

Descriptions of Seven New Species of the Genus *Dissomphalus* ASHMEAD (Hymenoptera, Bethyridae) from the Oriental Region

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Abstract The following seven new species of the genus *Dissomphalus* are described on the basis of males from the Oriental region: *D. browni*, *D. chiangmaiensis*, *D. malaysianus*, *D. nepalensis*, *D. philippinensis*, *D. thainus*, and *D. wusheanus*. Keys to the Oriental species of this genus are also presented.

The genus *Dissomphalus* ASHMEAD, 1893, belonging to the subfamily Pristocerinae of the family Bethyridae, is represented by 122 species, most of which are distributed in the New World (90 species), and a few occur in the Palaearctic (5 species), Ethiopian (12 species) and Oriental (7 species) regions (GORDH and MOCZAR, 1990; TERAYAMA, 1995a, 1996; TERAYAMA and YAMANE, 1997; AZEVEDO, 1999). Of those, 14 species are known only from females, and only 5 have been known for male-female associations. All the *Dissomphalus* species show strong sexual dimorphism: males are fully winged and have ocelli, whereas females are completely apterous and lack ocelli. Therefore, conspecificity of specimens belonging to different sexes is usually difficult to determine, unless a certain number of specimens of the two sexes captured at the same time and place are available. Little is known regarding the host relationships of members of this genus. In the Oriental region, 7 species of *Dissomphalus* have so far been known, and all of those are known only for one sex, 6 species are known for female and one is for male.

In the course of my study on the bethyrid fauna of Asia, I have examined about 280 specimens of the genus. The female specimens were treated in TERAYAMA (1995a) and TERAYAMA and YAMANE (1997). In this paper, I describe seven new species of this genus based on the males.

The following abbreviations are used in this paper: HL—head length; HW—head width; WF—width of frons; LM—length of mesosoma; LPD—length of propodeal disc; WPD—width of propodeal disc; FWL—forewing length; TL—total body length; OOL—distance from a posterior ocellus to nearest eye margin; WOT—distance across and including posterior ocelli; CNC—Canada national collection, Ottawa; NSMT—National Science Museum, Tokyo; PMA—Provincial Museum of Alberta, Canada; NIAES—National Institute of Agro-Environmental Sciences, Tsukuba.

Genus *Dissomphalus* ASHMEAD

Dissomphalus ASHMEAD, 1893, Bull. U.S. nat. Mus., 45: 41–42. Type species: *Dissomphalus xanthopus* ASHMEAD, 1893.

Ecitopria WASMANN, 1899, Zoologica, 1: 55, 56, 127. Type species: *Ecitopria crassicornis* WASMANN, 1899. [Synonymized by EVANS, 1955.]

Thaumatepyris KIEFFER, 1910, Ann. Entomol. Soc. Fr., 79: 47. Type species: *Thaumatepyris punctatus* KIEFFER, 1910. [Synonymized by EVANS, 1964.]

Glenobethylus KIEFFER, 1910, Ann. Entomol. Soc. Fr., 79: 50. Type species: *Glenobethylus montanus* KIEFFER, 1910. [Synonymized by EVANS, 1964.]

Parecitopria OGLOBLIN, 1930, Rev. Soc. Entomol. Argentina, 3: 15. Type species: *Parecitopria azarai* OGLOBLIN, 1930. [Synonymized by EVANS, 1964.]

Psilobethylus KIEFFER, 1906, In E. ANDRÉ (ed.), Species des Hyménoptères d'Europe et d'Algérie, 9: 461–462. Type species: *Psilobethylus luteus* KIEFFER, 1906. [Synonymized by TERAYAMA, 1995b.]

Generic diagnosis. Male. Pronotum short; metasoma broad and short; 2nd metasomal tergum bearing one or two pairs of pale or roughened spots, depressions, pits, setae or tubercles; forewing with costa extending well past pterostigma as a distinct vein (post marginal vein); basal vein of forewing reaching subcosta far based of pterostigma; transverse median vein of forewing erect or nearly so.

Female. Maxillary and labial palpi very short, PF=2-1, 2-1; eye small, consisting of less than 25 facets, or absent; propodeal disc long, more or less parallel-sided; mesopleuron almost wholly lateral in position, not or very weakly prominent; middle tibia with or without spines above.

***Dissomphalus browni* sp. nov.**

(Figs. 1-3)

Holotype. Male. HL 0.98 mm; HW 0.99 mm; FW 0.63 mm; LM 1.53 mm; LPD 0.50 mm; WPD 0.78 mm; FWL 3.0 mm; TL 3.8 mm.

Body black; mandible yellowish brown; antenna and legs yellow.

Head almost as long as wide, microreticulate and weakly punctate. Mandible with 5 teeth; apical tooth acute; subapical smaller and blunt; basal 3 minute. Median lobe of clypeus broad, with a small median angle as in Fig. 1. First 5 segments of antenna in a ratio of 9 : 4 : 3 : 4 : 4 in length. Eye 0.48 mm in length. Ocelli almost forming a regular triangle; OOL 1.3 times WOT.

Pronotal disc 0.26 times as long as wide, microreticulate with shallow moderate punctures. Mesonotum microreticulate with shallow punctures. Propodeal disc 0.64 times as long as wide; median carina reaching transverse carina; basal triangular area strongly reticulate; sublateral area almost smooth, but very weakly microreticulate.

Second metasomal tergum with shallow, oval depressions laterally; outer margin of depression with 4 or 5 hairs; a pit small, with a small seta that is directed caudal.

Variation. Paratypes vary in head length from 0.68 to 0.98 mm, and in head width from 0.68 to 1.00 mm.

Holotype. Male, 70 km S. W., Chiang Mai, Doi Inthanon, N. P. 38 km (1700 m alt.) Thailand, 3-12. V. 1990, B. V. BROWN leg. [PMA].

Paratypes. 4 males, same date as holotype [PMA]; 2 males, same locality, 27. IV-3. V. 1990, B. V. BROWN leg. [PMA]; 1 male, Nakhon Ratchasima, Khao Yai N. P., (700-800 m alt.), Thailand, 12-18. IV. 1990, E. FULLER leg. [PMA]; 1 male, same locality, 11-18. IV. 1990, E. FULLER leg. [PMA]; 1 male, same locality, 18-24. IV. 1990, E. FULLER leg. [PMA]; 2 males, 180 km N. E., Bangkok, Yai N. P., (780 m alt.), Thailand, 11-18. IV. 1990, B. V. BROWN leg. [PMA].

Distribution. Thailand.

***Dissomphalus Chiangmaiensis* sp. nov.**

(Figs. 4-6)

Holotype. Male. HL 0.75 mm; HW 0.80 mm; FW 0.49 mm; LM 1.25 mm; LPD 0.40 mm; WPD 0.53 mm; FWL 1.8 mm; TL 2.9 mm.

Body black; mandible yellowish brown; antenna brown except yellowish brown scape and pedicel; legs yellow except dark brown femora.

Head 0.94 times as long as wide, microreticulate and relatively sparsely punctate; the punctures shallow. Mandible with 2 teeth. Median lobe of clypeus rather narrow, with an acute median angle as in Fig. 4. First 5 antennomeres in a ratio of 10 : 3 : 3 : 3.5 : 3.5 in length. Eye 0.33 mm in length. Ocelli forming a compact triangle with an acute front angle; OOL 1.43 times WOT.

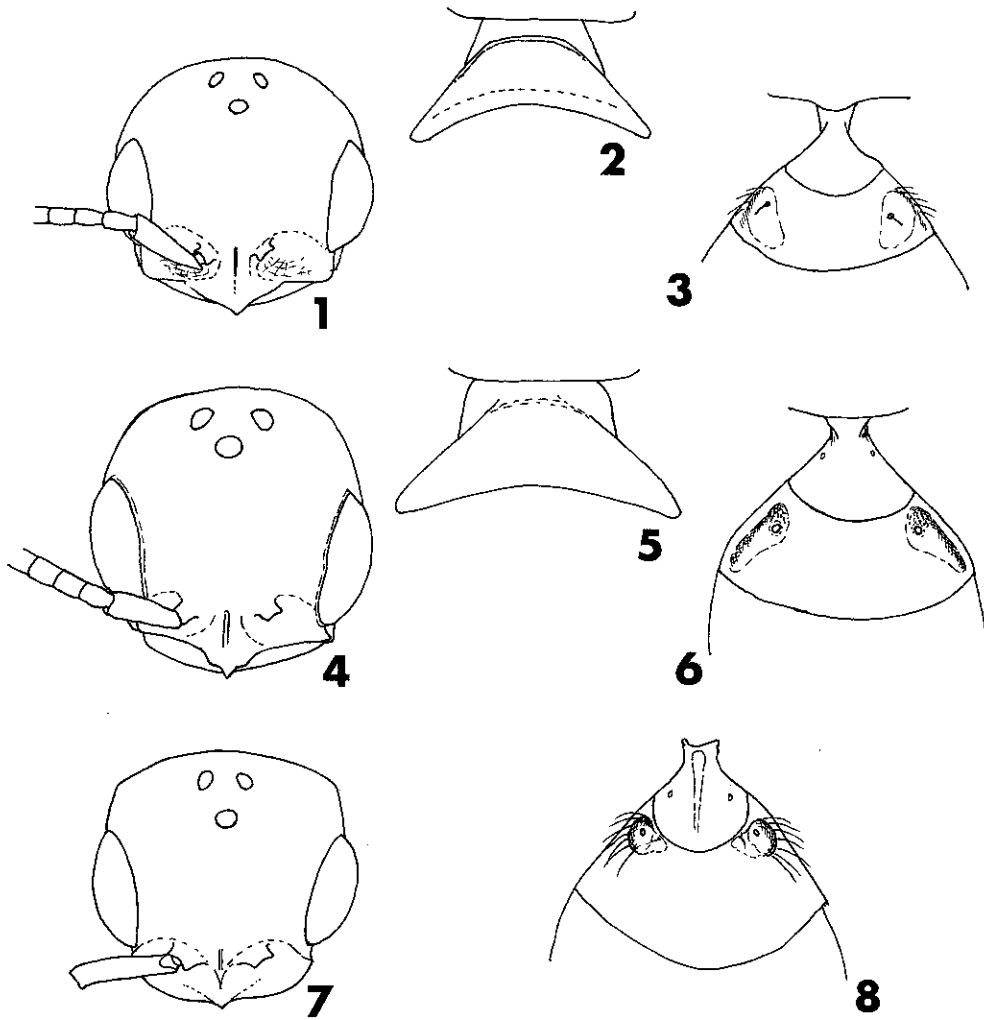
Pronotal disc 0.32 times as long as wide, microreticulate and impunctate; anterior margin carinate. Mesonotum microreticulate, impunctate. Propodeal disc 0.75 times as long wide; median carina present on basal 2/3 of disc; basal triangular area reticulate; sublateral area smooth and shining.

Second metasomal tergum with moderately large, triangular depressions laterally; the depression with a pit on its anterior portion.

Variation. Paratypes vary in head length from 0.53 to 0.85 mm, and in head width from 0.53 to 0.81 mm.

Holotype. Male, Chiang Mai, Doi Inthanon National Park, (1700 m alt.), Thailand, 29. IV–7. V. 1990, E. FULLER leg. [PMA].

Paratypes. 4 males, same data as holotype [PMA]; 8 males, 70 km S.W., Chiang Mai, Doi Inthanon N. P. 38 km, (1,700 m alt.), Thailand, 27.IV–3.V.1990, B. V. BROWN



Figs. 1–8. *Dissomphalus* spp., male. — 1–3, *D. browni* sp. nov.; 4–6, *D. chiangmaiensis* sp. nov.; 7–8, *D. malaysianus* sp. nov. — 1, 4, 7, Head, full-face view; 2, 5, pronotal disc, dorsal view; 3, 6, 8, second metasomal tergum, dorsal view.

leg. [PMA]; 4 males, same locality, 3–12. V. 1990, B. V. BROWN leg. [PMA].

Distribution. Thailand.

***Dissomphalus malaysianus* sp. nov.**

(Figs. 7, 8)

Holotype. Male. HL 0.83 mm; HW 0.81 mm; FW 0.53 mm; LM 1.30 mm; LPD 0.45 mm; WPD 0.55 mm; FWL 1.9 mm; TL 3.1 mm.

Body black; mandible cream yellow; antenna brown excepting scape and pedicel cream yellow; legs cream yellow.

Head as long as wide, microreticulate and impunctate. Mouth parts not dissected, but at least one acute apical tooth is recognizable. Clypeus produced anteriorly; median portion obtusely angulate as in Fig. 7. First 5 antennomeres in a ratio of 13 : 4 : 3.5 : 4 : 4 in length; scape relatively long, 4.3 times as long as wide. Eye 0.35 mm in length; with very short erect hairs. Front angle of ocellar triangle acute; OOL 1.25 times WOT.

Pronotal disc 0.29 times as long as wide, microreticulate and impunctate; anterior margin carinate. Mesonotum microreticulate. Propodeal disc 0.82 times as long as wide, smooth and shining, without basal triangular area; median carina present on basal 3/4 of disc.

Second metasomal tergum with subcircular depressions anterolaterally; outer margin of depression with 7 long hairs; inner margin with a short hair.

Holotype. Male, Sabah, Mt. Kinabalu N. P. (1,580 m alt.), Borneo, Indonesia, 17. V. 1987, A. SMETANA leg. [PMA].

Paratypes. 1 male, same data as holotype [PMA]; 2 males, same locality, 1,560 m, 23. V. 1987, A. SMETANA leg. [PMA].

Distribution. Malaysia (Borneo).

***Dissomphalus nepalensis* sp. nov.**

(Figs. 9–11)

Holotype. Male. HL 0.70 mm; HW 0.78 mm; FW 0.43 mm; LM 1.08 mm; LPD 0.33 mm; WPD 0.51 mm; FWL 1.9 mm; TL 2.8 mm.

Head and mesosoma blackish brown, and head darker than mesosoma; metasoma castaneous; mandible yellowish brown; antenna and legs yellow to pale yellow.

Head slightly wider than long, densely microreticulate with shallow punctures. Mandible with 5 teeth; apical tooth acute. Anterior clypeal margin broadly rounded, with a median small tooth. First 5 antennomeres in a ratio of about 3 : 1 : 1 : 1 : 1 in length; 2nd segment longer than wide; 3rd segment slightly longer than wide; 4th and 5th segments each as long as wide. Eye 0.35 mm in length; FW 1.23 times EL. Ocelli forming a regular triangle; OOL 1.25 times WOT.

Pronotal disc 0.18 times as long as wide, densely microreticulate with shallow punctures. Mesonotum densely microreticulate; punctures present, but fewer than those on head and pronotum. Propodeal disc 0.65 times as long as wide; median carina present at basal 4/5 of disc; basal triangular area mostly shining and weakly reticulate; sublateral area smooth and shining.

Metasoma smooth and shining. Second metasomal tergum with deep, teardrop-shaped depressions laterally; outer margin of depression carinate; a pit moderately large and circular.

Variation. Paratypes with the following measurements: HL 0.70–0.95 mm; HW 0.70–0.98 mm; FW 0.40–0.55 mm; TL 2.5–3.0 mm.

Holotype. Male, Lothar (450 ft. alt.), nr. Birganj, Nepal, 6–12. IX. 1967 [CNC].

Paratypes. 2 males, same locality, 30. VIII–5. IX. 1967 [CNC]; 1 male, same locality, 1. IX. 1967 [CNC]; 1 male, same locality, 12–19. IX. 1967, [CNC]; 3 males, Kakani forest (2,070 m alt.), Nepal, 1–15. IX. 1984, H. G. ALLEN leg. [CNC]; 1 male, Karnataka, Bangalore, (916 m alt.), India, 1–7. IX. 1987, K. GHORPADE leg. [PMA].

Distribution. Nepal, Northern India.

Dissomphalus philippinensis sp. nov.

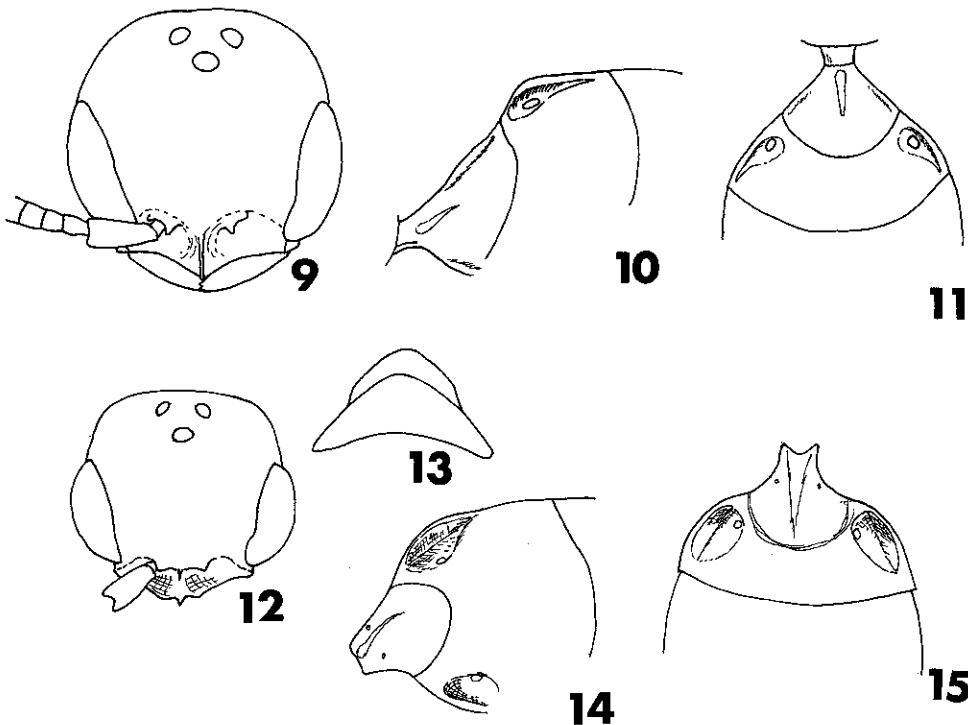
(Figs. 12–15)

Holotype. Male. HL 0.65 mm; HW 0.70 mm; FW 0.38 mm; LM 1.00 mm; LPD 0.30 mm; WPD 0.45 mm; FWL 1.9 mm; TL 2.5 mm.

Head blackish brown; mesosoma and metasoma castaneous; mandible, antenna and legs yellow.

Head slightly wider than long, strongly microreticulate with scattered very weak punctures. Mandible with 3 teeth; apical tooth acute and most developed; basal 2 minute and obscure. Clypeus tridentate as in Fig. 12. First 5 segments of antenna in a ratio of about 8 : 2 : 2 : 2.2 : 2.5 in length. Eye 0.35 mm in length. Ocelli forming a compact regular triangle; OOL 1.29 times WOT.

Pronotal disc 0.29 times as long as wide, strongly microreticulate and impunctate. Mesonotm microreticulate, impunctate. Propodeal disc 0.67 times as long as wide; median carina present on basal 2/3 of disc; basal triangular area reticulate; sublateral area smooth except the moderately reticulate posterolateral portions.



Figs. 9–15. *Dissomphalus* spp., male. — 9–11, *D. nepalensis* sp. nov.; 12–15, *D. philippinensis* sp. nov. — 9, 12, Head, full-face view; 10, 14, second metasomal tergum, dorsolateral view; 11, 15, ditto, dorsal view; 13, pronotal disc, dorsal view.

Second metasomal tergum with deep, oval depressions laterally; the depression consist of 2 surfaces as in Figs. 14 and 15, and with a pit on its anteroinner margin; outer margin of depression carinate.

Holotype. Male, Leyte, Baybay, Phillipines, 6. II. 1983, C. K. STARR and M. TUMILAP leg. [PMA].

Dissomphalus thaianus sp. nov.

(Figs. 16–19)

Holotype. Male. HL 1.10 mm; HW 1.10 mm; FW 0.68 mm; LM 1.63 mm; LPD 0.50 mm; WPD 0.75 mm; FWL 3.4 mm; TL 4.5 mm.

Head and mesosoma black; metasoma dark brown; posterior borders of each tergum with reddish brown band; mandible, antenna and legs cream yellow.

Head as long as wide, microreticulate and coarsely punctate. Mandible with a sharp apical tooth alone. Median lobe of clypeus with 2 dull angles and an acute median tooth as in Fig. 16. First 5 antennomeres in a ratio of about 14 : 4 : 5 : 5 : 5 in length. Eye 0.50 mm in length. Ocelli forming a regular triangle; OOL 1.3 times WOT.

Pronotal disc 0.26 times as long as wide, microreticulate with shallow dense punctures. Mesonotum microreticulate and punctate; the punctures sparser than those on head and pronotum. Propodeal disc 0.67 times as long as wide; median carina present on basal 9/10 of disc; basal triangular area strongly reticulate; sublateral area smooth and shining.

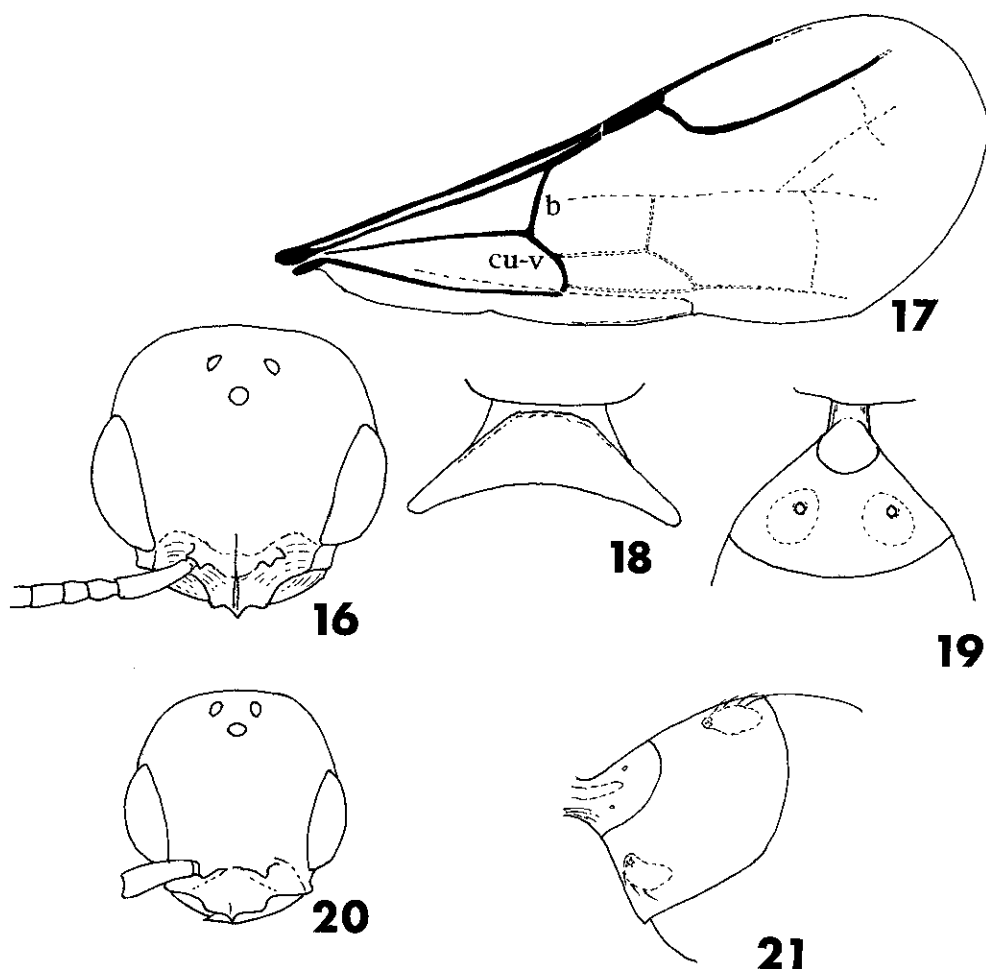
Second metasomal tergum with large, very shallow circular depressions as in Fig. 19; a pit on the depression relatively large, circular, and located at about midlength from outer margin to the mid-dorsal line

Variation. Specimens examined vary in head length from 0.48 to 1.10 mm, and in head width from 0.48 to 1.10 mm. Small individuals possess uniformly black to blackish brown metasoma.

Holotype. Male, Nakhon Ratchasima, Khao Yai National Park (700–800 m alt.), Thailand, 18–24. IV. 1990, E. FULLER leg. [PMA].

Paratypes. 57 males, same data as holotype [PMA]; 63 males, same locality, 12–18. IV. 1990, E. FULLER leg. [PMA]; 1 male, 70 km S. W., Chiang Mai, Doi Inthanon, N. P. (1,700 m alt.), 27. IV–3. V. 1990, B. V. BROWN leg. [PMA]; 23 males, Bangkok 180 km N. E., Khao Yai N. P. (780 m alt.), Thailand, 10–16. IV. 1990, B. V. BROWN leg. [PMA]; 22 males, same locality, 11–18. IV. 1990, B. V. BROWN leg. [PMA]; 12 males, same locality, 16–24. IV. 1990, B. V. BROWN leg. [PMA]; 4 males, same locality, 16–20. IV. 1990, B. V. BROWN leg. [PMA]; 6 males, same locality, 18–24. IV. 1990, B. V. BROWN leg. [PMA]; 12 males, same locality, 20–24. IV. 1990, B. V. BROWN leg. [PMA]; 10 males, same locality, 27. IV–3. V. 1990, B. V. BROWN leg. [PMA]; 7 males, same locality, 3–12. V. 1990, B. V. BROWN leg. [PMA]; 1 male, same locality, 7–11. V. 1990, B. V. BROWN leg. [PMA]; 4 males, Khap Yai Nat. P., 40 km S of Pak Chong, Thailand, 10–17. III. 1989, T. W. THORMIN leg. [PMA]; 1 male, Doi Inthanon Nat. Park, 70 km SW Chiang Mai, Thailand, 31. I–7. II. 1989, T. W. THORMIN leg. [PMA]; 1 male, Doi Inthanon National Park, 1,300m, Chiang Mai, Thailand, 7–12.V.1990, E. FULLER leg. [PMA]; 2 males, Chang Mai, Thailand, 8. IX. 1989, M. N. leg. [NSMT, NIAES].

Other specimens examined. 1 male, Karnataka, Bangalore (916 m alt.), India, 11–20. IX. 1988, K. GHORPADE leg.; 3 males, same locality, 1–10. IX. 1988, K. GHORPADE leg.; 2 males, Tamil Nadu, Mudumalai Natl. Pk. (900 m alt.), India, 20–30. VII. 1984, B. GILL leg.; 5 males, Karnataka, Yellapur, 12 km sw. (500 m alt.), India, 7. VI–14. VIII. 1984, B. GILL leg.



Figs. 15–21. *Dissomphalus* spp., male. — 16–19. *D. thaianus* sp. nov.; 20–21, *D. wusheanus* sp. nov. — 16, 20, Head, full-face view; 17, forewing (cu-v, transverse median vein; b, basal vein); 18, pronotal disc; 19, second metasomal tergum, dorsal view; 21, ditto, dorsolateral view.

Distribution. Thailand, India.

Remarks. The holotype and most of paratype specimens were taken at Malaise trap.

***Dissomphalus wusheanus* sp. nov.**

(Figs. 20, 21)

Holotype. Male. HL 0.73 mm; HW 0.75 mm; FW 0.45 mm; LM 1.30 mm; LPD 0.40 mm; WPD 0.55 mm; FWL 2.5 mm; TL 3.2 mm.

Head black; mesosoma blackish brown; metasoma brown; mandible, antenna and legs yellow.

Head as long as wide, and strongly microreticulate with shallow coarse punctures. Mandible with 3 teeth; apical tooth acute and largest; 2nd tooth acute triangular; basal tooth broad and round. Median lobe of clypeus with 2 blunt angles and a median tooth. First 5 antennomeres in a ratio of 11 : 4 : 4.5 : 4 : 4.5 in length. Eye 0.30 mm in length.

Ocelli relatively large, forming a regular triangle; OOL 1.38 times WOT.

Pronotal disc 0.31 times as long as wide, strongly microreticulate; anterior half with shallow sparse punctures; posterior half largely impunctate. Mesonotum microreticulate and impunctate. Propodeal disc 0.73 times as long as wide; median carina present on basal 2/3 of disc; basal triangular area relatively densely reticulate; sublateral area smooth and shining excepting weakly microreticulate posterolateral portions.

Second metasomal tergum with shallow, oval depressions laterally; the depression with several small pits on its anterior end; outer margin of depression with 4 distinct hairs.

Variation. The smallest individual with the following measurements: HL 0.48 mm; HW 0.48 mm; TL 2.8 mm.

Holotype. Male, Wushe (1,150 m alt.), Taiwan, 23. III. 1988, H. and M. TOWNES leg. [PMA].

Paratypes. 2 males, same data as holotype [PMA].

Distribution. Taiwan.

Keys to the Oriental species of *Dissomphalus*

(Male)

1. Femora reddish brown; trochanters, tibiae and tarsi red; transverse median (cu-v) vein short, 1/3 the length of basal vein. *D. brevinervis* KIEFFER [Sumatra]
- Femora dark brown to yellow; trochanters, tibiae and tarsi yellow; transverse median (cu-v) vein more than 1/2 the length of basal vein. 2
2. Outer margin of depression on the 2nd metasomal tergum with distinct erect or suberect hairs. 3
- Outer margin of depression on the 2nd metasomal tergum without hairs. 5
3. Anterolateral margin of clypeus remarkably produced; hairs on the constriction of 2nd metasomal tergum very long as in Fig. 8. *D. malaysianus* sp. nov. [Borneo]
- Anterolateral margin of clypeus not produced; hairs on the constriction of 2nd metasomal tergum shorter (Figs. 3 and 21). 4
4. Median lobe of clypeus triangular, with a median angle; anterior margin of pronotal disc carinate. *D. browni* sp. nov. [Thailand]
- Median lobe of clypeus rather square, with a median projection and a pair of lateral obtuse angles; anterior margin of pronotal disc not carinate.
..... *D. wusheanus* sp. nov. [Taiwan]
5. Depression of 2nd metasomal tergum long, teardrop-shaped as in Figs. 6 and 11. ...
..... 6
- Constriction of 2nd metasomal tergum more or less circular. 7
6. Pronotal disc with a carinate anterior margin; median lobe of clypeus with a median obtuse angle as in Fig. 9. *D. nepalensis* sp. nov. [Nepal, India]
- Pronotal disc without carina; median lobe of clypeus with a median acute angle and a pair of lateral obtuse angles as in Fig. 4. *D. changmaiensis* sp. nov. [Thailand]
7. Depression on the 2nd metasomal tergum circular, shallow and large; a pit present at middle of the depression; outer margin of depression simple, not carinate.
..... *D. thaianus* sp. nov. [Thailand, India]
- Depression on the 2nd metasomal tergum deep, present at laterally; a pit present at anterior portion of the depression; outer margin of depression carinate.
..... *D. philippinensis* sp. nov. [the Philippines]

(Female)

1. Head impunctate. 2
- Head distinctly punctate. 4
2. Body black; tibiae and tarsi yellowish white.
..... *D. tibialis* ASHMEAD [the Philippines]
- Body light yellow; legs pale yellow. 3
3. Eye present; total body length 2.5 mm. *D. fuscus* (KIEFFER) [Sumatra]
- Eye absent; smaller, total body length 1.1 mm.
..... *D. minor* TERAYAMA and YAMANE* [Borneo]
4. Mandible with 4 teeth; small species, head ca. 0.31 mm in width.
..... *D. kinabarensis* TERAYAMA [Borneo]
- Mandible with less than 4 teeth; larger species, head wider than 0.40 mm. 5
5. Anterior margin of clypeus with 7 small teeth; mandible with 3 teeth.
..... *D. chipenensis* TERAYAMA [Taiwan]
- Anterior margin of clypeus angulated medially, but without any tooth; mandible
with 2 teeth. *D. khaoyaiensis* TERAYAMA [Thailand]

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*The generic name *Dissomphalus* is masculine, so *D. minus* described by TERAYAMA and YAMANE in 1997 should be emended to *D. minor*.

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