2006, Malaise trap, Pongpitak Pranee, 1 male.

The holotype and a half of the paratypes are deposited in the Entomology Section of QSBG (Queen Sirikit Botanical Garden; P.O. Box 7, Mae Rim Chiang Mai, 50180, Thailand). Another half of the paratypes is deposited in the Zoological Institute of the Russian Academy of Sciences (St.Petersburg, Russia). All specimens are in ethanol.

Diagnosis. The new species is similar to *C. ocellata* (Lamb, 1918) (Fig. 17) in the yellow ground colour with some black marks on the scutum and pleura. Both species are characterized by the two round black marks in front of the scutum behind the postpronotum, a black mark on the anepisternum, and dark coloration of the abdomen, hind tibia with its preapical short spur, fore tibia and its tarsus. The new species differs from *C. ocellata* in the different shape of marks on the scutum, smaller black mark on the pleura, which occupies only the lower part of anepisternum and does not reach the notopleura. Inner sides of black marks behind the postpronotum are straight, not convex. The male genitalia are characterized by the small cerci with a very long apical seta and closed hypandrium (Figs 4, 5). Specimens of *C. ocellata* from Sri Lanka kept in the collection of the Zoological Institute, St.Petersburg (see Nartshuk, 2002), were used for comparison.

Description. Body yellow, with black spots on scutum and pleura. Head yellow. Frons square. Occiput in median part with an apically emarginate black spot not reaching eye margin. Ocellar triangle shining, yellow, with a small black spot on ocellar tubercle only and with black setulae along lateral sides. Five small black orbital setae.

Postocellar setae equal to outer verticals. Gena narrow, no wider than diameter of fore tibia, yellow with silvery pruinosity. Antennae yellow. Arista black, with rather long pubescence. First flagellomere higher than long, slightly darkened along upper margin. Eyes naked. Palpi yellow with black setulae.

Scutum yellow, shining, usually with a pattern of five separate black marks. A rounded spot always situated behind each postpronotum; two weak longitudinal marks running along sides of scutum anteriorly from postalar setae but not reaching notopleural depression; further two longitudinal marks situated along dorsocentral lines; usually scutum also with a central spot. Shape, size and number of black marks strongly variable (Figs 8–16). Scutellum yellow, flattened, more or less triangular, as long as its basal width. Apical setae on scutellum longer than scutellum; subapical setae situated in the middle of lateral sides of scutellum; distance between apical and respective subapical seta longer than that between apical setae. Subapical seta about half the length of apical seta. All thoracic setae dark brown to black. Pleura mainly yellow, shining, with a small black spot on anepisternum not reaching notopleural setae. Notopleural setae 1+2, one postalar, and one prescutellar seta. Postnotum yellow, blackish on sides. Wing slightly greyish. Ratios of sections 2, 3 and 4 of costal vein as 25:20:10. Veins R_{4+5} and M_{1+2} parallel. Transverse vein $r\text{-}m$ situated in the middle of posterior basal cell. Posterior transverse vein $dm\text{-}cu$ oblique. Halteres yellow. Legs yellow, with darkened fore and hind tibiae and fore tarsus, sometimes also with darkened hind tarsus. Tibial spur short, black, situated subapically. Sensory spot on hind tibia slightly longer than diameter of tibia, situated in basal part of tibia.

Abdomen black with pale base (Fig. 7). Pregenital sclerite in male with only one rather large stigma at either side.

Male genitalia (Figs 4, 5): cerci small, nearly straight apically, with a very long apical seta. Surstyli wide, as long as height

of epandrium, not tapering. Hypandrium closed. Phallus cylindrical, with straight base, gonites elongate-oval.

Body length 1.7–2.0 mm.

Colour variation. Scutum yellow with some black spots. Two rounded marks behind postpronotum always present. Five longitudinal marks: two along dorsocentral lines, two marks situated laterally of these, all beginning behind the notopleura, and an additional central mark. All these marks varying in length and shape, and some of them sometimes absent. Shape of central mark varying from linear to pear-shaped, round or small black line. Rarely, small spots present on postpronotum and on basal corner of scutellum (Figs 8–16). All specimens missing a black spot on scutellum.

Etymology. The species is named after the country where it was collected (Thailand).

Distribution. The species is recorded only from Thailand.

DISCUSSION

Totally 2367 specimens of *Cadrema* have been examined (1022 males and 1243 females). Among them, 1793 specimens belong to *C. minor* (752 males and 1039 females) and 574 specimens, to *C. thailandica* sp. nov. (370 males and 204 females). *Cadrema minor* was found in the following nine provinces: Khonkaen, Chaiyaphum, Chiang Mai, Nong Bua Lampoo, Nakhon Nayok, Phetchabun, Sakon Nakhon, Loei, and Ubon Ratchathani, in a total of 179 localities at altitudes ranging from 196 m up to 2500 m above the sea level. *Cadrema thailandica* was found in the following eight provinces: Khonkaen, Chaiyaphum, Chiang Mai, Nakhon Nayok, Phetchabun, Sakon Nakhon, Phitsanulok, and Loei. It was common in seven provinces. *Cadrema thailandica* occurred more rarely than *C. minor* and was found only in 53 localities at heights between 172 m and 870 m. Both species were collected in 27 localities comprising 13.2% of the localities sampled.

Some species of *Cadrema* with preapical hind tibial spur, such as *C. minor*, are superficially similar to species of *Arcuator* Sabrosky, 1985 in the yellow colour of body and in having a single black polished spot on the anepisternum. Sabrosky (1985) listed the following characters of *Cadrema* as the main distinguishing ones from *Arcuator*: ultimate section of M_{1+2} straight; r_m crossvein opposite the middle of discal cell; cell r_1 broad, wider than cell behind it; ocellar setae strongly crossed and slightly proclinate; and hind tibial organ very short. Long before that, several authors compared their new species with *C. minor*, as all these species have yellow body with one black spot on the anepisternum. Lamb (1912) compared *Hippelates stigmaticus* Lamb, 1912, Tonnoir (1921), *H. jacobsi* Tonnoir, 1921, and Bezzi in Bezzi and Lamb (1926) compared *H. bipustulatus* Bezzi in Bezzi & Lamb, 1926, with *C. minor*. Presently these three species are included in the genus *Arcuator*, which is characterized by a different venation of wing (Sabrosky, 1985).

Species of the genus *Cadrema* are distributed mainly in the tropical zone. Larvae of different species were reared from various decaying substrates: grass roots, molluscs, ginger inflorescences, coconuts, and pig dung. *Cadrema minor* has been reared from Capsicum, Solanaceae, in Malaysia (Yunus & Hua, 1980). I examined specimens of *C. minor* reared from rotting coconuts on the Seyshelles Islands.

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