

ORIENTAL AND AUSTRALIAN SPECIES OF THE GENUS *PROSTEMMA* LAPORTE (HETEROPTERA: NABIDAE)

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KERZHNER, I.M. & STROMMER, N.G. 1990. Oriental and Australian species of the genus *Prostemma* Laporte (Heteroptera: Nabidae). *Rec. S. Aust. Mus.* 24(1): 27-34.

Two new species, *P. walkeri* (Sri Lanka, south-west India) and *P. australicum* (Australia), and a new subspecies *P. fasciatum sulawesense* (Sulawesi I.) are established. A key to species and revised data on distribution are given. Lectotypes of *P. carduelis* Dohrn, of its junior synonym *P. placens* Walker, and of *P. fasciatum* (Stål) are designated.

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Manuscript received 13 June 1989.

The genus *Prostemma* Laporte, 1832 is widely distributed in the Old World. The last revision of the genus was published by Reuter & Pöppius (1909). A review of palearctic species is given by Kerzhner (1981), a review of Afrotropical species by the same author is in press.

The following abbreviations are used for institutions in which the material is preserved (curators who lent material are in parentheses): AM - Australian Museum, Sydney (Dr C.N. Smithers); AMNH - American Museum of Natural History, New York (the late Prof. P. Wygodzinsky); ANIC - Australian National Insect Collection, CSIRO, Canberra (Dr J.A.L. Watson); AUW - Agricultural University, Wageningen (the late Dr R.H. Cobben); BMNH - British Museum (Natural History), London (Dr W.R. Dolling); CU - Connecticut University, Storrs, Conn. (Prof. J.A. Slater); EQU - Entomology Department, Queensland University, St Lucia (the late Dr T.E. Woodward); IB - Institut Royal de l'Histoire Naturelle de Belgique, Bruxelles (Dr A. Capart); NMP - Narodni Museum, Prague (Dr L. Hoberlandt); NRS - Naturhistoriska Riksmuseet, Stockholm (Dr P. Lindskog); QM - Queensland Museum, Brisbane (Dr G.B. Monteith); SAMA - South Australian Museum, Adelaide (Dr G.F. Gross); USNM - U.S. National Museum of Natural History, Washington, D.C. (Dr Th. J. Henry); VPG - V.P. Gapud's collection, College, Laguna, Philippines; ZIL - Zoological Institute, Academy of Sciences of the USSR, Leningrad; ZMB - Zoologisches Museum der Humboldt-Universität, Berlin, GDR (Dr U. Göllner-Scheiding); ZMH - Zoological Museum, University of Helsinki (Dr A. Jansson).

The sign '?' is used for specimens examined.
All measurements are in mm.

KEY TO THE ORIENTAL AND AUSTRALIAN SPECIES OF *PROSTEMMA*

- 1 — Hind lobe of pronotum, scutellum and clavus (except sometimes a spot at base of outer margin) black 2
- Hind lobe of pronotum, scutellum and clavus (except its extreme apex) red 3
- 2(1) — Corium black with 2 yellowish white spots: at base and near the middle; the last spot is connected with the inner margin of corium by a narrow stripe. Membrane black with a spot in inner corner and apical 1/5 white. Hemelytra covering at least 4/5 of abdomen length. Length 5.6-6.7 *P. flavomaculatum* Lethierry
- Corium yellow with two small black spots: near the middle of outer margin and at apex. Membrane black with a white spot in outer corner. Hemelytra reaching about half of abdomen length only. Length 6.5 *P. siamense* Noualhier
- 3(1) — Underside of meso- and metathorax black or dark brown (sometimes mesothorax reddish in the middle). Inner corner of membrane with a white spot. Base of corium whitish or yellowish white, with a brownish vein. Length 7.8-9.8 *P. carduelis* Dohrn
- Underside of meso- and metathorax red or yellow red. Inner corner of membrane without white spot. Base of corium red, with a vein of the same colour. Length as a rule less than 7.5 4
- 4(3) — White spot at outer corner of membrane and apex of corium (triangular, part lying on corium forms about 1/10 of its length (measured at outer margin of hemelytron). White spot at apex of membrane with fore margin deeply invaginated, hind margin touching the apex of membrane, lateral corners not rounded and the outer of them connecting by a narrow whitish stripe with white spot at outer corner of membrane. Mid and hind femora brown for a least half their length. Length 6.5-7.5, width

- 2.0-2.4. *P. australicum* sp.n.
 — White spot at outer corner of membrane and apex of corium more or less quadrangular¹, the part lying on corium forms about $\frac{1}{4}$ to $\frac{1}{2}$ of its length². White spot on apex of membrane as a rule with fore margin straight or feebly invaginated, hind margin usually separated from apex of membrane by a more or less distinct greyish stripe, lateral corners usually rounded, never connecting with white spot at outer corner of membrane. Mid and hind femora brown less than one half, usually no more than one-third of their length. 5
 5(4) — White stripe of corium with subparallel fore and hind margins. White spot on apex of membrane about twice as wide as long. White spot on outer corner of membrane usually lies on corium by half its length. Length 6.5-7.6, width 2.0-2.5.
 *P. fasciatum* (Stål), 6
 — White stripe of corium distinctly widened at the middle, stripes of opposite hemelytra widely separated. White spot on apex of membrane no more than 1.5 times as wide as long. White spot on outer corner of membrane lies on corium by a third or fourth of its length. Red colour at base of hemelytra not changing before the black stripe. Length 6.1-6.8, width 1.75-1.95.
 *P. walkeri* sp.n.
 6(5) — White stripe of corium more or less subequal in width to black stripes behind and before it, often white stripes of opposite hemelytra are connected by a white spot at base of membrane. Front margin of anterior black stripe of corium straight or wavy. Red colour at base of hemelytra usually gradually turning into yellow or white before the black stripe. *P. f. fasciatum* (Stål)
 — White stripe of corium much narrower, two to three times narrower than black stripes behind and especially before it, white stripes of opposite hemelytra not connected. Front margin of anterior black stripe of corium angulate. Red colour at base of hemelytra practically not changing before the black stripe,
 *P. f. sulawesiense* sp.n.

¹The form of the spot should be examined carefully. Its inner margin is often masked by black margin of the opposite membrane lying over or under the spot, therefore it may look at first glance triangular, as in the figure of *P. fasciatum* in Reuter & Poppius (1909).

²It is sometimes difficult to determine the border between membrane and apex of corium. The apex of corium can be distinguished by presence of hairs; besides, it is thicker than the membrane and mostly somewhat yellowish.

***Prostemma flavomaculatum* Lethierry, 1883**
 (Figs 2a, 3)

Prostemma flavomaculatum Lethierry, 1883: 649; Distant, 1904: 393.

Nabis flavomaculatus: Reuter & Poppius, 1909: 10, 17; Bergroth, 1915: 178.

Syntype(s)

Male(s) (according to Reuter & Poppius, 1909), BURMA, Minhla, leg. Comotto, stated to be in Museo Civico di Storia Naturale in Genova, not examined.

Distribution and material examined

INDIA: Bombay! (Reuter & Poppius, 1909; Bergroth, 1915; ZMH), Chick Ballapur! (BMNH), W. Almora, Kumaon, U.P. (BMNH, Dolling *in litt.*), Padang and Gopaldhara near Darjeeling! (BMNH). NEPAL: between Kathmandu and Everest (Prof. R. Remane *in litt.*). BURMA: Minhla (Lethierry, 1883), Carin, Asciti Ghecu (BMNH, Dolling *in litt.*). We examined 14 imagoes and 1 larva.

Note. The species is very closely related to the Afrotropical *P. concinnum* Walker (eva Kirkaldy), which is in the main larger (length 6.4-8.0), with relatively broader pronotum (proportion width to length of pronotum in *P. flavomaculatum* 1.10-1.16, in *P. concinnum* 1.18-1.23) and usually with more distinct brown rings on the femora, while the paramere in *P. concinnum* is longer, with more broadly rounded outer corner and some other differences.

***Prostemma siamense* Noualhier, 1896**

Prostemma siamense Noualhier, 1896: 253; Noualhier & Martin, 1904: 176, pl. 10, fig. 2; Distant, 1919: 285.

Nabis siamensis: Reuter & Poppius, 1909: 10, 15.

Syntype

Female, now without head, apparently the only specimen used for description. CAMPUCHEA (Siam), Battambang (according to Reuter & Poppius, 1909), leg. A. Pavie, in Muséum National d'Histoire Naturelle, Paris (Dr J. Pericart, *in litt.*), not examined by us.

The species is known from the type only. It was examined and redescribed by Reuter & Poppius (1909).

***Prostemma carduelis* Dohrn, 1858**
 (Figs 1a, 2b, 3)

Prostemma carduelis Dohrn, 1858: 229, pl. 1, fig. 8; Distant, 1903: 253; Distant, 1904: 392, fig. 249 (part.).

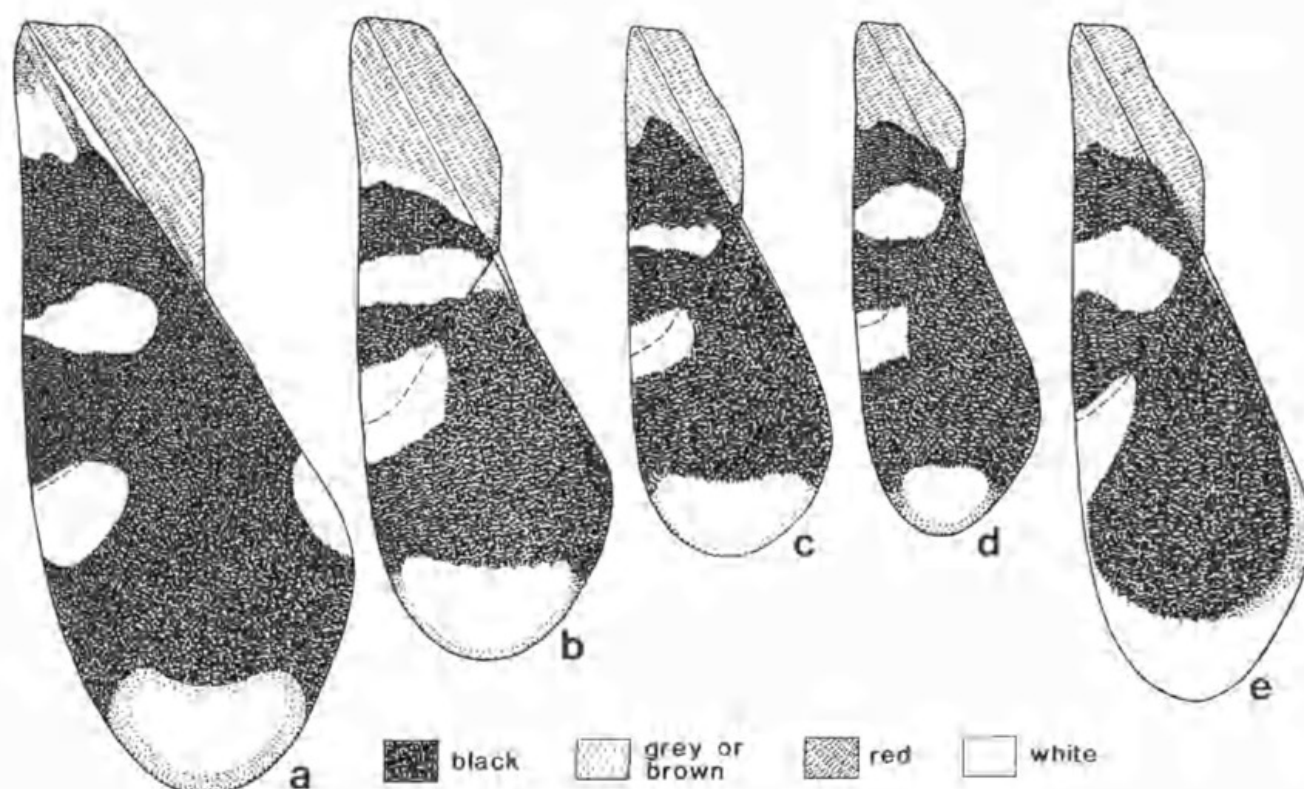


FIGURE 1. *Prostemma*, left hemelytron: a - *P. carduelis* Dohrn, b - *P. fasciatum fasciatum* (Stål), c - *P. fasciatum sulawesiense* subsp.n., d - *P. walkeri* sp.n., e - *P. australicum* sp.n.

Nabis (Poecilla) carduelis: Stål, 1873: 108.

Prostemma placens Walker, 1873: 137 (syn. by Distant, 1903).

Nabis carduelis: Reuter & Poppius, 1909: 11, 18 (part.).

Nabis carduelis var. *placens*: Reuter & Poppius, 1909: 19.

Types

Lectotypes: of *carduelis*, male, hereby designated, labelled '3259', 'Type', *carduelis* Dohrn, Ceylon, [leg.] Nicl[er]. *Nabis carduelis* Dohrn. F.

Schumacher rev., in ZMB. Syntypes from Colombo in Dohrn's collection (now in Warsaw), probably lost.

Of *placens*, female, hereby designated, labelled 'Type', 'Saunders 65.13', 'Ind.', '27. *Prostemma placens*', in BMNH. Paralectotype: male (not female as stated in the original description) labelled 'E. Ind.' (hand-written circular label), '*Prostemma placens*, Walker's Catal.', in BMNH, examined.

Distribution and material examined

SRI LANKA: Colombo (Dohrn, 1858), also specimens labelled 'Ceylon' and collected by Nietner! (ZMB), by Green! (BMNH) and by unknown person! (NRS). INDIA: Coimbatore! (AMNH, CU, USNM, ZIL), Nilgiri Hills! (CU), Chick Ballapur! (BMNH), Secunderabad! (BMNH), Poona! (BMNH), Mile 4 Wirangan in Kharagoda, Bombay! (BMNH), Mandar! (IB), Janjgir, Bilaspur! (BMNH), Pusa! (BMNH), Purnea Distr.! (BMNH), Balaore (Reuter & Poppius, 1909), also specimens without exact localities! (BMNH). NEPAL: Iera! (BMNH), Indrawati Khola, Saretar! (NMP). We examined 23 specimens.

Notes. The species is closely related to the Afrotropical *P. falkensteinii* Stein, from which it differs in the less dense punctuation of the hind lobe of pronotum and smaller paramere. Distant's (1904)

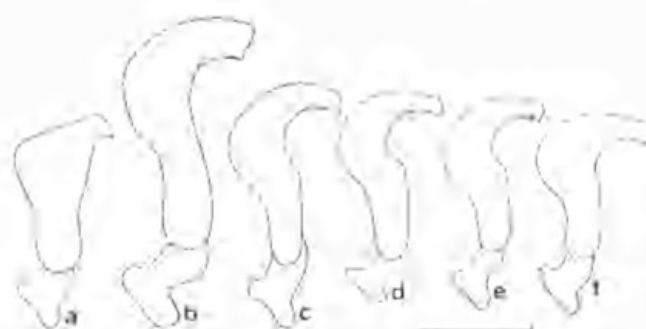


FIGURE 2. *Prostemma*, left paramere: a - *P. flavomaculatum* Lethierry, Chick Ballapur, b - *P. carduelis* Dohrn, Coimbatore, c - *P. fasciatum fasciatum* (Stål), Bhamo, d - *P. fasciatum sulawesiense* subsp.n., holotype, e - *P. walkeri* sp.n., holotype, f - *P. australicum* sp.n., Townsville.

record from Burma, judging from specimens in BMNH and ZIL collected by L. Fea, refers to *P. fasciatum*. Reuter & Poppius (1909), judging from their data on the colour of thorax ('meso- et metapleuris nigris vel rufo-testaceis') and the length of the 'typical form' (6 mm), apparently confused under *P. carduelis* 3 species: their specimens of 'var. *placens*' from India belong to *P. carduelis*, whereas specimens identified as the typical form of *P. carduelis* belong in fact to *P. fasciatum* (Burma, Vietnam) and *P. walkeri* (Sri Lanka). Philippine specimens recorded as *P. carduelis* by Stål (1871) were later described by him as a new species *P. fasciatum*.

***Prostemma fasciatum fasciatum* (Stål, 1873)**
(Figs 1b, 2c, 4)

Nabis (Poecilta) fasciata Stål, 1873: 108.

Nabis fasciatus: Kirkaldy, 1901: 220; Reuter & Poppius, 1909: 11, 19, fig 3; Poppius, 1914: 135; Gross, 1963: 390.

Prostemma fasciatum: Takara, 1957: 52; Hasegawa, 1962: 20, fig. 21; Miyamoto & Hidaka, 1963: 80; Miyamoto, 1964: 275; Kerzhner, 1970: 357; Hsiao & Ren, 1981: 544 (not pl. 82, fig. 804 representing a species of *Rhamphocoris*!).

Metastemma carduelis (misidentification): Stål, 1871: 675.

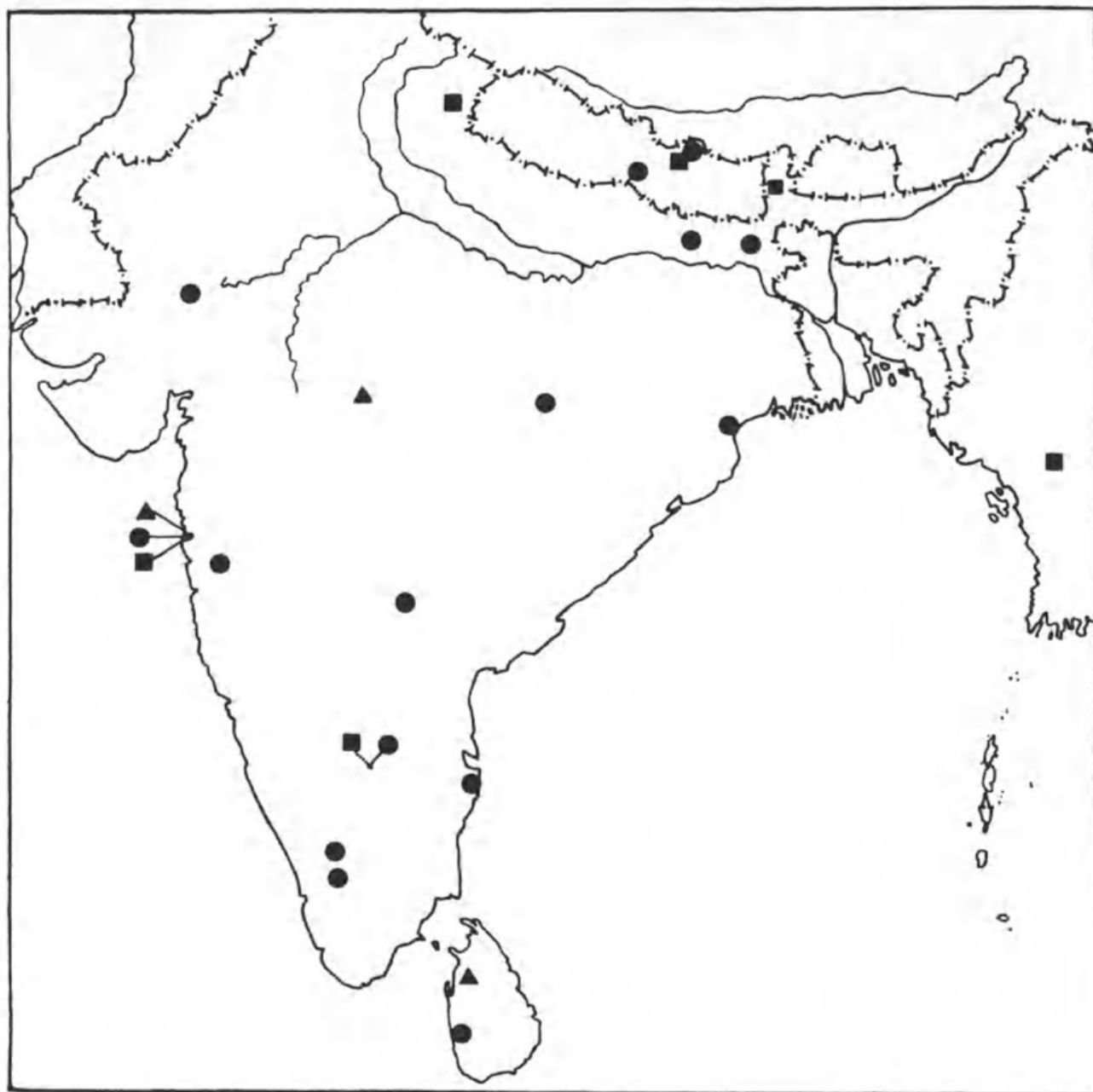


FIGURE 3. Distribution of *Prostemma flavomaculatum* Lethierry (squares), *P. carduelis* Dohrn (circles) and *P. walkeri* sp.n. (triangles).

Prostemma carduelis (misidentification): Distant, 1904: 392 (part.).

Nabis carduelis (misidentification): Reuter & Poppius, 1909: 18 (part.).

Type

Lectotype: female (not male as stated in the original description!), hereby designated, labelled *fasciata* (Stål) (apparently in Stål's handwriting), NRS. The species was described from the Philippines.

Distribution and material examined

INDIA: Purnea Distr.! (BMNH). BURMA: Bhamo! (Distant, 1904, as *carduelis*; BMNH, ZIL). Pegu, Palon (Kirkaldy, 1901; Distant, 1904, as *carduelis*; Reuter & Poppius, 1909, as *carduelis*). Tikekee (Reuter & Poppius, 1909, as *carduelis*). THAILAND: Bangkok! (BMNH), Rarburi! (USNM), Chiang Mai (Hasegawa, 1962). LAOS: Vientiane! (BMNH, ZIL). CAMPUCHIA: Kampong Cham and Siem Reap (Hasegawa, 1962). VIETNAM: Chiem Hoa (Reuter & Poppius, 1909, as *carduelis*), Hanoi! (ZIL), Tam Dao! (ZIL), Dong Hoi! (ZIL), Prov. Gia Lai- Cong Tum! (ZIL). S. CHINA: Guangxi: Yanshan (Hsiao & Ren, 1981); Guangdong: Guangzhou (Hsiao & Ren, 1981), Linhsien (Linchow) (= Lianxian)! (BMNH); Fujian: Gu Shan nr Fuzhou! (ZIL). TAIWAN (Hasegawa, 1962; Miyamoto, 1964; Hsiao & Ren, 1981). JAPAN: Amami-Oshima, Okinawa and Iriomote Islands (Takara, 1957; Miyamoto & Hidaka, 1963; Miyamoto, 1964). PHILIPPINES: no exact locality, lectotype! (Stål, 1873; NRS); Luzon: Alabang, Rizal Prov.! (USNM), Mt Makiling! (VPG); Mindanao: Davao! (ZMH), Momungan! (BMNH). MALAYSIA: Selangor: Kuala Lumpur! (BMNH); Sabah: 'NO Borneo' (Poppius, 1914), Mt Kinabalu, Tenom Kinangau! (BMNH), Belloian nr Sandakan (BMNH); Sarawak: Ban! (BMNH), Kuching (BMNH). INDONESIA: Sumatra (Reuter & Poppius, 1909): Tebingtinggi! (Poppius, 1914; ZMH), Medan! (NRS), Tjinta Radja! (NRS), Tanjungmorawa! (AUW, ZIL), Pagar Baran! (AUW), Labuan Bilik! (ZMH), Fort de Koek (= Bukittinggi)! (BMNH); Java: Chandoe (Reuter & Poppius, 1909), Sukabumi (Poppius, 1914), nr Banyumas! (BMNH), Banyuwangi! (ZIL). We examined 43 specimens. Many of them were collected at light.

Prostemma fasciatum sulawesiense subsp.n.
(Figs 1c, 2d, 4)

Diagnosis

Differs from the nominotypical subspecies by the colour of the hemelytra, as indicated in the key. The paramere is slightly smaller, but does not differ in form.

Types

Holotype: male (badly damaged, without head and some legs), INDONESIA, south of Sulawesi Island, Macassar (now Ujung Pandang), leg. W. Doherty, 1903-31 (BMNH).

Paratype: female, INDONESIA, south of Sulawesi Island, 'Lompoh Batang' (Lompobattang Mt), 200 m leg. H. Lucht (AUW).

Prostemma walkeri sp.n.
(Figs 1d, 2e, 3)

Prostemma carduelis var.? Walker, 1873: 137.

Description

Body covered by long black hairs. Head, pronotum, a narrow stripe at outer margin of corium, legs, underside of pro- and mesothorax and of abdomen shining, the remaining parts dull. Hind lobe of pronotum with few scattered punctures. Hemelytra reaching or slightly surpassing the apex of abdomen. Fore femora strongly thickened, but without angular projection near the middle.

Head and rostrum black or blackish brown, segment IV of rostrum yellow. Antennae yellow to brown. Fore lobe of pronotum black, hind lobe red. Scutellum red to yellowish red. Clavus red, its extreme apex with black margins and usually with a very small yellowish spot. Base of corium (about a third of its length) red, remaining part black, with a transverse spot in the middle and apex white. The white spot is distinctly narrowed to outer margin of corium, its inner margin is rounded. Membrane black, outer corner with a sub-quadrangle white spot partly (by $\frac{1}{4}$ to $\frac{1}{2}$ of its length) lying at apex of corium. Inner corner of membrane without white spot. Apex of membrane with a white spot separated from hind margin of membrane by a greyish stripe. Fore margin of this white spot nearly straight, outer corners broadly rounded, width of spot about 1.5 times its length. Hypocostal lamina red, blackish at extreme apex. Underside of body black or dark brown, except hind part of propleurae, meso- and metathorax red or yellowish red. Fore coxae dark brown, mid and hind coxae light brown. Trochanters pale yellow. Fore femora dark brown, apical fourth pale yellow. Mid and hind femora yellow with the middle third brown. Tibiae and tarsi yellow to brown.

Paramere as in *P. fasciatum*, but smaller.

Length σ 6.1-6.8, φ 6.5, width σ 1.75-1.95, φ 1.9.

Measurements: Head length (except neck and base of rostrum) σ 0.71-0.79, φ 0.71, width σ 0.73-0.83, φ 0.79, interocular distance σ 0.31-0.34, φ 0.33, antennal segments length 0.37 (0.11 + 0.79) - (0.14 + 0.93), 0.81, 0.79, pronotum length σ

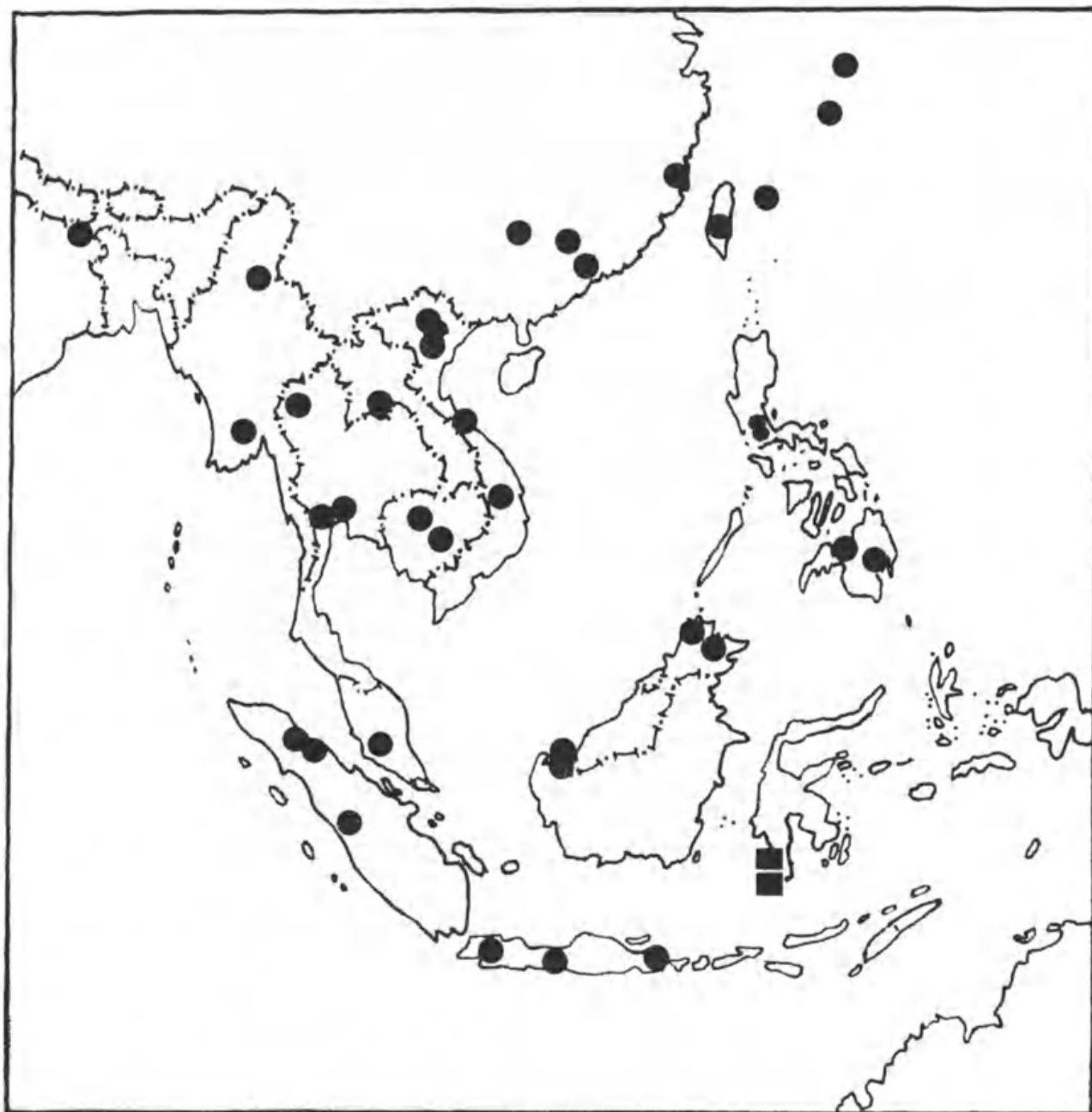


FIGURE 4. Distribution of *Prostemma fasciatum fasciatum* (Stål) (circles) and *P. fasciatum sulawesiense* subsp.n. (squares).

1.36–1.54, ♀ 1.41, width ♂ 1.79–1.96, ♀ 1.80, hind tibia length 1.80–2.15.

Types

Holotype: male, SRI LANKA, Nat. Park Wilpattu, Talawila, 13 km W. of Maradanmaduwa, 7–9 Oct. 1982, V. Zaitzev (ZIL).

Paratypes: INDIA: 1♂, Hoshangabad, at light, 14–19 Oct. 1911, T.B.F. (BMNH); 1♀ labelled 'E.Ind.' (on circular label), with explanatory label of Dr W.R. Dolling 'Wooley/Hewitson, probably Bombay, Walker's "*carduelis* var.?", (BMNH).

Notes. The new species is closely related to *P. fasciatum*, but differs in somewhat more slender

body as well as in the form of the white markings as indicated in the key. It is named in honour of F. Walker, who published its first description.

Prostemma australicum sp.n. (Figs 1e, 2f, 5)

Description

Body covered with long black hairs. Head, pronotum, a narrow stripe at outer margin of corium, legs, underside of pro- and mesothorax and of abdomen shining, the remaining parts dull. Hind lobe of pronotum with few scattered punctures. Hemelytra reaching or slightly surpassing apex of

abdomen. Fore femora strongly thickened, but without angular projection near middle.

Head and rostrum black or blackish brown, segment IV of rostrum yellow. Antennae yellow to brown. Fore lobe of pronotum black, hind lobe red. Scutellum red. Clavus red, its extreme apex black or with black margins. Base of corium (about a third of its length) red, remaining part black with a transverse spot near middle and extreme apex white. White spot is distinctly narrowed to outer margin of corium, its inner margin is rounded or angular. Membrane black, outer corner with a triangular white spot, occupying also extreme apical margin of corium. Inner corner of membrane without white spot, but often with a greyish white margin. Apex of membrane with a white spot not separated from hind margin of membrane by a greyish stripe. Fore margin of this white spot deeply concave, outer corners prolonged along the margins of the membrane in form of greyish or white stripes reaching the white spot at outer corner of membrane and often the inner corner of membrane. Hypocostal lamina red, blackish at extreme apex. Underside of body black or dark brown, except hind part of propleurae, meso- and metathorax red or yellow. Fore coxae dark brown, mid and hind coxae deep yellow to brownish yellow. Trochanters pale yellow. Fore femora dark brown, pale yellow apically; mid and hind femora dark brown, about $\frac{1}{2}$ basal yellow, sometimes yellow apically on the ventral side, brown part occupies more than a half length of femur. Tibiae and tarsi brownish yellow.

Paramere relatively broader than in *P. fasciatum* and *P. walkeri*, with less invaginated inner margin.

Length σ 6.5–7.1, ϕ 6.3–7.45, width σ 2.0–2.35, ϕ 2.0–2.4.

Measurements: Head length (except neck and base of rostrum) about 0.75–0.80, width 0.80–0.85, interocular distance 0.34–0.40, antennal segments length 0.35–0.45, (0.10 + 0.95) – (0.12 + 1.13), 1.00–1.07, 0.80–0.95, pronotum length 1.45–1.65, width 1.85–2.20.

Types

Holotype: male, AUSTRALIA, Queensland, Leichhardt Falls, 35 ml SE of Burketown, 24 May 1972, G.B. and S.R. Monteith (EQU).

Paratypes: AUSTRALIA: Queensland: 1 σ , 2 ϕ , same labels as in holotype (EQU); 1 σ , Camooweal, 15 Sept. 1968, K. Armstrong (AM); 1 σ , 1 ϕ , Townsville, Jan. and Feb. 1945, B. Malkin (USNM); 1 σ , 31 km NW by N of Longreach, 23–13'S, 144°04'E, 10 May 1973, M.S. Upton (ANIC); 1 ϕ ,

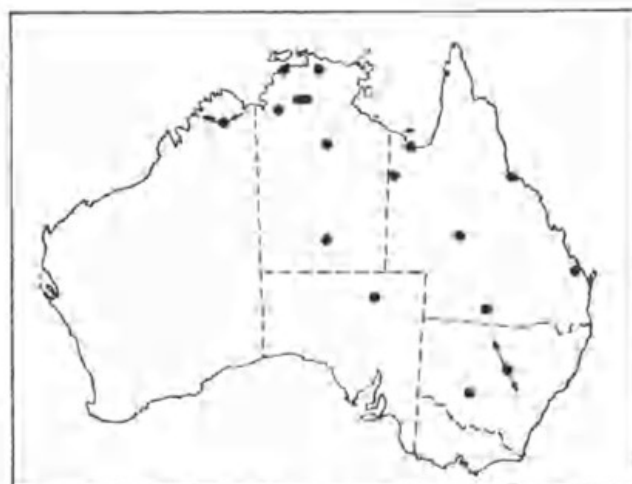


FIGURE 5. Distribution of *Prostemma australicum* sp.n.

Cunnamulla, Nov. 1941, N. Geary (AM); 1 ϕ , Wallaville, T.L. Bancroft; Western Australia: 1 ϕ , Kimberley Distr., March 1911, Mjöberg (NRS); Northern Territory: 1 ϕ , Coastal Plains Research Station, C.S.I.R.O., nr Darwin, at light, 6 June 1966, E. Langfield (ANIC); 1 ϕ , 5 km NNW of Cahills Crossing, East Alligator Riv., 12°23'S, 132°57'E, 8 June 1973, R. Kitching (ANIC); 2 ϕ , 4 km W of Coolibah HS, 15°34'S, 130°54'E, 13 June 1968, M. Mendum (ANIC); 1 σ , 1 ϕ , Tindal, 14°31'S, 132°22'E, 1–20 Dec. 1967, light trap, W.J.M. Vestjens (ANIC); 1 ϕ , Katherine Riv., 25 km NE of Katherine, 3 Oct. 1977, G.F. Gross and J.A. Forrest (SAMA); 7 ϕ , Lake Woods, 15 km SW of Elliot, at light, 5 Oct. 1977, G.F. Gross (SAMA); 1 ϕ , 22 mls S of Alice Springs, 15 Feb. 1966, J.A. Grant, BM/CSIRO Expedition (BMNH); New South Wales: 1 σ , Bogan Riv., Jan. 1932, J. Armstrong (AM); 2 ϕ , 'The Cubas', via Booligal, 21 Feb.–1 March 1965, A. Forbes (AM); South Australia: 2 ϕ , Madigan Gulf, Lake Eyre, at light, 5 Nov. 1955, E.T. Giles (SAMA).

Notes

This species represents the first record of the genus *Prostemma* from Australia, and was mentioned by Woodward & Strommer (1982), when they referred to a genus of Nabidae, not recorded from Australia. Characters differentiating *P. australicum* from the closely related oriental *P. fasciatum* and *P. walkeri* are indicated in the key.

ACKNOWLEDGEMENTS

The authors acknowledge the help of all curators listed with their institutions in the introduction, who provided material for this study.

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