

REVISION OF *PEDETHMA* WEISE (COLEOPTERA: CHRYSOMELIDAE)

STEVEN W. LINGAFELTER AND ALEXANDER S. KONSTANTINOV
Systematic Entomology Laboratory, PSI, Agriculture Research Service,
USDA
National Museum of Natural History, MRC-187
Washington, D.C. 20560, U.S.A.

Abstract

The flea beetle genus *Pedethma* Weise (Coleoptera: Chrysomelidae), occurring in Queensland and New South Wales, Australia, is revised. *Pedethma fuscipennis* Weise is designated as the type species. Lectotypes are designated for *P. fuscipennis* Weise, *P. malandensis* Weise, and *P. suturalis* Weise. Fourteen **new species** are described (type locality in parentheses): *P. australiensis* Lingafelter and Konstantinov (Queensland: Mt. Glorious National Park); *P. cookensis* Lingafelter and Konstantinov (Queensland: Mt. Cook); *P. demiensis* Lingafelter and Konstantinov (Queensland: Mt. Demi); *P. howdeni* Lingafelter and Konstantinov (Queensland: Mt. Lewis); *P. humeromaculata* Lingafelter and Konstantinov (Queensland: Windin Falls via Butchers Creek); *P. kirejtshuki* Lingafelter and Konstantinov (New South Wales: Dorrigo National Park); *P. kurandensis* Lingafelter and Konstantinov (Queensland: Kuranda); *P. maculata* Lingafelter and Konstantinov (Queensland: Bellenden Ker Range); *P. nigra* Lingafelter and Konstantinov (Queensland: Bellenden Ker Range); *P. pinnipenis* Lingafelter and Konstantinov (Queensland: Hugh Nelson Range, 2.5 km S. of Crater National Park); *P. pubescens* Lingafelter and Konstantinov (Queensland: Bamboo Creek); *P. seymourensis* Lingafelter and Konstantinov (Queensland: Seymour Range, Polly Creek); *P. sinuatipennis* Lingafelter and Konstantinov (Queensland: Mt. Bartle Frere); and *P. weisei* Lingafelter and Konstantinov (New South Wales: Monga State Forest). A redescription of the genus and descriptions, diagnoses, and key to all species are presented.

The Australian alticine fauna is rich (51 genera have been reported in Australia, Seeno and Wilcox 1982, although some of these are erroneous records) but poorly studied. In 1923, Weise proposed the alticine genus *Pedethma* in his study of Queensland leaf beetles collected on a Swedish expedition there from 1910–1913. In that study, three species were described: *P. malandensis* Weise from Malanda, *P. suturalis* Weise from Herberton (both in northeast Queensland), and *P. fuscipennis* Weise from Tambourine in southeast Queensland. Since that paper, no additional species have been described. One of us (A. S. K.) had the opportunity to examine all the type specimens (deposited in Naturhistoriska Riksmuset, Stockholm, Sweden, NHRS). We designate *P. fuscipennis* Weise as the **type species** since no designation was made in Weise's paper or subsequently. For this and our ongoing studies of world alticine genera, we borrowed material from the Queensland Museum (QMBA) and CSIRO Australian Entomology National Collections (ANIC), among which we found numerous undescribed taxa. We also examined the holdings of the Natural History Museum, London (BMNH), the Canadian Museum of Nature (CMNC), and the Smithsonian Institution (NMNH) (acronyms from Arnett *et al.*, 1993). In total, we examined over 500 specimens of *Pedethma* representing 17 morphologically distinct species.

Little is known of the biology of *Pedethma*. The species are distributed along the eastern coast rainforests of Australia in northeast Queensland, South-

east Queensland, and along New South Wales (see Map 1 for all known localities of *Pedethma* species). More recently collected specimens have some plant association data (including *Acacia*, *Nothophagus*, and *Oxylobium*), but no hosts were mentioned in Weise (1923), Hawkeswood (1994), Jolivet and Hawkeswood (1995), or other papers to our knowledge. Most specimens were collected in October and November, but we have seen records from December through April as well. Based on label data, specimens have been collected in a great variety of ways including pyrethrum spray, malaise trap, sieved litter and Berlese funnels, yellow pan trap, pitfall traps, beating, and at white and UV light. They are probably abundant in rainforest undergrowth, since so many general collecting methods are effective.

Methods

Material of *Pedethma* was acquired from museums listed above. Type series and other specimens of the following non-*Pedethma* taxa were examined to ascertain their correct placement: *Sittacella*, *Micrantipha* (currently in *Orthaltica*), *Crepidodera parallela* Baly, *C. seminigra* Jacoby, *C. crassior* Blackburn, *C. dimidiata* Baly, *C. vestita* Baly, *C. indicica* Blackburn, *C. fuscitarsus* Lea and *C. instabilis* Lea. Our terminology is taken from Harris (1979), Konstantinov (1998), Lingafelter *et al.* (1998), Lingafelter and Konstantinov (2000), and Torre-Bueno (1989). Table 1 lists specific measurements and ratios for all species. Map 1 gives the collecting localities as mentioned in the Material Examined section.

Taxonomy

Diagnosis. *Pedethma* (Figs. 14–21) is a moderate sized, somewhat flattened and elongate alticine ranging from 2.2–4.1 mm in length (from anterior of pronotum to posterior of elytron) and 1.1–1.8 mm in greatest width (typically at anterior one-third of elytra). The head (Fig. 1) bears a variably developed, usually short frontal ridge and antennal calli. Large punctures occur on the frons and vertex around the eye margin, and these form a variably developed row of 4–6 setose punctures across the top of the head (although there is usually a wide, puncture free region in the middle of the vertex). The antennae are long, about two-thirds the length of the body, more so in males. The pronotum (Figs. 9, 14–21) is sinuate laterally, with an antemedial expansion and basal constriction, and is much wider than long, width ranging from 0.7–1.1 mm; length ranging from 0.5–0.9 mm. The posterior portion of the pronotum bears a straight or sinuate groove with a row of large punctures that ends before the margin on either side. The pronotum is relatively weakly punctate compared to the elytra. The elytra have uniform striae of large punctures, apical setae, and are variably maculate in some species. The humeral regions are well developed. There is also a round swollen callosity between the humeral callus and the suture on each elytron. The integument of all but one species is sparsely pubescent. Male and female genitalia for species of *Pedethma* are variable and diagnostic at the species level. The aedeagus (Figs. 22–27) is generally elongate, narrow, and moderately curved from lateral view but varies among species with regard to apical shape, longitudinal ridges and depressions, and degree of curvature. Aedeagi of some species may have truncate aedeagal apices, arrowhead expansions, or taper to a narrowly rounded apex. The spermathecae (Figs. 28–32) vary as well in the degree of curvature of the proximal and distal ends to one another and in the surface sculpturing. Most sperma-

Table 1. Body measurements (in millimeters) and ratios of *Pedethma* species.

	Average	Max.	Min.	# Measured
<i>P. fuscipennis</i> Weise				
Length of body (anterior of pronotum to posterior of elytron):	3.52	4.03	2.90	7
Length of pronotum:	0.82	0.93	0.69	7
Greatest width of pronotum:	1.09	1.24	0.91	7
Length/width of pronotum:	0.75	0.75	0.76	7
Length of elytron:	2.77	3.20	2.24	7
Greatest width of elytron:	0.79	0.95	0.64	7
Length of body/twice greatest width of elytron:	2.23	2.12	2.27	7
<i>P. suturalis</i> Weise				
Length of body (anterior of pronotum to posterior of elytron):	3.04	3.44	2.74	5
Length of pronotum:	0.69	0.81	0.64	5
Greatest width of pronotum:	0.98	1.12	0.85	5
Length/width of pronotum:	0.70	0.72	0.75	5
Length of elytron:	2.35	2.66	2.08	5
Greatest width of elytron:	0.71	0.81	0.64	5
Length of body/twice greatest width of elytron:	2.14	2.12	2.14	5
<i>P. malandensis</i> Weise				
Length of body (anterior of pronotum to posterior of elytron):	2.75	2.98	2.52	2
Length of pronotum:	0.60	0.66	0.54	2
Greatest width of pronotum:	0.82	0.89	0.76	2
Length/width of pronotum:	0.73	0.74	0.71	2
Length of elytron:	2.10	2.33	1.88	2
Greatest width of elytron:	0.64	0.72	0.56	2
Length of body/twice greatest width of elytron:	2.15	2.07	2.25	2
<i>P. australiensis</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.53	2.62	2.49	3
Length of pronotum:	0.58	0.58	0.58	3
Greatest width of pronotum:	0.88	0.89	0.87	3
Length/width of pronotum:	0.66	0.65	0.67	3
Length of elytron:	1.98	2.01	1.93	3
Greatest width of elytron:	0.68	0.69	0.66	3
Length of body/twice greatest width of elytron:	1.86	1.90	1.89	3
<i>P. cookensis</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.84	2.98	2.60	3
Length of pronotum:	0.61	0.66	0.58	3
Greatest width of pronotum:	0.90	0.95	0.81	3
Length/width of pronotum:	0.68	0.70	0.72	3
Length of elytron:	2.22	2.38	1.94	3
Greatest width of elytron:	0.69	0.72	0.64	3
Length of body/twice greatest width of elytron:	2.06	2.10	2.03	3
<i>P. demiensis</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.91	3.45	2.46	5
Length of pronotum:	0.61	0.70	0.58	5
Greatest width of pronotum:	0.90	1.01	0.79	5
Length/width of pronotum:	0.68	0.69	0.73	5

Table 1. Continued.

	Average	Max.	Min.	# Measured
Length of elytron:	2.32	2.67	1.94	5
Greatest width of elytron:	0.71	0.89	0.56	5
Length of body/twice greatest width of elytron:	2.06	1.94	2.20	5
<i>P. howdeni</i> new species				
Length of body (anterior or pronotum to posterior of elytron):	3.11	3.47	2.90	3
Length of pronotum:	0.67	0.69	0.66	3
Greatest width of pronotum:	0.97	1.06	0.91	3
Length/width of pronotum:	0.69	0.65	0.73	3
Length of elytron:	2.42	2.70	2.24	3
Greatest width of elytron:	0.75	0.81	0.71	3
Length of body/twice greatest width of elytron:	2.07	2.14	2.04	3
<i>P. humeromaculata</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.82	3.18	2.64	3
Length of pronotum:	0.59	0.66	0.54	3
Greatest width of pronotum:	0.87	0.97	0.81	3
Length/width of pronotum:	0.68	0.68	0.67	3
Length of elytron:	2.25	2.52	2.05	3
Greatest width of elytron:	0.71	0.78	0.66	3
Length of body/twice greatest width of elytron:	1.99	2.04	2.00	3
<i>P. kirejtshuki</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	3.67	—	—	1
Length of pronotum:	0.93	—	—	1
Greatest width of pronotum:	1.43	—	—	1
Length/Width of pronotum:	0.65	—	—	1
Length of elytron:	2.95	—	—	1
Greatest width of elytron:	0.93	—	—	1
Length of body/twice greatest width of elytron:	1.97	—	—	1
<i>P. kurandensis</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.66	2.90	2.43	5
Length of pronotum:	0.58	0.60	0.54	5
Greatest width of pronotum:	0.86	0.91	0.81	5
Length/width of pronotum:	0.67	0.66	0.67	5
Length of elytron:	2.02	2.28	1.78	5
Greatest width of elytron:	0.65	0.69	0.58	5
Length of body/twice greatest width of elytron:	2.05	2.10	2.10	5
<i>P. maculata</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	3.67	4.21	3.28	5
Length of pronotum:	0.75	0.81	0.68	5
Greatest width of pronotum:	1.09	1.20	0.97	5
Length/width of pronotum:	0.69	0.68	0.70	5
Length of elytron:	2.95	3.36	2.59	5
Greatest width of elytron:	0.85	0.97	0.77	5
Length of body/twice greatest width of elytron:	2.16	2.17	2.13	5
<i>P. nigra</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.46	2.70	2.18	4

Table 1. Continued.

	Average	Max.	Min.	# Measured
Length of pronotum:	0.54	0.58	0.50	5
Greatest width of pronotum:	0.76	0.81	0.69	5
Length/width of pronotum:	0.71	0.72	0.73	5
Length of elytron:	2.01	2.14	1.78	5
Greatest width of elytron:	0.59	0.68	0.54	5
Length of body/twice greatest width of elytron:	2.09	1.99	2.02	5
<i>P. pinnipenis</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.75	2.93	2.48	6
Length of pronotum:	0.58	0.62	0.50	6
Greatest width of pronotum:	0.86	0.97	0.74	6
Length/width of pronotum:	0.67	0.64	0.68	6
Length of elytron:	2.22	2.40	2.02	6
Greatest width of elytron:	0.65	0.70	0.60	6
Length of body/twice greatest width of elytron:	2.12	2.09	2.07	6
<i>P. pubescens</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.80	3.13	2.51	4
Length of pronotum:	0.64	0.68	0.60	4
Greatest width of pronotum:	0.90	1.00	0.81	4
Length/width of pronotum:	0.71	0.68	0.74	4
Length of elytron:	2.20	2.47	1.99	4
Greatest width of elytron:	0.69	0.79	0.64	4
Length of body/twice greatest width of elytron:	2.03	1.98	1.96	4
<i>P. seymourensis</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.90	3.33	2.60	4
Length of pronotum:	0.61	0.66	0.54	4
Greatest width of pronotum:	0.88	1.01	0.81	4
Length/width of pronotum:	0.69	0.65	0.67	4
Length of elytron:	2.29	2.54	2.05	4
Greatest width of elytron:	0.69	0.78	0.62	4
Length of body/twice greatest width of elytron:	2.10	2.13	2.10	4
<i>P. sinuatipennis</i> new species				
Length of body (anterior or pronotum to posterior of elytron):	2.87	—	—	1
Length of pronotum:	0.66	—	—	1
Greatest width of pronotum:	0.93	—	—	1
Length/width of pronotum:	0.71	—	—	1
Length of elytron:	2.33	—	—	1
Greatest width of elytron:	0.66	—	—	1
Length of body/twice greatest width of elytron:	2.17	—	—	1
<i>P. weisei</i> new species				
Length of body (anterior of pronotum to posterior of elytron):	2.38	2.61	2.24	5
Length of pronotum:	0.54	0.60	0.51	5
Greatest width of pronotum:	0.74	0.85	0.69	5
Length/width of pronotum:	0.73	0.71	0.74	5
Length of elytron:	1.87	2.07	1.76	5
Greatest width of elytron:	0.56	0.66	0.51	5
Length of body/twice greatest width of elytron:	2.13	1.98	2.20	5



thecae are approximately "c"-shaped and nearly symmetrical. The vaginal palpi (Fig. 33) are quite similar among species, confluent apically and strongly setiferous. All have a tapering outside margin before the apex, and a straight median margin.

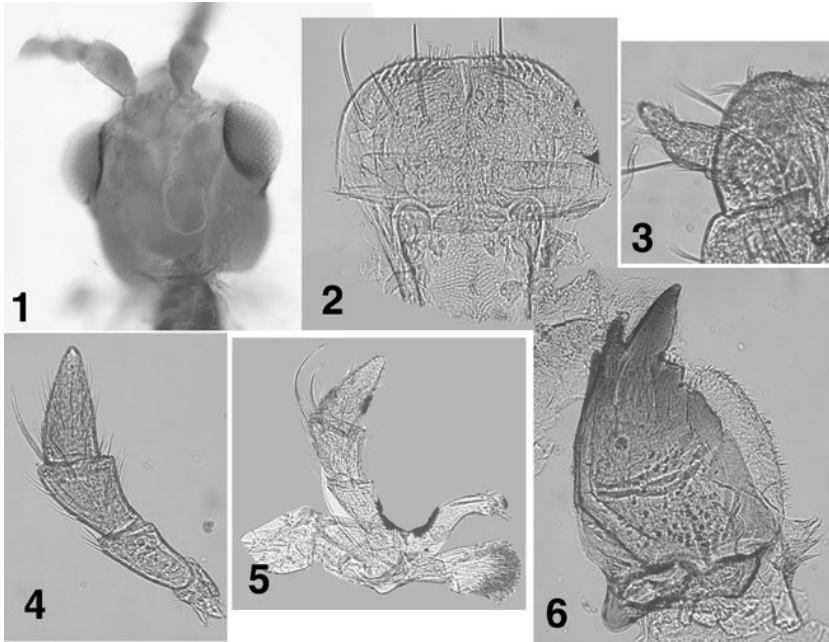
Superficially *Pedethma* is similar to *Microdonacia* as described in Reid (1992), particularly in body shape, punctation of elytra, mouthparts, short frontal ridge and facial part of the head, and antennal calli with the lower portion long and extending far between the antennal socket and frontal ridge. However, the presence of the metafemoral spring and the lack of the elongated spermathecal receptaculum in *Pedethma* will distinguish these two taxa. Further, most species of *Microdonacia* (except subgenus *Tantawangalo*) have conspicuous femoral teeth, lacking in *Pedethma* species. *Pedethma* shares several character states with *Crepidodera* Chevrolat, *Alema* Sharp and *Orthaltica* Crotch (including *Micrantipha* Blackburn). These states include a short facial portion of the head, antennal calli extending between antennal socket and frontal ridge, transverse impression on the base of the pronotum, and metatibia almost entirely cylindrical with flat oblique plate dorsally. *Pedethma* species can be easily distinguished from the aforementioned genera based on the following characters: the combination of the interrupted row of 4–6 punctures on the vertex; the extremely narrow mesocoxal process of the mesosternum; the apical elytral hairs; the pronounced basal elytral swellings; the basal impression formed by a row of large punctures on the pronotum; and the heavily and evenly sclerotized spermatheca without differentiated receptacle and pump.

Description. Weise's (1923) original description of the genus is rather general and focused on some of the diagnostic characters discussed above. He described the pronotum as nearly heart-shaped, apparently referring to the anteromedial swelling and anterior and posterior constrictions. He mentioned that the antennae are incrassate at the apical five antennomeres, and that the transverse posterior pronotal sulcus is rounded laterally before the base. The elytra he indicated as subparallel, punctato-substriate, with a basal swelling, with epipleurae eide, narrowed posterior to middle, and then suddenly terminated further posteriorly. He described the anterior coxal cavities as being closed due to an apical expansion of the apex of the prosternal intercoxal process and the hind tibiae as dorsally arched and the metatarsus as long as the next two tarsomeres. We describe this genus fully below.

Body: See Table 1 for measurements and proportions. Moderate sized alticine, rather flat and parallel-sided, with little pubescence on most species. Length (from anterior of pronotum to apex of elytron), 2.2–4.1 mm. Greatest body width (approximately at an-

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Map 1. Localities for *Pedethma* species. **1)** Mt. Cook, Mt. Finnigan (*P. cookensis*); **2)** Mossman, Bamboo Creek, Hugh Nelson Range, Bakers Blue Mt., Cape Tribulation, Mt. Molloy, Mt. Demi, Mt. Spurgeon (*P. kurandensis*, *P. demiensis*, *P. australiensis*, *P. pinnipennis*, *P. pubescens*); **3)** Kuranda (*P. kurandensis*); **4)** Herberton, Atherton, Malanda, Bartle Frere, Polly Creek, Maalan, Bellenden Ker, Windin Falls (*P. suturalis*, *P. howdeni*, *P. sinuatipennis*, *P. humeromaculata*, *P. malandensis*, *P. maculata*, *P. seymourensis*, *P. nigra*); **5)** Seymour Range (*P. seymourensis*); **6)** Tully River (*P. kurandensis*); **7)** Kirrama Range (*P. humeromaculata*); **8)** Mt. Tambourine, Mt. Glorious (*P. fuscipennis*); **9)** Dorrigo National Park, New England National Park (*P. kirejtshuki*, *P. fuscipennis*); **10)** Barrington Tops (*P. fuscipennis*); **11)** Monga State Forest, Clyde Mountain (*P. weisei*).

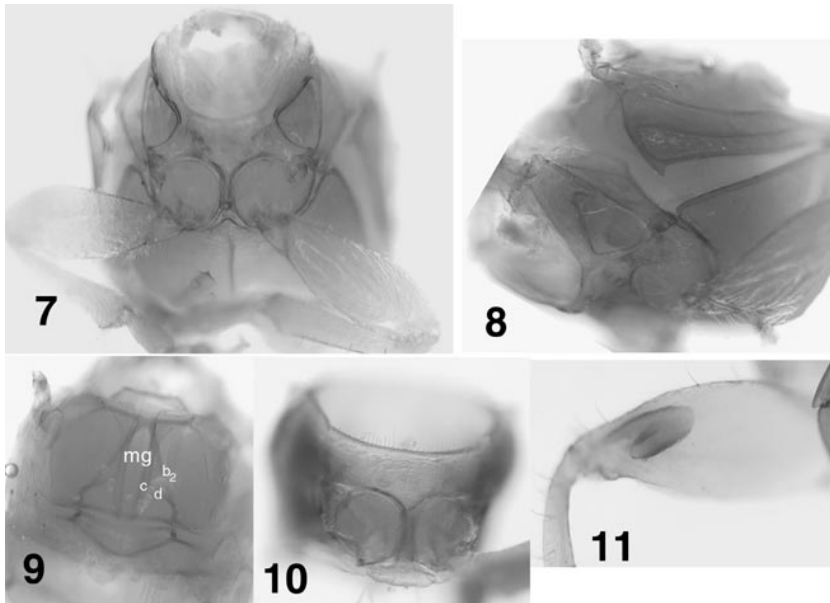


Figs. 1–6. Morphological characters of genus *Pedethma* (based on type species, *Pedethma fuscipennis* Weise). **1)** dorsal view of head; **2)** dorsal view of labrum; **3)** labium showing palpus; **4)** maxillary palpus; **5)** maxilla; **6)** mandible.

terior one-third of elytron), 1.1–1.8 mm. Ratio of length/width ranging from 0.65–0.82. Length of pronotum ranging from 0.54–0.90 mm. Width of pronotum ranging from 0.74–1.43 mm. Ratio of length to width of pronotum ranging from 0.66–0.82. Color of integument generally pale reddish brown, some specimens dark brown to piceous on venter, elytra, and antennae. Legs generally pale to reddish brown in coloration.

Head: Antennal calli present (Fig. 1), well developed, larger than antennal sockets, quadrate. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. Frontolateral, supraantennal, and supracallinal sulci well developed. Frontal ridge acute, short, well developed. Anterofrontal ridge variably developed, high with narrow crest in some species, lower and indistinct in other species. Sparse, but large punctures on head limited to upper eye margin and in a variably formed row leading across vertex. Most specimens with 8–10 punctures around each eye and 4–6 setiferous punctures between the dorso-posterior margin of the eyes. The vertex lacks median punctation. Facial portion of head short. Eyes variable and sexually dimorphic in size, larger in males than females. In males the eyes occupy well over 50% of the head as viewed from lateral perspective; in females they occupy much less than 50% of head. Antennal socket situated very close to eye margin.

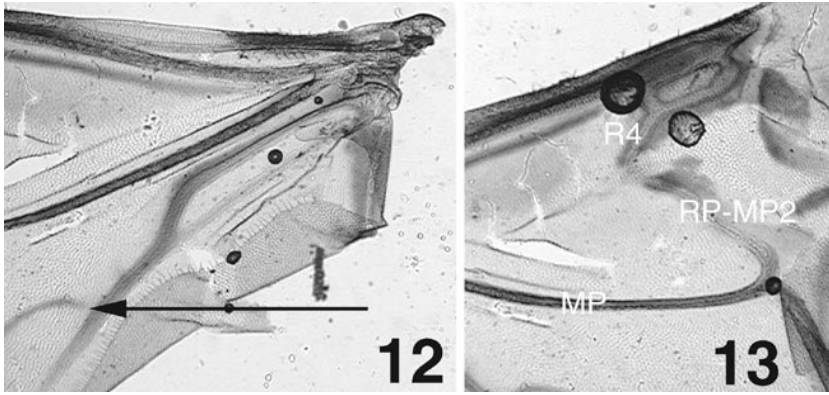
Mouthparts and Antennae: Labrum (Fig. 2) with submarginal row of short sensilla along apico-medial third of ventral (inner) surface (some of which extend a little beyond apex); six long sensilla evenly spaced across middle of dorsal (outer) surface (these extending about one-half their length beyond apex of labrum); and elsewhere with an erratic pattern of very short, thickened sensillae. Labium (Fig. 3) with prementum short, fleshy, with four long setae extending beyond apex and a dense network of very short setae on prementum surface. Labial palpi appearing four-segmented, palpomeres 1–2 wider than long and 3–4 longer than wide. Apico-lateral surface of palpomeres 2–3 with



Figs. 7–11. Morphological characters of genus *Pedethma* (based on type species, *Pedethma fuscipennis* Weise). **7)** ventral view of mesosternum and surrounding sclerites; **8)** lateral view of mesocoxa and surrounding sclerites; **9)** ventral view of prosternum and procoxa; **10)** metanotum with ridges labelled as referred to in text; **11)** cleared metafemora showing metafemoral spring.

a few long setae, otherwise palpomeres with sparse, shorter setae. Maxilla (Figs. 4–5) with apparently four-segmented palpus, palpomeres progressively longer, apical palpomere conical. Apex of penultimate palpomere with long curved setae extending approximately to apex of palpus. Digitiform sensillum, if present, very small and indistinct. Galea nearly straight to slightly arcuate. Mandible (Fig. 6) with five teeth at apex (only three prominently developed). Very large prosthecal region of mandible extending from base to apical fourth. Antennae with 11 antennomeres, generally long and filiform, somewhat dimorphic in length: antennae $\frac{1}{2}$ body length or more in males, less than $\frac{1}{2}$ body length in females. Antennomere 2 shortest, antennomeres 5–7 longest, and generally subequal in length. Antennomeres slightly enlarged apically, more so in basal antennomeres. Antennae separated by at least width of antennal socket.

Thorax: Pronotum rectangular, wider than long, with extended antero and posterolateral seta-bearing corners. Distinctly margined with slightly sinuate sides due to an antemedial lateral expansion. Pronotum without distinct calli, and only distinctly maculate on disc in one species, otherwise sometimes slightly darker along lateral margins. Pronotum with smaller and fewer punctures than elytron. Anterior margin with row of larger punctures (indistinct on some species). Posterior fifth with transverse row of large punctures ending before lateral margins. This row either straight or slightly sinuate, with middle and lateral posterior dip. Prosternal process (Fig. 10) narrow but expanded at apex behind procoxal cavities, contacting hypomerall projection, and closing the procoxal cavities posteriorly. Procoxal cavities with antero-lateral margins angulate. Mesocoxae (Figs. 7–8) widely open laterally: mesosternum and metasternum widely separated at lateral margin of mesocoxa by extension of mesepimeron. Mesosternal intercoxal process very narrow, unexpanded and unlobed at apex. Metanotum (Fig. 9) wider than long. Postnotum strongly posteriorly arcuate. Median groove of metanotum moderately narrow,



Figs. 12–13. Hindwings of *Pedethma fuscipennis* Weise, showing important veins as indicated by arrow and labelled and referred to in text. **12)** basal venation; **13)** apical venation.

more so posteriorly. Ridge “d” intersecting ridge “c” at approximately midway point between the length of “c” before its intersection with “b2” (Fig. 9).

Wings and Legs: Elytral punctation bold, seriate, in 11 distinct rows (some rows near scutellum incomplete). Interstriae raised and impunctate. Elytra nearly glabrous on all but one species, except for the apex and along the apicolateral margin, where several long setae occur in all species. Humeral margin of elytra variably swollen, most evident from lateral view. Epipleuron well developed, wide at base, quickly diminishing toward apex. Two indistinct binding patches present under humeral margin. Hind wings long, well developed. Venation (Figs. 12–13) complete with AA, CuA, CuA3+4, MP, RP-MP2, and R3 well developed. Venation not present in apical one-third of wing. RP-MP2 fully connects to R3 and has distinctly sinuate curvature (Fig. 13). CuA2 variably developed, may or may not attach to CuA3+4. Legs moderately long, pro and mesofemora slightly enlarged, metafemora moderately enlarged. Femora without middle teeth. Tibiae not strongly modified, only with dorso-apical emargination lined with stiff, short spines. This modification stronger on metatibiae. First tarsomeres of each leg longer than next two tarsomeres, longer than remaining tarsomeres on hind legs. First tarsomere only weakly sexually dimorphic, slightly longer and thickened in males, more narrow in females. Metafemora with well developed spring mechanism (Fig. 11) with thick dorsal and ventral lobes, moderate recurve flange, long extended arm approximately one-third overall length of spring.

Genitalia: Aedeagus (Figs. 22–27) with variable development among species with regard to apical shape, longitudinal ridges and depressions, and degree of curvature. Aedeagi may have truncate aedeagal apices, arrowhead expansions, or taper to a narrow apex. Spermatheca (Figs. 28–32) variable in the degree of curvature of the proximal and distal ends and in surface sculpturing. Spermatheca approximately “c”-shaped, heavily and evenly sclerotized without differentiated receptacle and pump regions. Vaginal palpi (Fig. 33) quite similar among species, confluent apically, strongly setiferous, with outside margin tapering before apex, and straight median margin.

Pedethma australiensis Lingafelter and Konstantinov, **new species**
(Figs. 14b–c, 22a–b, 25e–f, 27d)

Description. Measurements listed in Table 1. Antennae about two-thirds length of body. Basal antennomeres pale, apical antennomeres dark brown to piceous. Color of antennal calli variable, either lighter than surrounding head region or similar in coloration to surrounding region. Vertex with two setiferous pores on each side between upper

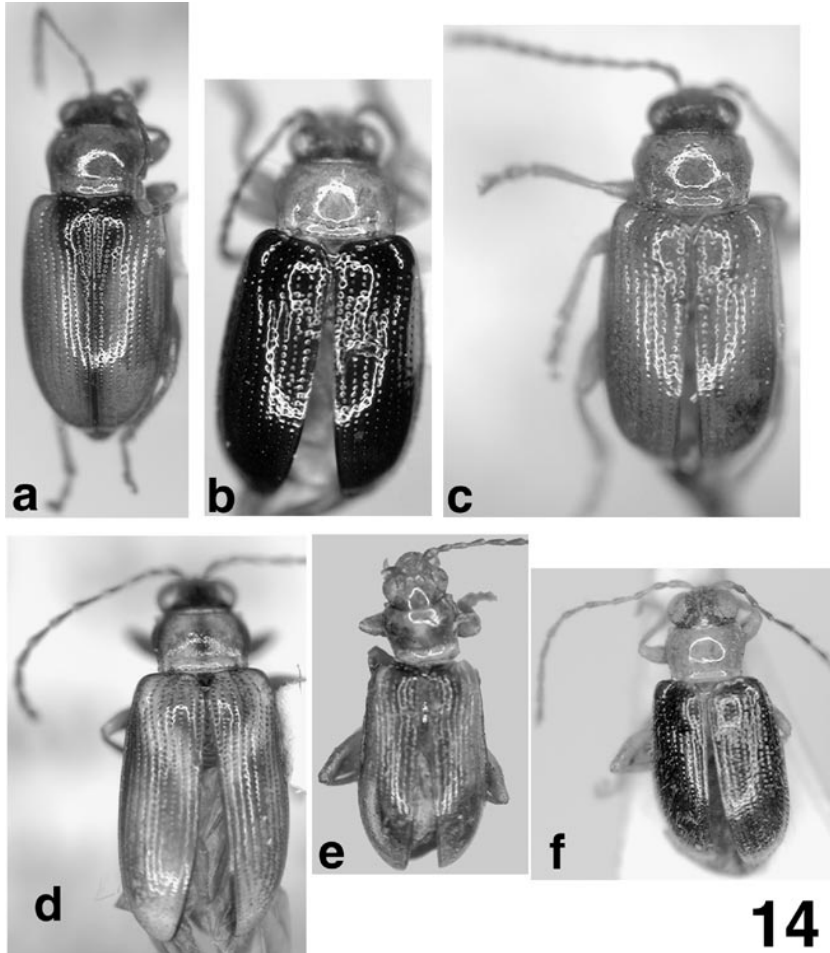


Fig. 14. Dorsal habitus of *Pedethma* species. **a)** *Pedethma suturalis* Weise; **b)** *P. australiensis* Lingafelter and Konstantinov, new species (dark morph); **c)** *P. australiensis* Lingafelter and Konstantinov, new species (pale morph); **d)** *P. maculata* Lingafelter and Konstantinov, new species; **e)** *P. fuscipennis* Weise (light morph); **f)** *P. pubescens* Lingafelter and Konstantinov, new species.

portion of eye not forming straight line. Supracallinal, midfrontal, and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores separating callus and orbit. Orbit extremely narrow, 0.43 times width of antennal callus. Antennal socket situated very close to eye margin. Upper part of frontal ridge between antennal calli 0.39 times width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, only slightly narrower than latter. No ridges situated between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 2.60 times as high as wide, as

high as distance between eyes (above antennal sockets). Pronotum with moderate antemedial expansion and posterior constriction. Posterior pronotal row of punctures linear with ends slightly curving anteriorly. Pronotum pale yellowish. Elytra (Figs. 14b–c) color polymorphic: some specimens (including holotype) with dark brown (appearing black) elytra, other specimens with pale elytra. Abdominal venter and metasternum pale brown. Aedeagus (Figs. 22a–b, 25e–f) with arrowhead apex; broad, widening apically and then triangular at apex, without antepical constriction. Aedeagus with variable medial longitudinal impression with middle ridge present, but never strongly developed. Aedeagus not strongly curved as viewed from lateral perspective. Spermatheca unknown (no females are known for this species).

Diagnostic and Other Comments. Like *P. fuscipennis* and *P. kurandensis*, this species is polymorphic with respect to elytral coloration, although it is always uniformly colored, either pale or dark brown to piceous. The arrangement of the posterior pronotal row of punctures (linear with ends slightly curving anteriorly) is an unusual characteristic among *Pedethma* species.

Distribution. Forests of north and southeast Queensland (Map 1, localities #2, 11).

Etymology. The specific epithet is based on the native country of this species.

Material. Holotype (Male): “AUST.: Qld. 630 m, Mt. Glorious N. P., Feb. 28, 1984, s. s. L. Masner, Trop. rain and sclerophyl for., mixed s.s.” (ANIC).

Paratypes. “AUST.: Qld. 630 m, Mt. Glorious N. P., Feb. 28, 1984, s. s. L. Masner, Trop. rain and sclerophyl for., mixed s.s.” (NMNH, 1 specimen; CMNC, 1 specimen); “Carbine Tableland, N.Qld., Mossman Bluff Camp, 30 Nov 1990, 1,000 m, Monteith and Janetzki, Pitfall Traps” (QMBA, 1 specimen).

Pedethma cookensis Lingafelter and Konstantinov, **new species**
(Figs. 16c, 23c–d)

Description. Measurements listed in Table 1. Antennae about two-thirds length of body in males, slightly more than one-half length of body in females. Antennae more pale at base, becoming darker at apex. Antennal calli pale yellow to reddish brown, not differing in color from surrounding region of head. Vertex with three setiferous pores of differing size on each side between upper portion of eye, forming straight line. Supracallinal sulcus moderately well developed. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Midfrontal sulcus straight, supracallinal and supraantennal sulci concave, latter bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores between antennal callus and orbit. Orbit extremely narrow, less than one-half width of antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli one-fifth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 1.8 times as high as wide, slightly higher than distance between eyes (above antennal sockets). Pronotal shape with moderate antemedial expansion and posterior constriction, weaker in females. Posterior pronotal depression sinuate with moderate posterior dip at middle and sides. Pronotum pale yellow to light brown. Elytra (Fig. 16c) variable, pale yellow to reddish brown, some (including holotype) with dark periscutellar macula and dark epipleura, one paratype uniformly yellow-brown. Abdominal venter and metasternum pale yellow-brown. Aedeagus (Figs. 23c–d) moderate in length, very slightly narrowed apically. Aedeagus with very slight apical, medial impression and flanged margins on dorsal side; no transverse ridges present. Aedeagus moderately curved as viewed from lateral perspective. Spermatheca unknown.

Diagnostic and Other Comments. The elytral maculations are variable,

consequently the aedeagus is most diagnostic for this species. It lacks transverse ridges and an arrowhead apex, and possesses flanged dorsal sides.

Distribution. Forests of northeastern Queensland (Map 1, locality #1).

Etymology. The specific epithet refers to the type locality.

Material. Holotype (Male): "NEQ: 15°29'S × 145°16'E, Mt Cook, 430 m, 9 Nov 1995, Monteith, Cook and Janetzki, Pyrethrum, trees and logs" (QMBA, QMT 62950).

Paratypes. "Mt Finnigan Summit, Via Helenvale, N. Qld., 3–5 Dec 1990, 1,050 m, Monteith, Sheridan, Roberts and Thompson, Pyrethrum" (QMBA, 1 specimen; NMNH, 1 specimen).

Pedethma demiensis Lingafelter and Konstantinov, **new species**

Figs. 16d, 23e–f, 27e, 31p

Description. Measurements listed in Table 1. Antennae about two-thirds length of body in males, slightly more than one-half length of body in females. Basal antennomeres reddish-brown, apical antennomeres dark brown to piceous; some apical antennomeres bicolored with reddish-brown base and piceous apex. Antennal calli pale reddish-brown, of same color as head. Vertex with two setiferous pores on each side between upper portion of eye, not forming very straight line. Supracallinal sulcus absent. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores between antennal callus and orbit. Orbit extremely narrow, one-half width of antennal callus. Antennal socket close to eye margin. Upper part of frontal ridge between antennal calli one-fifth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye nearly twice as high as wide, slightly higher than distance between eyes (above antennal sockets). Pronotal shape with strong antemedial expansion and posterior constriction in male, weak in female. Posterior pronotal depression nearly straight with slight posterior dip at middle and sides. Pronotum pale yellow to reddish-brown. Elytra (Fig. 16d) variable: pale with dark periscutellar region and broad sutural vitta in holotype and some paratypes, to uniformly pale in rest of specimens. Abdominal venter varies from piceous in holotype to pale yellow in other specimens; metasternum pale reddish-brown. Aedeagus (Figs. 23e–f; 27e) short and moderately sinuate from lateral view. A dorsal keel is present at middle and several impressions and ridges present. Spermatheca (Fig. 31p) nondistinct, moderately curved at each end; slightly thicker body at base. Proximal and distal ends moderately separated by about one-half of overall length of spermatheca.

Diagnostic and Other Comments. The elytra are variable, but the maculate forms are distinctive with the broad darkened periscutellar region and suture. The aedeagus is most distinctive with the dorsal keel and moderately sinuate curvature.

Distribution. Rainforests of northeast Queensland, mostly above 1,000 m (Map 1, locality #2).

Etymology. The specific epithet refers to the type locality.

Material. Holotype (Male): "AUST: QLD: Mt Demi, 7 km SW Mossman, 29 Oct 1983. D. Yeates G. Thompson. QM Berlesate No. 604, 16.30S 145.19E, Rainforest 1,100 m, Sieved litter" (QMBA, QMT 62951).

Paratypes. "NE QLD Mt Demi, 7 km SW of Mossman, 29 Oct 1983, 1,100 m. D. Yeates and G. Thompson. Pyrethrum Rainfor." (QMBA, 3 specimens); "NE.Q: 16°24'S × 145°13'E, Stewart Ck., 4 km NNE Mt Spurgeon (Camp 1), 1,250–1,300 m, 15 Oct 1991. PYRETHRUM. Monteith and Janetzki"

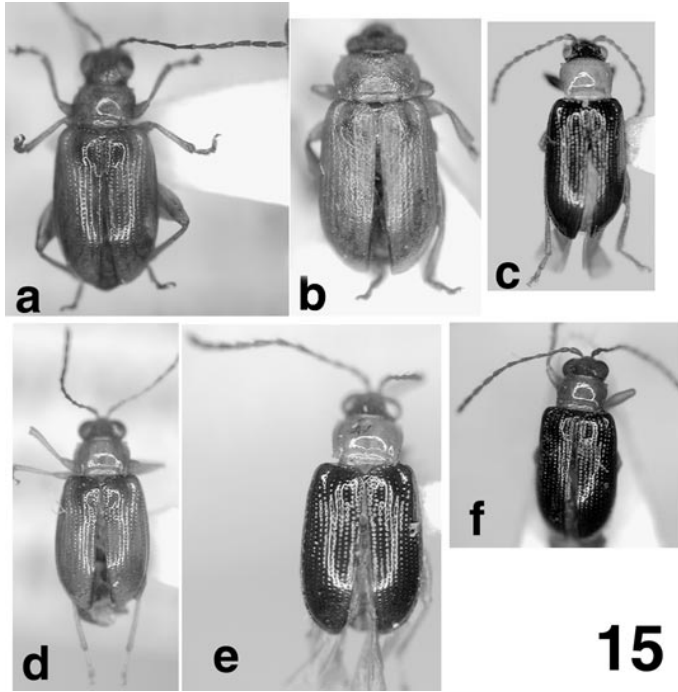


Fig. 15. Dorsal habitus of *Pedethma* species. **a)** *P. howdeni* Lingafelter and Konstantinov, new species; **b)** *P. kirejtshuki* Lingafelter and Konstantinov, new species; **c)** *P. fuscipennis* (dark morph); **d)** *P. kurandensis* Lingafelter and Konstantinov, new species (pale morph); **e)** *P. kurandensis* Lingafelter and Konstantinov, new species (dark morph); **f)** *P. nigra* Lingafelter and Konstantinov, new species.

(QMBA, 1 specimen); “NE.Q: 16°25’S × 145°13’E, Stony Creek, 2.5 km NE of Mt Spurgeon, 1,200 m, 15–21 Oct 1991. Pitfalls. Monteith, Janetzki, Cook, Roberts” (NMNH, 1 specimen); “NE.Q: 16°28’S × 145°12’E, 2.5 km S Mt Spurgeon, 13–21 Oct 1991. 1,100 m. Monteith and Janetzki, Pitfalls, open forest” (QMBA, 1 specimen).

Pedethma fuscipennis Weise

(Figs. 1–13, 14e, 15c, 22c–d, 25b, 26e, 28a–c,g–h, 29a–b, 30h–j, 33b)

Description. Measurements listed in Table 1. Antennal length in male about $\frac{2}{3}$ length of body, in females slightly shorter. Antennae reddish brown, slightly darker than most of body. Specimens from Barrington Tops usually have antennomere coloration similar to *P. maculata* in that most antennomeres are bicolored, dark reddish brown at the base, and pale at the apex; usually apical 4–5 antennomeres uniformly dark reddish brown. Antennal calli are similar to or slightly paler than the surrounding portions of head, especially in specimens from Barrington Tops region. Vertex with two or three extremely large setiferous pores on each side between upper portion of eye forming straight line. Supracallinal, midfrontal (which can be very deep, deeper than other sulci), and supraantennal sulci well developed. Supraorbital sulcus absent. Midfrontal sulcus straight, supracallinal sulcus convex, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket

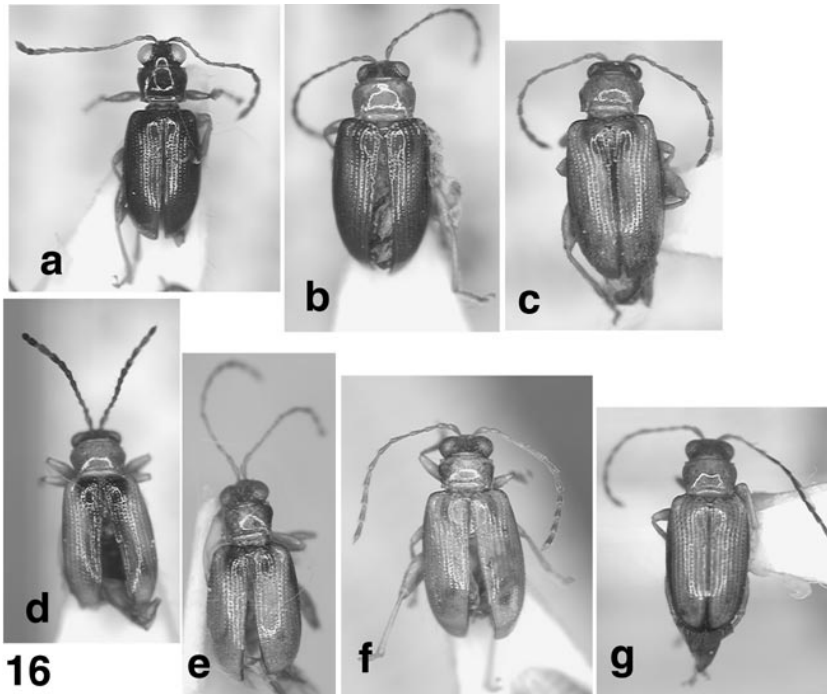


Fig. 16. Dorsal habitus of *Pedethma* species. **a)** *P. malandensis* Weise; **b)** *P. sinuatipennis* Lingafelter and Konstantinov, new species; **c)** *P. cookensis* Lingafelter and Konstantinov, new species; **d)** *P. demiensis* Lingafelter and Konstantinov, new species; **e)** *P. pinnipennis* Lingafelter and Konstantinov, new species; **f)** *P. humeromaculata* Lingafelter and Konstantinov, new species; **g)** *P. seymourensis* Lingafelter and Konstantinov, new species.

and frontal ridge. A few large pores separate antennal callus and orbit. Upper part of orbit separated from vertex by narrow and moderately long ridge attached to posterolateral corner of antennal callus. Orbit width variable, 0.59–0.70 times width of antennal callus. Antennal socket situated very close to eye margin. Upper part of frontal ridge between antennal calli 0.13–0.25 times width of transverse diameter of antennal socket. Lower part of frontal ridge not forming straight angle with upper part, very high (compared to *P. kurandensis*) and as narrow as latter. No narrow ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 1.60–1.90 times higher than wide. Pronotal shape with moderate antemedial expansion and posterior constriction. Posterior pronotal depression usually sinuate with slight posterior dip at middle and sides; sometimes straight. Pronotum pale yellow to reddish-brown with slightly darkened lateral margins in some specimens. Elytra (Figs. 14e, 15e) polymorphic in color, either uniformly pale, reddish-brown with slightly darker peri-scutellar, sutural, and epipleural areas, or entirely dark (as in lectotype). Abdominal venter pale reddish-brown to piceous in some specimens with dark elytra. Metasternum pale reddish-brown. Aedeagus (Figs. 22c–d, 25b, 26e) relatively broad, large. Strongly constricted ante-apically with pronounced arrowhead apex. A deep medial impression extending from apical constriction to basal one-third or more. Aedeagus weakly curved from lateral perspective. Spermatheca (Figs. 28g–h, 30i–j) thickened at distal end, tightly curved towards proximal end. Proximal end not strongly curved.

Diagnostic and Other Comments. This species was described by Weise (1923:120). Males of this species are distinctive with their relatively large aedeagus with strong arrowhead apex. The well-developed interstriae on the elytra are also characteristic of this species. The elytral color is polymorphic, with some having entirely dark elytra, and others uniformly pale or with darker suture and periscutellar region.

Distribution. Forests of southeast Queensland through east central New South Wales (Map 1, localities #11, 13, 14, 15).

Material. Lectotype (designated herein): (Male: labels numbered): 1) Mt. Tambourine; 2) Queensl., Mjoberg; 3) (no data); 4) loan 1129/94; 5) Lectotype *Pedethma fuscipennis* Weise (NHRS).

Paralectotypes (labels numbered): Labels 1–3 as in lectotype; 4) loan 1126/94; 5) Paralectotype *Pedethma fuscipennis* Weise (NHRS, 2 specimens).

Other Material. “AUSTRALIA, New Engl. N. Park, A. Kirejtshuk, 17.II.80,” (NMNH, 1 specimen); “AUSTRALIA, N. Engl. Nat. Park, A. Kirejtshuk, 17.II.80” (NMNH, 1 specimen); “New England Nat Park, via Ebor, NSW, 11 Nov 1980, G. Monteith, Pyrethrum, open forest” (QMBA, 3 specimens); “[AUSTRALIA]: 31.53°S 151.32°E, Barrington Tops, Dilgry R. NSW, 26 Nov. 1985, C. Reid, ex flowering bushes, *Acacia* etc.” (ANIC); “[AUSTRALIA]: 31.53°S 151.32°E, Barrington Tops, Dilgry R. NSW, 26 Nov. 1985, C. Reid, ex flowering bushes, *Acacia* etc.” (ANIC, 10 specimens; NMNH, 6 specimens); “[AUSTRALIA]: 31.53°S 151.32°E, Barrington Tops, Dilgry R. NSW, 26 Nov. 1985, C. Reid, on Tree ferns and *Nothofagus*” (ANIC, 9 specimens; NMNH, 2 specimens); “[AUSTRALIA]: Barrington Tops NSW, 26 Nov. 1985, C. Reid, on *Oxylobium ilicifolium*” (ANIC, 2; NMNH, 1 specimen); “[AUSTRALIA]: 31.54°S 151.33°E, Moppy Lookout, Barrington Tops S. F. NSW, 18 Nov. 1981, A. Calder” (NMNH, 1 specimen); “[AUSTRALIA]: 31.53°S 151.32°E, Dilgry River Barrington Tops S. F. NSW, 15–16 Nov. 1981, T. Weir” (ANIC, 1 specimen); “[AUSTRALIA]: 31.54°S 151.33°E, Moppy Lookout, Barrington Tops S. F. NSW, 18 Nov. 1981, T. Weir and A. Calder, Berlesate ANIC 755, leaf litter, *Nothofagus* rainforest” (ANIC, 2 specimens); “[AUSTRALIA]: Forest Park, NSW, Barringt. Tops SF, 25 Nov. 1986, C. Reid ex *Nothofagus moorei*” (ANIC, 2 specimens); “[AUSTRALIA]: 32.08°S 151.27°E, Allyn River, Chichester S. F. NSW, 10–11 Nov. 1981, T. Weir and A. Calder” (ANIC, 6 specimens; NMNH, 3 specimens); “[AUSTRALIA]: Dorrigo Nat. Pk. NSW, Nov. 1982, M. Lowman, rainforest, No. 59,” (ANIC); “[AUSTRALIA]: Dorrigo Nat. Pk. NSW, Nov. 1982, M. Lowman, rainforest, No. 59” (ANIC, 1 specimen; NMNH, 1 specimen); “[AUSTRALIA]: Dorrigo, N.S.W., W Heron (2 pins, 7 specimens) (CSIRO)” (ANIC, 7 specimens).

Pedethma howdeni Lingafelter and Konstantinov, **new species**
(Figs. 15a, 22f, 26c, 28d, 30g, 32b)

Description. Measurements listed in Table 1. Dimorphic antennal lengths: males have antennae approximately length of body with apical antennomere widest just distal to middle; females have antennae less than two-thirds length of body and widest portion of apical antennomere is at distal one-third or distad to this point. Antennomere color variable: on holotype and one paratype, the basal 4–6 antennomeres reddish brown and apical antennomeres dark brown to piceous; other paratype with antennomeres uniformly reddish brown. Antennal calli not noticeably paler than surrounding region of head. Vertex with two setiferous pores on each side between upper portion of eye forming straight line. Supracallinal, midfrontal, and supraantennal sulci well developed. Supra-orbital sulcus absent. Midfrontal sulcus straight, supracallinal sulcus slightly convex es-

pecially medially, and supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores separate callus and orbit. Orbit narrow, 0.71 times width of antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli 0.15 times width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No narrow ridges situated between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eyes bulging, produced at least as far as anterior corners of pronotum. Eye twice as high as wide, higher than distance between eyes (above antennal sockets). Pronotal shape with only slight antemedial expansion and posterior constriction. Pronotal coloration variable, pale and slightly darkened at margin on holotype, less so in paratypes. Posterior pronotal depression nearly horizontal with only slight posterior dip at middle. Elytra (Fig. 15a) with varying maculations at base, epipleuron, suture, and posterior one-half. Venter of abdomen and metasternum pale. Aedeagus (Figs. 22f, 26c) parallel sided for most of its length (although narrow and constricted at apex), with distinct, evenly spaced, transverse ridges along dorsal and ventral surface. Aedeagus moderately curved from lateral perspective. Spermatheca (Figs. 28d, 30g, 32b) with distal end broadly curved, as in *P. suturalis*, with great separation between distal and proximal regions. Surface sculpturing of spermatheca fissate.

Diagnostic and Other Comments. The aedeagus is quite distinctive with the transverse ridges, otherwise this species is somewhat similar to the less boldly maculate forms of *P. suturalis* Weise. The spermathecae are identical in shape to those of *P. suturalis*, but differ in having fissate rather than imbricate surface sculpturing.

Distribution. Forests of Northeast Queensland (Map 1, localities #2, 4).

Etymology. The specific epithet refers to the collectors, Henry and Ann Howden.

Material. Holotype (Male): "AUSTRALIA Qld., Mt. Lewis, 800 m, 20 km N. Mt. Molloy, 20.XII.1986, H. and A. Howden" (CMNC).

Paratypes. "AUSTRALIA Qld., 5 km NW Atherton, Baldy Mt. rain for., 17.XII.1986, H. and A. Howden" (NMNH, 1 specimen); "AUSTRALIA Qld., Mt. Lewis, 800 m, 20 km N. Mt. Molloy, 26.XII.1986, H. and A. Howden.FIT" (CMNC, 1 specimen).

Pedethma humeromaculata Lingafelter and Konstantinov, **new species**
(Figs. 16f, 23h–i, 27b, 31n)

Description. Measurements listed in Table 1. Antennae about two-thirds length of body in males, slightly more than one-half length of body in females. Antennae nearly uniformly pale yellow. Antennal calli pale yellow, of same color as surrounding region of head. Vertex with two setiferous pores on each side between upper portion of eye, forming straight line. Supracallinal sulcus poorly developed. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores between antennal callus and orbit. Orbit extremely narrow, one-half width of antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli one-fifth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye nearly twice as high as wide, slightly higher than distance between eyes (above antennal sockets). Pronotal shape with weak antemedial expansion and posterior constriction. Posterior pronotal depression nearly straight with slight posterior dip at middle and sides. Pronotum pale yellow to reddish-brown with darker sides. Elytra (Fig. 16f) highly variable: nearly pale in holotype with only slightly darker epipleura; darkened periscutellar area and antemedial macula on other specimens. Abdom-

inal venter and metasternum pale yellow to light reddish-brown. Aedeagus (Figs. 23h–i, 27b) long, slightly expanded apically in a very weak, rounded arrowhead, nearly uniform in width; without abrupt preapical constriction. Aedeagus with very slight apical, medial impression and dorsal transverse ridges present. Aedeagus weakly curved as viewed from lateral perspective. Spermatheca (Fig. 31n) with thick bony, weakly curved at each end. Proximal and distal ends widely separated by about one-half of overall length of spermatheca.

Diagnostic and Other Comments. Because the elytra is so variable in maculation, only characters of the aedeagus lend themselves most for diagnosis of this species. The humeral maculations are weak in the holotype, but stronger in the paratypes. The aedeagus is uniform in width, with a very weak rounded arrowhead and dorsal transverse ridges.

Distribution. Rainforests of northeast Queensland (Map 1, locality #4, 7)

Etymology. The specific epithet refers to the humeral maculations of some specimens.

Material. Holotype (Male): “Windin Falls via Butchers Ck. N.Qld., 9 Oct. 1980, G. Monteith, Pyrethrum, Rainforest” (QMBA, QMT 62956).

Paratypes. “Kirrama Range, N.E.QLD (Mt Pershouse, 950 m), 12 Dec 1986, Monteith, Thompson and Hamlet, Pyrethrum knockdown” (QMBA, 1 specimen); “Kirrama Range, N.E.QLD (Douglas Ck Rd, 850 m), 10–12 Dec 1986, Monteith, Thompson and Hamlet, Pyrethrum knockdown” (QMBA, 1 specimen).

Pedethma kirejtshuki Lingafelter and Konstantinov, **new species**

Figs. 15b, 22g, 25d

Description. Measurements listed in Table 1. Holotype is missing both antennae. Antennal calli dark reddish-brown, darker than the surrounding region of head. Moderate constriction at posterior (top) of calli as viewed from lateral perspective. Vertex with two setiferous pores on each side situated asymmetrically between upper portion of eye not forming straight line. Lower part of vertex above antennal calli covered with coarse, long, horizontal wrinkles. Supracallinal, midfrontal, and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around uppermedian side of antennal socket. Supracallinal sulci form straight line. Lower part of antennal callus narrow, shorter than in *P. kurandensis*, not extending far between antennal socket and frontal ridge. A few large pores separate callus and orbit. Orbit narrow, 0.68 times width of antennal callus. Antennal socket situated close to eye margin. Upper part of frontal ridge between antennal calli 0.85 times width of transverse diameter of antennal socket. Lower part of frontal ridge does not form straight angle with upper part, only slightly narrower than latter. No narrow ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge well developed. Eye 2.32 times higher than wide. Pronotum very wide antemedially, moderately narrowing posteriorly. The posterior pronotal transverse impression slightly sinuate, but short, not conspicuous due to numerous, coarse punctures surrounding it. Pronotum reddish-brown in color. Elytra (Fig. 15b) light reddish-brown with slightly darker regions around base and post-medially. Abdominal venter and metasternum dark reddish-brown. Aedeagus (Figs. 22g, 25d) relatively large, broad, with indistinct ante-apical impression present, with slightly pointed apex, and weak longitudinal impression with interior elevation; tapering at middle toward base. Aedeagus moderately curved from lateral perspective. Spermatheca unknown (no females known for this species).

Diagnostic and Other Comments. *Pedethma kirejtshuki* is very unusual among the known *Pedethma* species with its coarsely, confusedly punctate pronotum and elytra. Other unusual features include the relatively broad pron-

otum, very weakly setose elytral apices, and weak humeral swellings at the base of the elytra.

Distribution. Forests of northeast New South Wales (Map 1, locality #13).

Etymology. The specific epithet refers to the collector, A. Kirejtshuk.

Material. Holotype (Male): "AUSTRALIA: Dorrigo National Park, 15 November, 1980, A. Kirejtshuk, coll." (ANIC).

Pedethma kurandensis Lingafelter and Konstantinov, **new species**

(Figs. 15d–e, 17, 18, 22h, 26a, 28k–l, 30k–l, 33a)

Description. Measurements listed in Table 1. Dimorphic antennal lengths: males have antennae approximately length of body with apical antennomere widest just distal to middle; females have antennae less than two-thirds length of body with widest portion of the apical antennomere at the distal one-third or distad to this point. Basal 4–6 antennomeres pale; apical 4–6 antennomeres progressively more piceous. Antennal calli slightly paler than surrounding region of head. Vertex with three setiferous pores on each side between upper portion of eye forming straight line. Supracallinal, midfrontal, and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores between callus and orbit. Orbit extremely narrow, 0.42 times width of antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli one-fourth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. Two more extremely narrow ridges situated between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 1.87 times higher than wide. Pronotal coloration uniformly pale. Pronotal shape with only slight antemedial expansion and posterior constriction. Posterior pronotal depression nearly horizontal with only slight posterior dip at middle. Elytra (Figs. 17–18) unicolorous, all yellow or all dark bluish/black, without any distinct humeral, epipleural, or sutural maculations. Venter of abdomen and metasternum pale. Aedeagus (Figs. 22h, 26a) long, tapering continuously to narrow point at apex (as in *P. pubescens*). Dorsal transverse ridges and minute ventral striae on apical one-half, but not extending to apex. Aedeagus moderately curved as viewed from lateral perspective. Spermatheca (Figs. 28k–l, 30k–l) nearly symmetrical, abruptly curved at each end. Space between both ends approximately one-third length of spermatheca.

Diagnostic and Other Comments. Most specimens have the apex of the labrum and mandibles pigmented. Like *P. fuscipennis* and *P. australiensis*, this species is polymorphic with respect to elytral coloration, although it is always uniformly colored, either pale or dark brown to piceous. The shape and structure of the aedeagus and spermatheca will readily identify this species.

Distribution. Rainforests of northeast Queensland (Map 1, localities #2, 3, 6).

Etymology. The specific epithet refers to the type locality, Kuranda.

Material. Holotype (Male): "AUSTRALIA: Qld., Kuranda, 1,000 m, Feb. 17–24, 1984, L. Masner, MT" (CMNC).

Paratypes. "AUSTRALIA: Qld., Kuranda, 1,000 m, Feb. 17–24, 1984, L. Masner, MT" (CMNC, 4 specimens; NMNH, 1 specimen; ANIC, 1 specimen); "AUSTRALIA: Qld., Kuranda, 1,000 m, Feb. 17–24, 1984, L. Masner, MT, Rainforest, Malaise trap" (CMNC, 1 specimen); "AUSTRALIA: Qld., Kuranda, 1,000 m, Feb. 21, 1984, L. Masner, s. s." (CMNC, 1 specimen); "AUSTRALIA: Qld., Mossman Gorge, 30 m, Feb. 23, 1984, L. Masner, s. s., Rain-

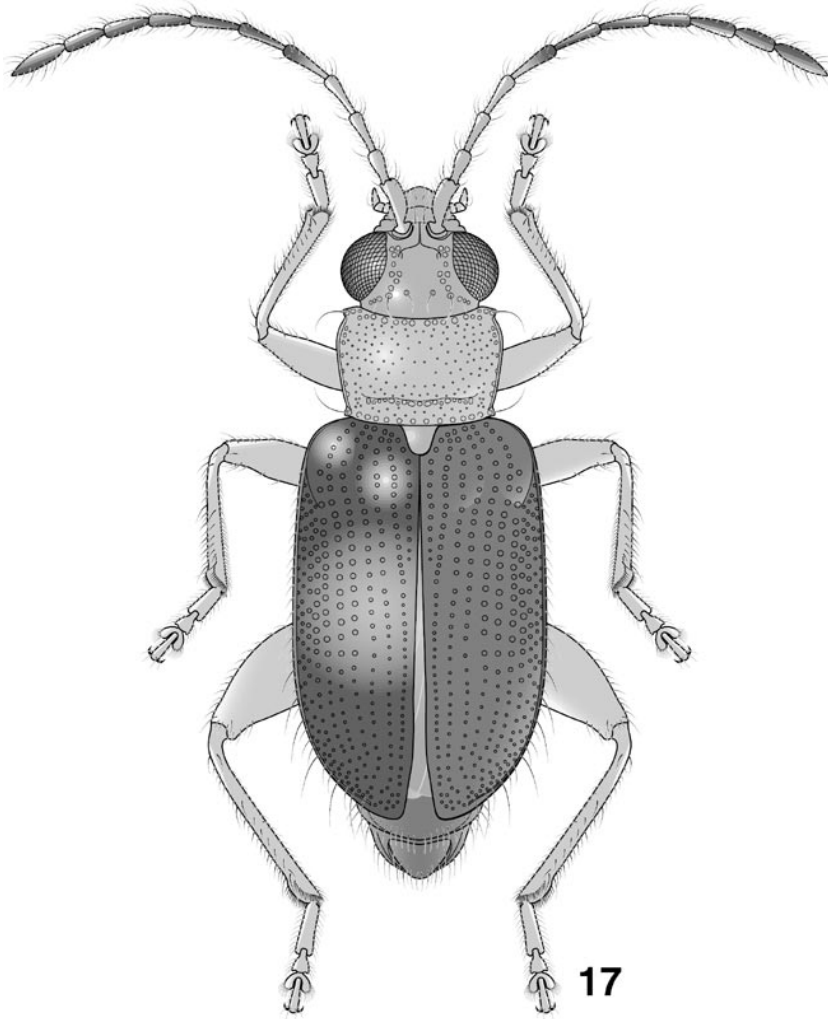


Fig. 17. *Pedethma kurandensis* Lingafelter and Konstantinov, new species, dorsal habitus of dark morph.

forest undergrowth" (CMNC, 2 specimens; NMNH, 1 specimens); "AUSTRALIA: Qld., Mossman Gorge, 30 m, Feb. 23, 1984, L. Masner, s. s." (CMNC, 1 specimen); "AUSTRALIA. N.Q.: Black Mt. Rd., Nr. Kuranda, 21.i.1962, E. B. Britton. B. M. 1962-153." (BMNH, 2 specimens); "AUSTRALIA. N.Q.: Kuranda, 15.i.1962, E. B. Britton. B. M. 1962-153." (BMNH, 3 specimens); "AUSTRALIA: Mt. Gingera, A.C.T., Showy Flat 5,000 ft, 29.i.1962, E. B. Britton. B. M. 1962-153." (BMNH, 1 specimen); "AUSTRALIA. N.Q., 3.5 mls. Kuranda-Marabee Rd., 21.i.1962, E. B. Britton. B. M. 1962-153." (BMNH, 2 specimen).

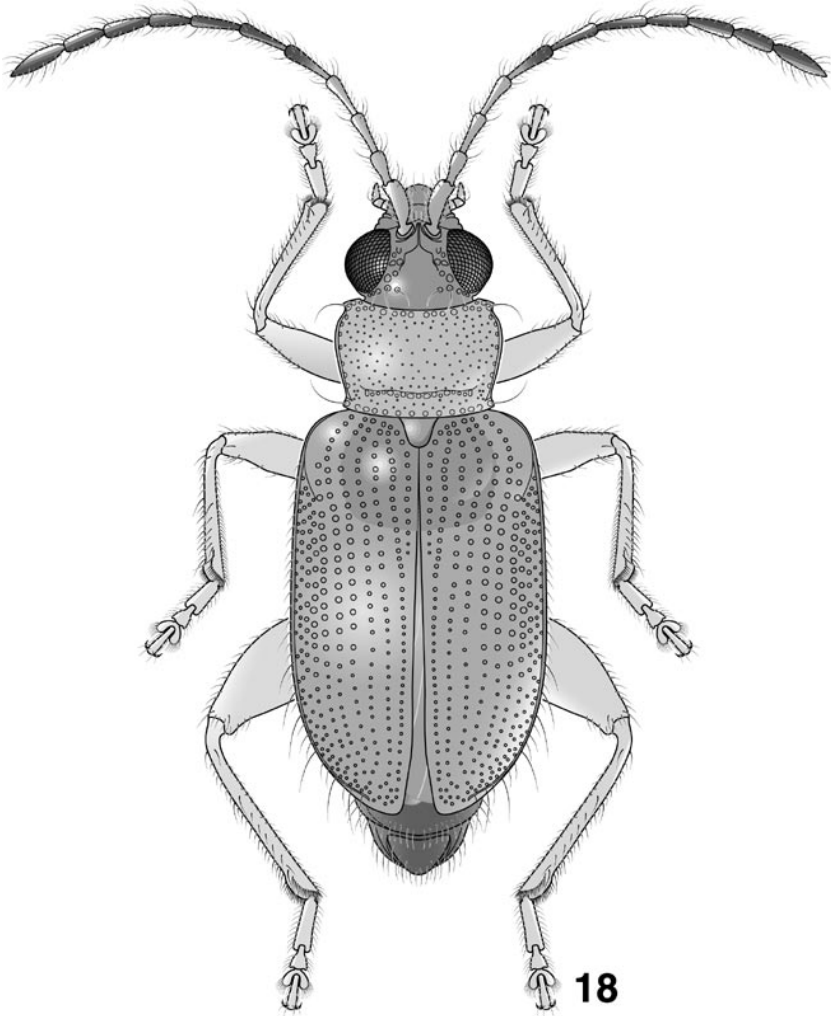


Fig. 18. *Pedethma kurandensis* Lingafelter and Konstantinov, new species, dorsal habitus of pale morph.

Other Material. “AUSTRALIA: Qld., Kuranda, 11–13 Dec. 1978, William D. Sumlin III, Entomological Expedition to Australia 1978–1979.” (CMNC, 1 specimen); “[AUSTRALIA]: Upp. Mulgrave R., 10 m. Goldstborough Rd., N. Qld., 9 May 1967, D. H. Colless, (CSIRO)” (ANIC, 1 specimen); “NE.Qld., Upper Boulder Ck via Tully, 900 m, 26 Oct 1983, Monteith, Yeates and Thompson, RF Pyrethrum knockdown” (QMBA, 3 specimens); “AUST: QLD:NE: Upper Boulder Ck via Tully, 900 m, 27 Oct 1983, Monteith, Yeates, Thompson; QM Berlesate No. 599, 17.50S 145.54E, Rainforest 900 m, Sieved litter” (QMBA, 1 specimen).

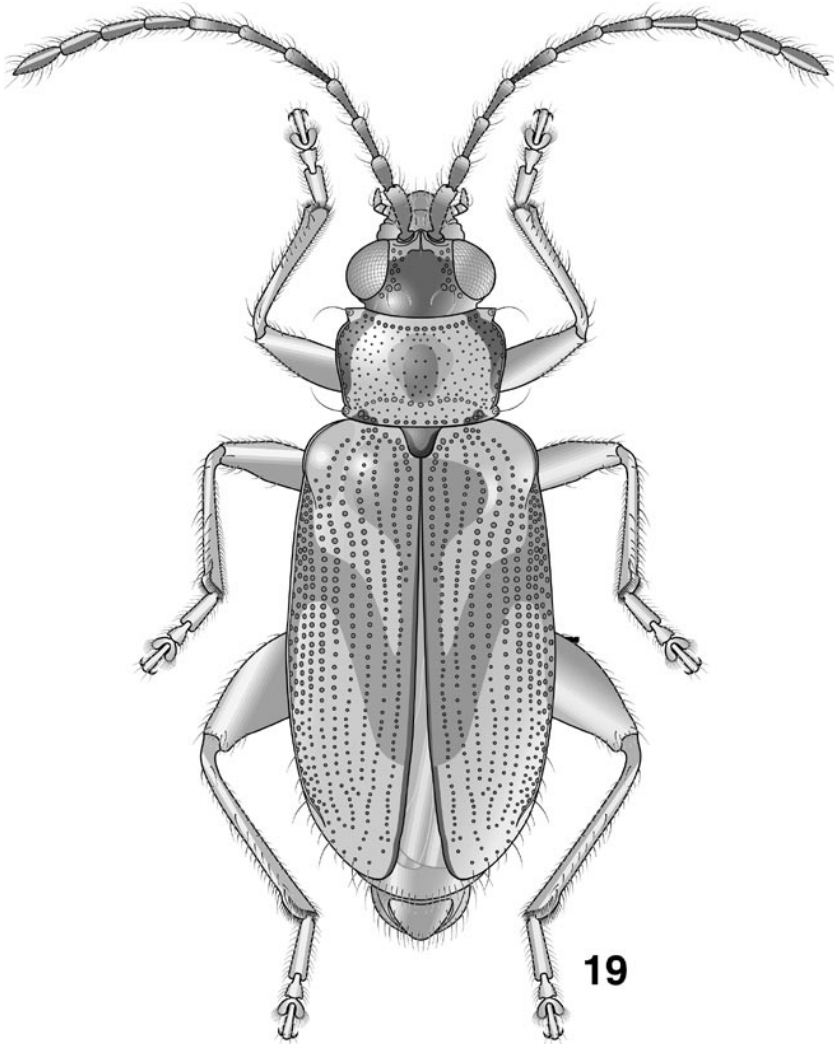


Fig. 19. *Pedethma maculata* Lingafelter and Konstantinov, new species, dorsal habitus.

Pedethma maculata Lingafelter and Konstantinov, **new species**
(Figs. 14d, 19, 22i, 26d, 28f, 29d)

Description. Measurements listed in Table 1. Weakly dimorphic antennal lengths: males with antennae slightly less than length of body and apical antennomere widest just distal to middle; females with antennae about two-thirds length of body with widest portion of apical antennomere at distal one-third or distad to this point. Basal antennomeres bicolored, dark reddish brown at base, pale at apex; apical 4–5 antennomeres uniformly reddish brown. Antennal calli not noticeably paler than surrounding region of

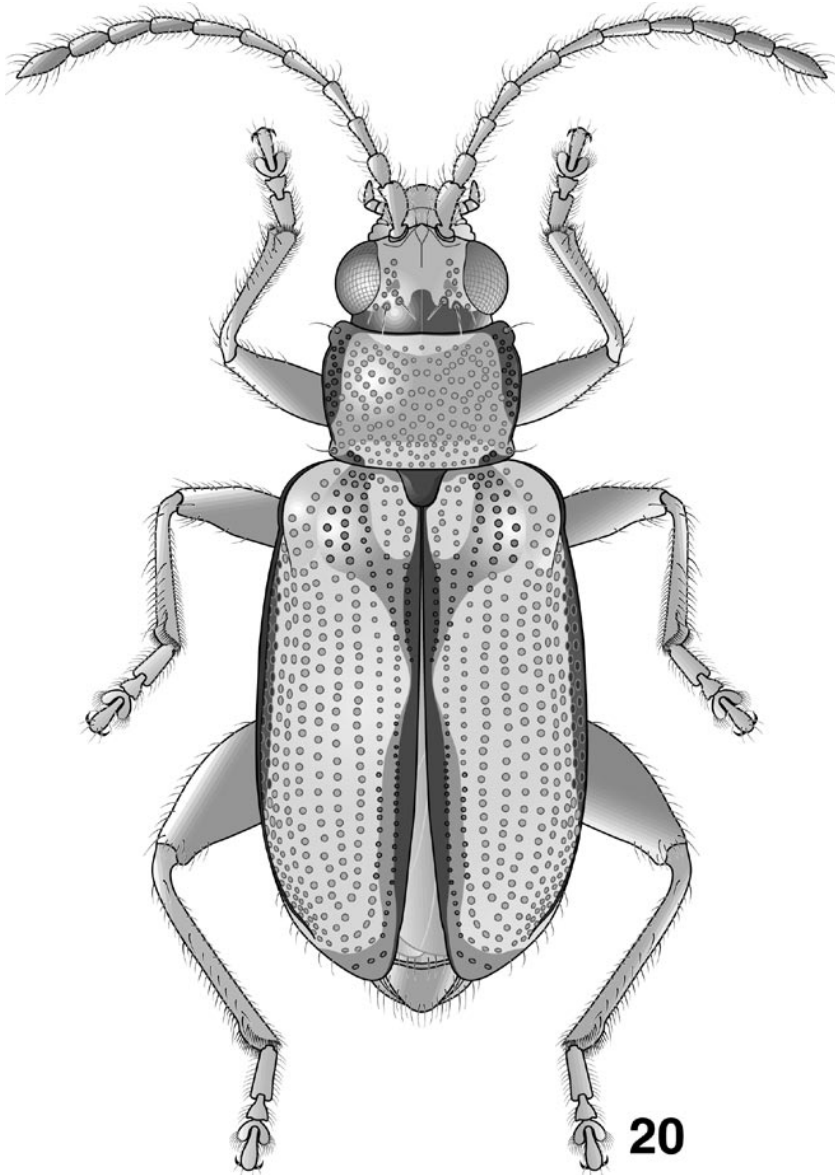


Fig. 20. *Pedethma weisei* Lingafelter and Konstantinov, new species, dorsal habitus.

head and variably discrete from vertex. Eyes bulging, produced at least as far as anterior corners of pronotum. Vertex with two or three setiferous pores on each side between upper portion of eye forming straight line. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal sulcus poorly developed, substituted by few parallel, shallow and thin lines. Supracallinal and midfrontal sulci straight, su-

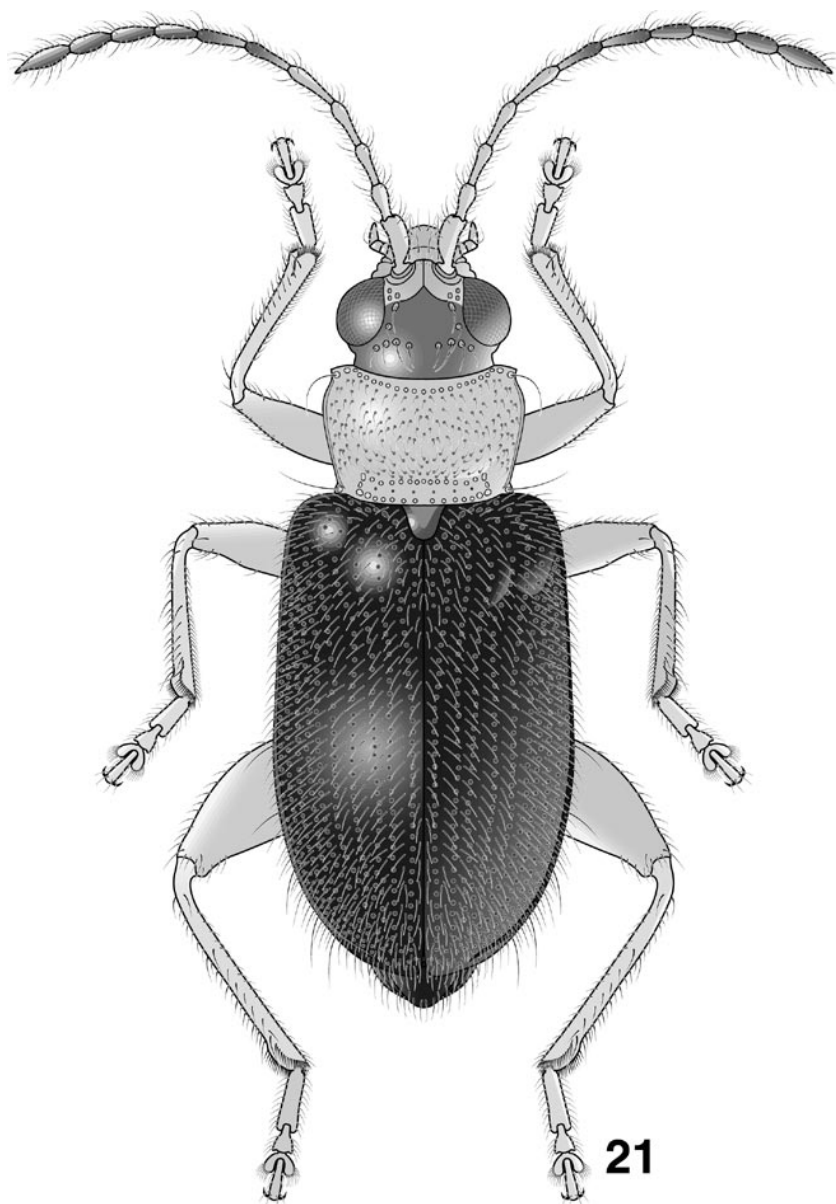
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Fig. 21. *Pedethma pubescens* Lingafelter and Konstantinov, new species, dorsal habitus.

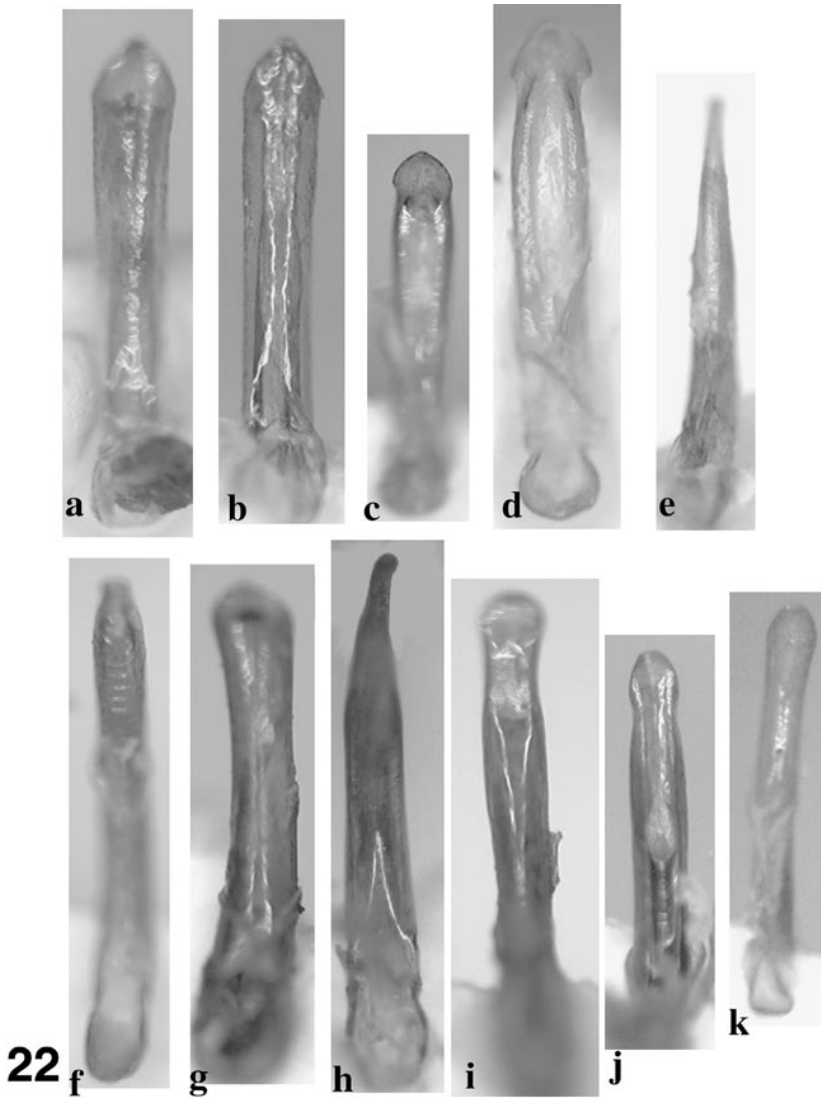


Fig. 22. Aedeagi of *Pedethma* species. **a)** *P. australiensis* Lingafelter and Konstantinov, new species (dark morph); **b)** *P. australiensis* Lingafelter and Konstantinov, new species (pale morph); **c)** *P. fuscipennis* Weise; **d)** *P. fuscipennis* Weise; **e)** *P. pubescens* Lingafelter and Konstantinov, new species; **f)** *P. howdeni* Lingafelter and Konstantinov, new species; **g)** *P. kirejtshuki* Lingafelter and Konstantinov, new species; **h)** *P. kurandensis* Lingafelter and Konstantinov, new species; **i)** *P. maculata* Lingafelter and Konstantinov, new species; **j)** *P. weisei* Lingafelter and Konstantinov, new species; **k)** *P. nigra* Lingafelter and Konstantinov, new species.

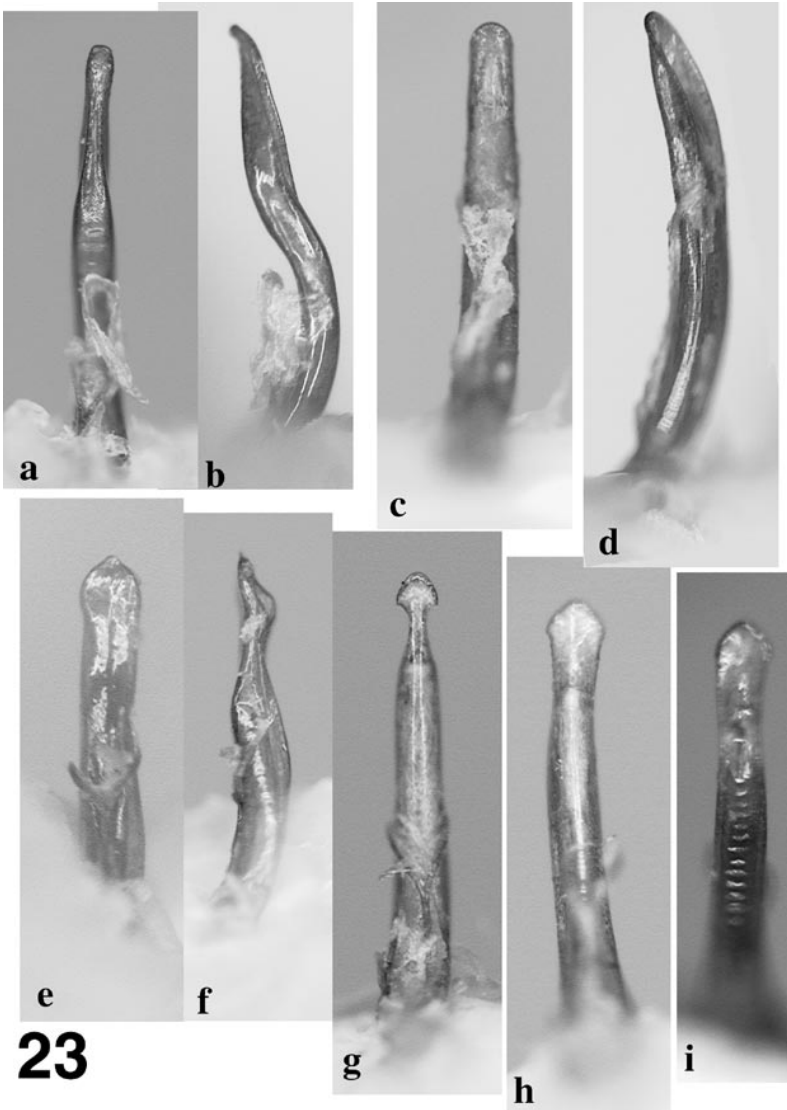


Fig. 23. Aedeagi of *Pedethma* species. **a)** *P. sinuatipenis* Lingafelter and Konstantinov, new species, ventral view; **b)** *P. sinuatipenis* Lingafelter and Konstantinov, new species, lateral view; **c)** *P. cookensis* Lingafelter and Konstantinov, new species, ventral view; **d)** *P. cookensis* Lingafelter and Konstantinov, new species, oblique lateral view; **e)** *P. demiensis* Lingafelter and Konstantinov, new species, ventral view; **f)** *P. demiensis* Lingafelter and Konstantinov, new species, lateral view; **g)** *P. pinnipenis* Lingafelter and Konstantinov, new species, ventral view; **h)** *P. humeromaculata* Lingafelter and Konstantinov, new species, ventral view; **i)** *P. humeromaculata* Lingafelter and Konstantinov, new species, dorsal view.

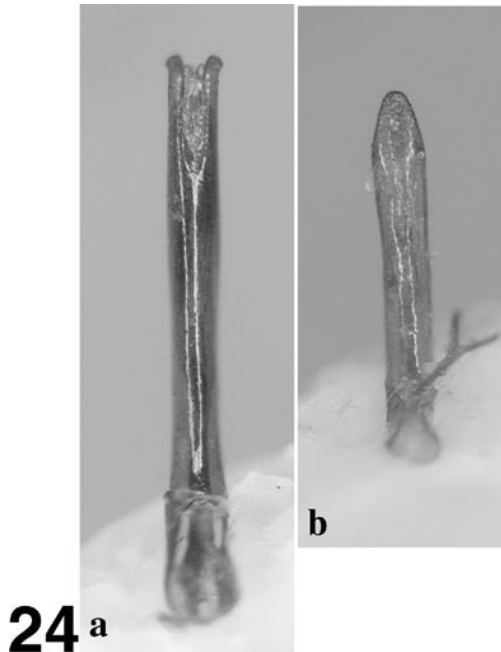
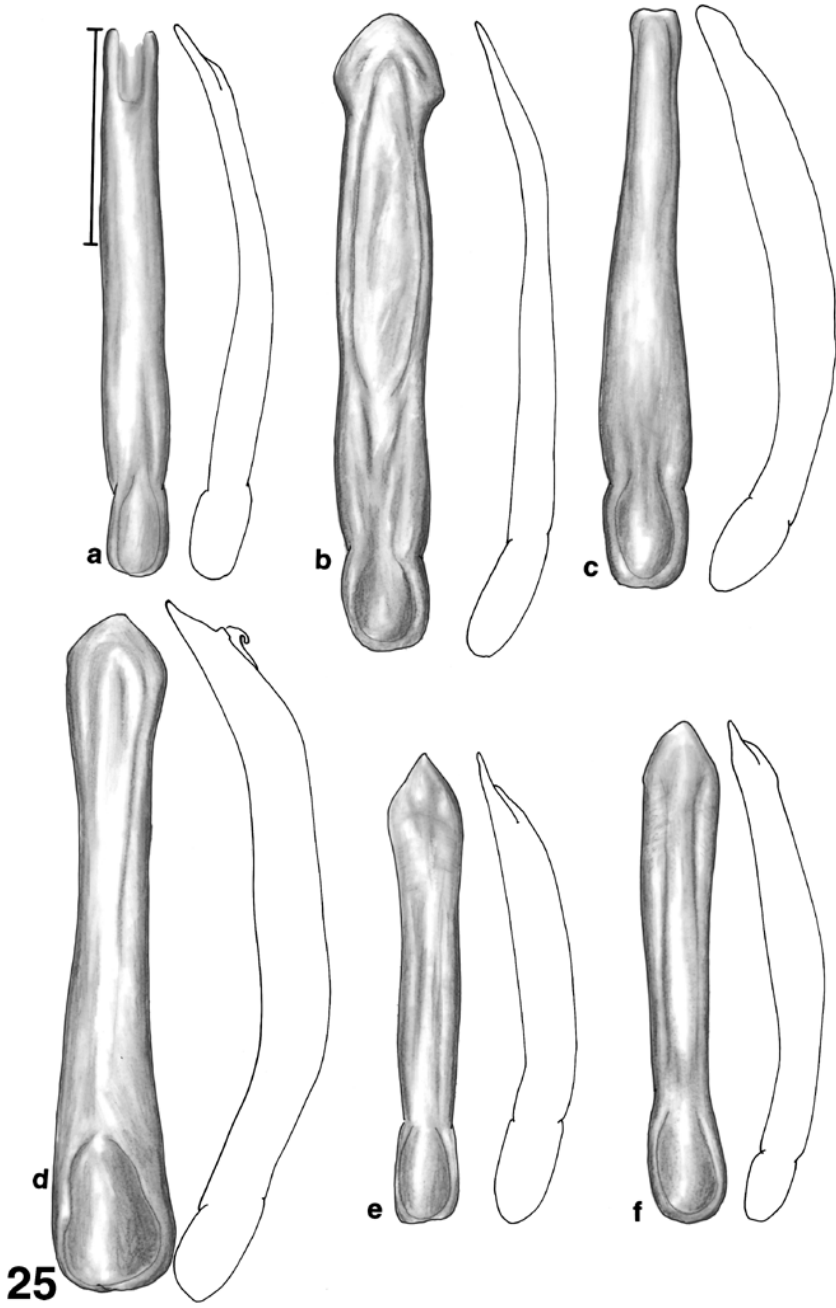


Fig. 24. Aedeagi of *Pedethma* species. **a)** *P. malandensis* Weise, ventral view; **b)** *P. australiensis* Lingafelter and Konstantinov, new species, ventral view.

praantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal sockets. No pores separate callus and orbit. Orbit extremely narrow, 0.4 times width of antennal callus. Antennal socket situated very close to eye margin. Upper part of frontal ridge absent between antennal calli. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. Narrow ridges between lower part of frontal ridge and lateral third of clypeus as in *P. kurandensis* absent. Anterofrontal ridge absent. Eye 1.94 times higher than wide and slightly higher than distance between eyes (above antennal sockets). Pronotal shape with moderate antemedial expansion and posterior constriction. Pronotum with consistent longitudinal maculation at middle of disk and slightly darker at margins. Posterior pronotal depression sinuate with slight posterior dip at middle and sides. Elytra (Figs. 14d, 19) variably maculated but darker around the scutellum and antemedially, with oblique, pale band running from humerus to approximately anterior one-third of suture. Abdominal venter and metasternum uniformly pale reddish brown to dark reddish brown. Aedeagus (Figs. 22i, 26d) relatively long, with slight to moderate anteapical constriction. Aedeagal apex broadly, evenly rounded, with small impression. Dorsal transverse ridges present. From lateral perspective, aedeagus strongly, broadly curved with very narrow apex. Spermatheca (Figs. 28f, 29d) with distal end narrowed and angled (rather than curved) outward from proximal end.

Diagnostic and Other Comments. The middle longitudinal maculation of the pronotum and the posterior region of head to the antennal calli is distinctive. Also, most specimens have noticeably maculate elytra with an oblique antemedial pale band running from the humerus to the suture. The bicolored basal antennomeres in combination with the above characters serve to distinguish this species.



Distribution. Rainforests of Northeast Queensland (Map 1, locality #4).

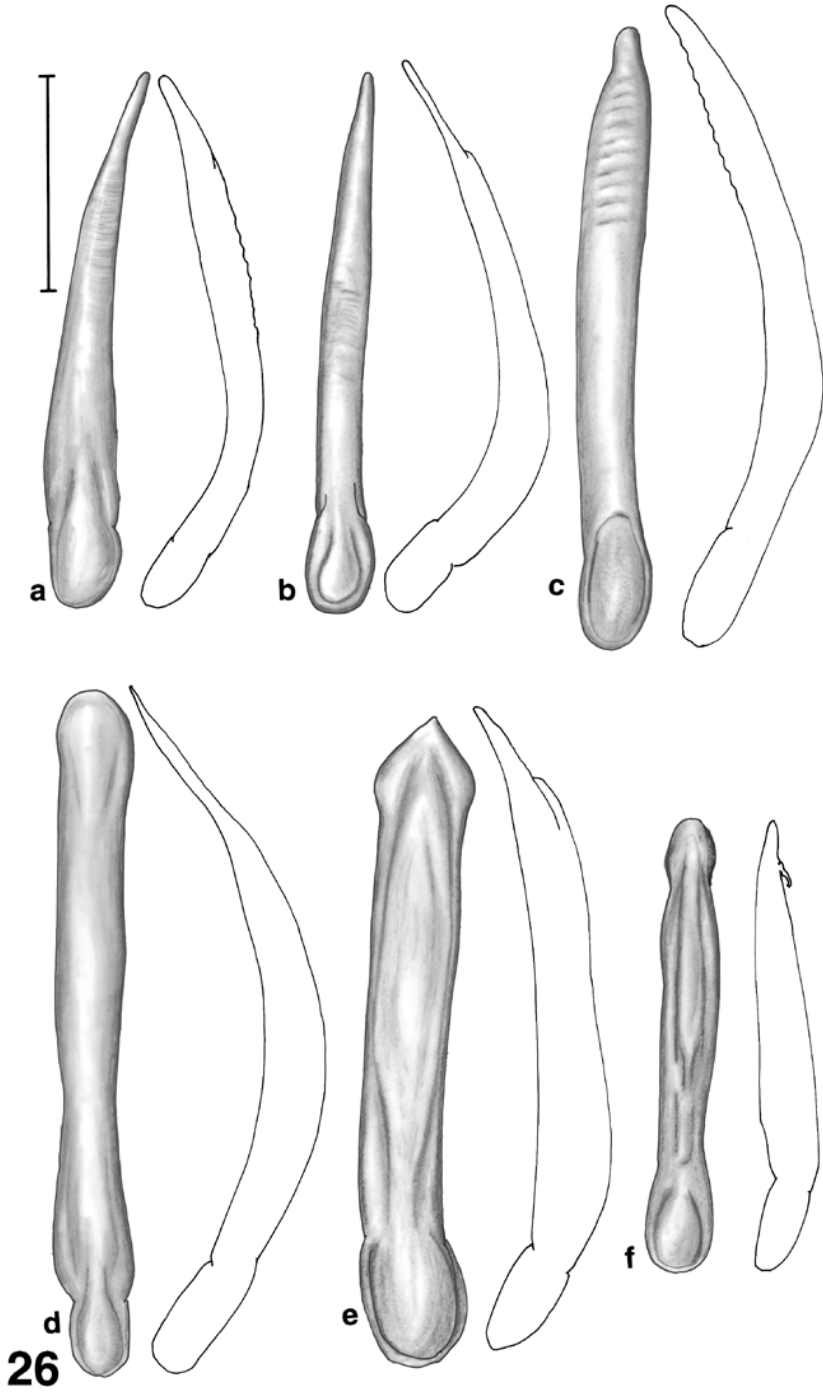
Etymology. The specific epithet refers to the bold patterns on the pronotum and elytra.

Material. Holotype (Male): “[AUSTRALIA]: Bellenden Ker Range, NQ, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM” (ANIC).

Paratypes. “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Pyrethrum knockdown” (ANIC, 23 specimens; NMNH, 15 specimens); “[AUSTRALIA]: Mt Bartle Frere, N. Qld. 5th Peak Summit, 1,620 m, 6–8 Nov., 1981, EARTHWATCH/ QLD. MUSEUM, Pyrethrum Knockdown” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, Oct. 25–31, 1981, EARTHWATCH/ QLD. MUSEUM, Q. M. BERLESATE No.371, 17.16S 145.51E, Rainforest, Sieved litter. A.N.I.C. COLEOPTERA Voucher 83-1093” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, Nov. 1–7, 1981, EARTHWATCH/ QLD. MUSEUM, Q. M. BERLESATE No. 339, 17.16S, 145.51E, Rainforest, Sieved litter” (ANIC, 2 specimens); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, Nov. 1–7, 1981, EARTHWATCH/ QLD. MUSEUM, Q. M. BERLESATE No. 338, 17.16°S, 145.51°E, Rainforest, Sieved litter” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, Nov. 1–7, 1981, EARTHWATCH/ QLD. MUSEUM, Q. M. BERLESATE No. 336, 17.16°S, 145.51°E, Rainforest, Sieved litter” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, Nov. 1–7, 1981, EARTHWATCH/ QLD. MUSEUM, Q. M. BERLESATE No. 340, 17.16°S, 145.51°E, Rainforest, Stick brushings” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, Nov. 1–7, 1981, EARTHWATCH/ QLD. MUSEUM, Yellow pan trap in rainforest” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Pitfall trap, rainforest” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Malaise trap, rainforest” (ANIC, 16 specimens); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, MV light, rainforest” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Baited window trap” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Beating, rainforest” (ANIC, 1 specimen); “[AUSTRALIA]: QLD c. 1,560 m, Mt. Bellenden-Ker (Summit), 7.vii.71, 17.16S 145.51E, Taylor and Feehan, ANIC Berlesate No. 367, Moss forest” (ANIC, 1 specimen).

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Fig. 25. Aedeagi of *Pedethma* species. Scale = 0.5 mm. **a)** *P. malandensis* Weise; **b)** *P. fuscipennis* Weise; **c)** *P. suturalis* Weise; **d)** *P. kirejtshuki* Lingafelter and Konstantinov, new species; **e)** *P. australiensis* Lingafelter and Konstantinov, new species (dark morph); **f)** *P. australiensis* Lingafelter and Konstantinov, new species (pale morph).



Pedethma malandensis Weise
(Figs. 16a, 24a, 25a)

Description. Measurements listed in Table 1. Basal antennomeres pale, apical 3–4 antennomeres darkened. Vertex with two setiferous pores on each side between upper portion of eye forming straight line, but widely separated at middle of vertex. Supracallinal, midfrontal, and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. Several large pores forming two rows along margin of eye between antennal callus and orbit. Orbit extremely narrow, 0.42 times width of antennal callus. Antennal socket situated very close to eye margin. Upper part of frontal ridge very narrow between antennal calli, no more than one-fourth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye (Fig. 16a) very large and occupying over two-thirds of head as viewed from lateral perspective in males. Eye 1.87 times higher than wide. Pronotum (Fig. 16a) brownish, darker at anterior two-thirds than region posterior of transverse impression. Posterior pronotal depression straight. Elytra (Fig. 16a) unicolorous, pale to moderately dark brown. Abdominal venter and metasternum darker than surrounding region. Legs pale yellow-brown. Aedeagus (Figs. 24a, 25a) symmetrical, not strongly tapering. Apex of aedeagus truncate with slight apical, medial impression and two lateral apical arms. Dorsal transverse ridges present. Aedeagus weakly curved as viewed from lateral perspective. Spermatheca unavailable for description. Tignum of paralectotype with basal sclerotization apparently unique for the genus.

Diagnostic and Other Comments. This species was described by Weise (1923:120). It is distinctive with the very large eyes, narrow frons and frontal ridge, and anteriorly narrowed antennal calli. The truncate aedeagal apex with apico-lateral arms and unique basal sclerotization of the tignum is characteristic. This species differs from *P. kurandensis* by its amber body color, pale to yellow legs, reduced number of pores above the eye, and larger pronotal punctures.

Distribution. Rainforests of northeast Queensland (Map 1, locality #4).

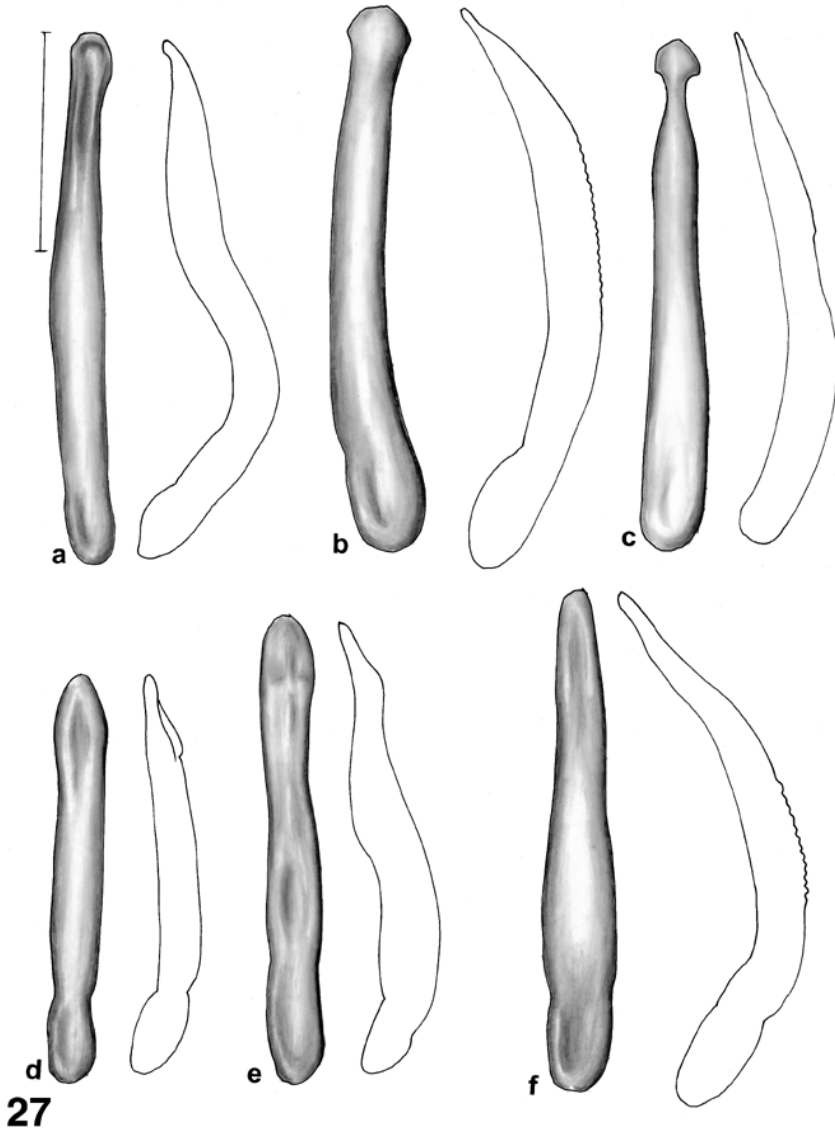
Material. Lectotype (designated herein): (Male: labels numbered): 1) Malanda; 2) Queensland, Mjoberg; 3) (no data); 4) loan 1132/94; 5) Lectotype *Pedethma malandensis* Weise (NHRS).

Paralectotypes. Labels 1–2 as in lectotype; 3) type; 4) (no data); 5) Typus; 6) *Pedethma malandensis* m. 7) loan 1133/94; 8) Paralectotype *Pedethma malandensis* Weise (NHRS, 1 specimen); Labels 1–2 as in lectotype; 3); 4) Paratypus; 5) *Pedethma malandensis* m. 6) loan 1131/94; 7) Paralectotype *Pedethma malandensis* Weise (NHRS, 1 specimen).

Other Material. “NEQ: 17°23’S 145°46’E Bartle Frere, W. Base, 7 Mar–15 May 1995, Monteith and Hasenpusch, Pitfall traps, 700 m” (QMBA, 1 specimen); “NE QLD. Emerald Ck, Lamb Range, 11 Oct 1982, 950 m, Monteith, Yeates and Thompson, Pyrethrum knockdown, RF” (NMNH, 1 specimen).

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Fig. 26. Aedeagi of *Pedethma* species. Scale = 0.5 mm. **a)** *P. kurandensis* Lingafelter and Konstantinov, new species; **b)** *P. pubescens* Lingafelter and Konstantinov, new species; **c)** *P. howdeni* Lingafelter and Konstantinov, new species; **d)** *P. maculata* Lingafelter and Konstantinov, new species; **e)** *P. fuscipennis* Weise; **f)** *P. weisei* Lingafelter and Konstantinov, new species.



27 **Fig. 27.** Aedeagi of *Pedethma* species. Scale = 0.5 mm. **a)** *P. sinuatipenis* Lingafelter and Konstantinov, new species; **b)** *P. humeromaculata* Lingafelter and Konstantinov, new species; **c)** *P. pinnipenis* Lingafelter and Konstantinov, new species; **d)** *P. australiensis* Lingafelter and Konstantinov, new species; **e)** *P. demiensis* Lingafelter and Konstantinov, new species; **f)** *P. seymourensis* Lingafelter and Konstantinov, new species.

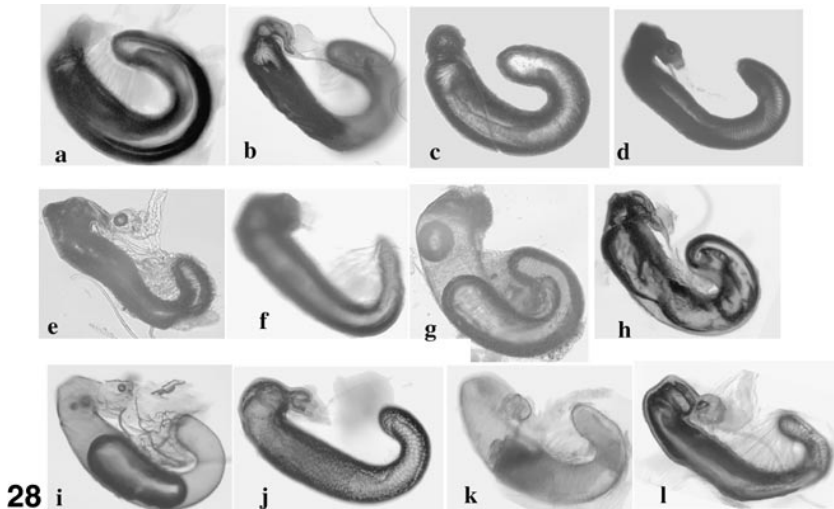


Fig. 28. Spermathecae of *Pedethma* species. **a)** *P. fuscipennis* Weise (dark morph of Allyn River locality); **b)** *P. fuscipennis* Weise (pale morph of Allyn River locality); **c)** *P. fuscipennis* Weise (Dilgry River locality); **d)** *P. howdeni* Lingafelter and Konstantinov, new species; **e)** *P. nigra* Lingafelter and Konstantinov, new species; **f)** *P. maculata* Lingafelter and Konstantinov, new species; **g)** *P. fuscipennis* Weise; **h)** *P. fuscipennis* Weise; **i)** *P. pubescens* Lingafelter and Konstantinov, new species; **j)** *P. suturalis* Weise; **k)** *P. kurandensis* Lingafelter and Konstantinov, new species (dark morph); **l)** *P. kurandensis* Lingafelter and Konstantinov, new species (pale morph).

Pedethma nigra Lingafelter and Konstantinov, **new species**
(Figs. 15f, 22k, 28e, 29c)

Description. Measurements listed in Table 1. Antennae over two-thirds length of body in males, slightly more than one-half length of body in females. Basal 4–5 antennomeres pale, apical antennomeres dark brown to piceous. Antennal calli pale yellow. Vertex with two setiferous pores on each side between upper portion of eye, forming straight line. Supracallinal sulcus poorly developed. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores between antennal callus and orbit. Orbit extremely narrow, one-half width of antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli one-fifth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye twice as high as wide, slightly higher than distance between eyes (above antennal sockets). Pronotal shape with moderate antemedial expansion and posterior constriction. Posterior pronotal depression sinuate with slight posterior dip at middle and sides. Pronotum pale yellow. Elytra (Fig. 15f) dark reddish-brown, appearing black. Abdominal venter and metasternum piceous. Aedeagus (Fig. 22k) long, slightly expanded apically, but not as strongly as in *P. maculata*; without abrupt preapical constriction as in *P. maculata*. Aedeagus with very slight apical, medial impression; no other ridges or impressions present. Aedeagus moderately curved as viewed from lateral perspective. Spermatheca (Figs. 28e, 29c) abruptly curved at each end, slightly sinuate

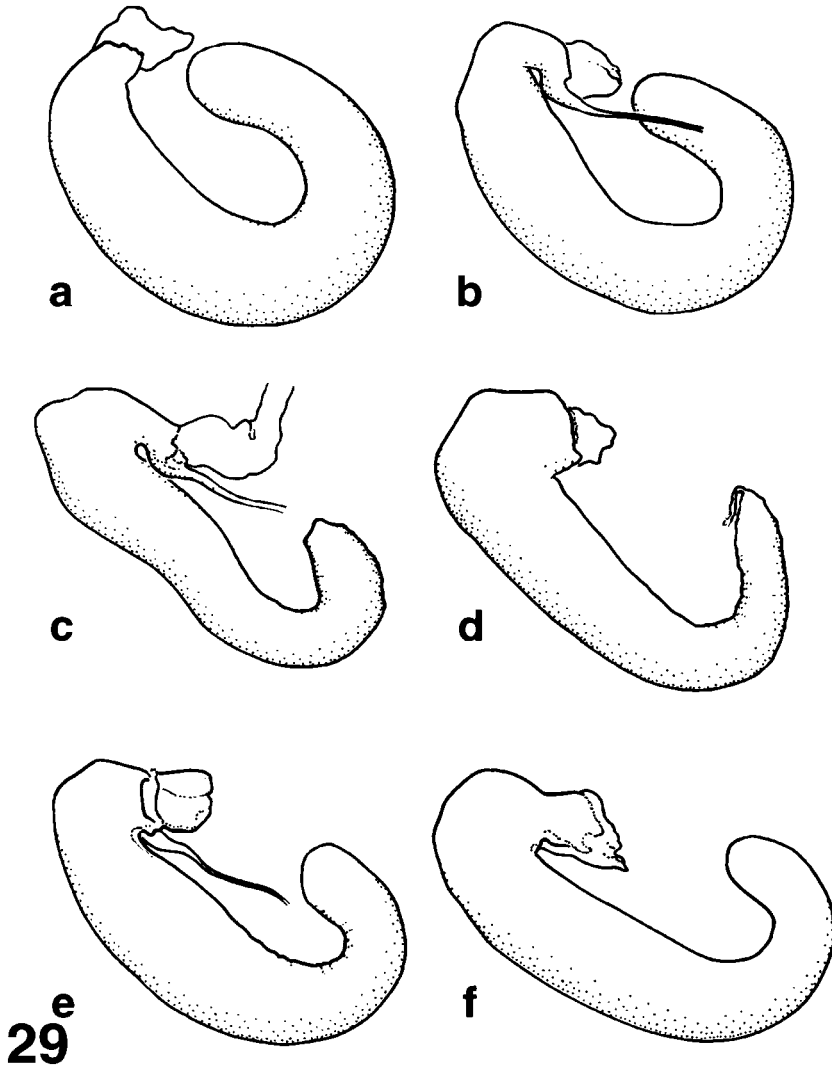


Fig. 29. Spermathecae of *Pedethma* species. **a)** *P. fuscipennis* Weise (dark morph of Allyn River locality); **b)** *P. fuscipennis* Weise (pale morph of Allyn River locality); **c)** *P. nigra* Lingafelter and Konstantinov, new species; **d)** *P. maculata* Lingafelter and Konstantinov, new species; **e)** *P. pubescens* Lingafelter and Konstantinov, new species; **f)** *P. suturalis* Weise.

along body. Proximal and distal ends widely separated by about one-half of overall length of spermatheca.

Diagnostic and Other Comments. The very pale yellow head, pronotum, and legs, small size, dark reddish-brown elytra (appearing black), long aedeagus without any distinct impressions or anteapical constriction, and sinuate

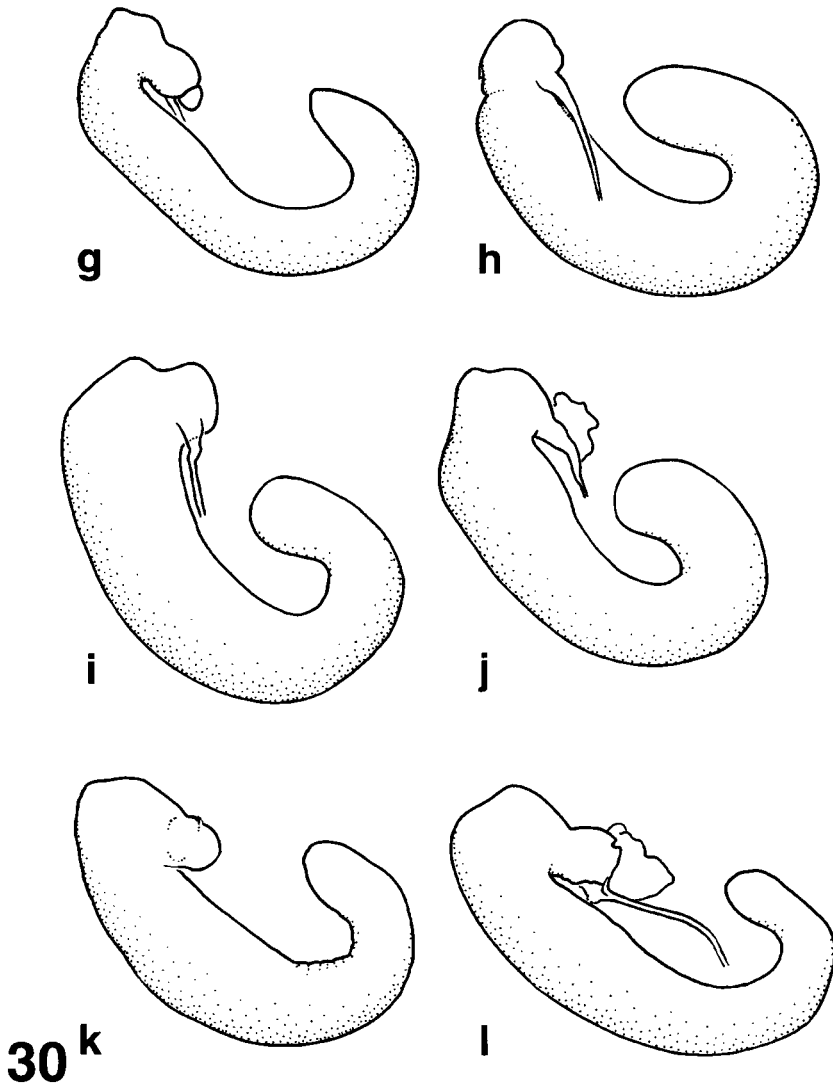


Fig. 30. Spermathecae of *Pedethma* species. **g)** *P. howdeni* Lingafelter and Konstantinov, new species; **h)** *P. fuscipennis* Weise (Dilgry River locality); **i)** *P. fuscipennis* Weise; **j)** *P. fuscipennis* Weise; **k)** *P. kurandensis* Lingafelter and Konstantinov, new species (dark morph); **l)** *P. kurandensis* Lingafelter and Konstantinov, new species (pale morph).

spermatheca with widely separated proximal and distal ends distinguish this species from other *Pedethma* species.

Distribution. Rainforests of northeast Queensland (Map 1, locality #4).

Etymology. The specific epithet refers to the dark elytra.

Material. Holotype (Male): “[AUSTRALIA]: Bellenden Ker Range, NQ,

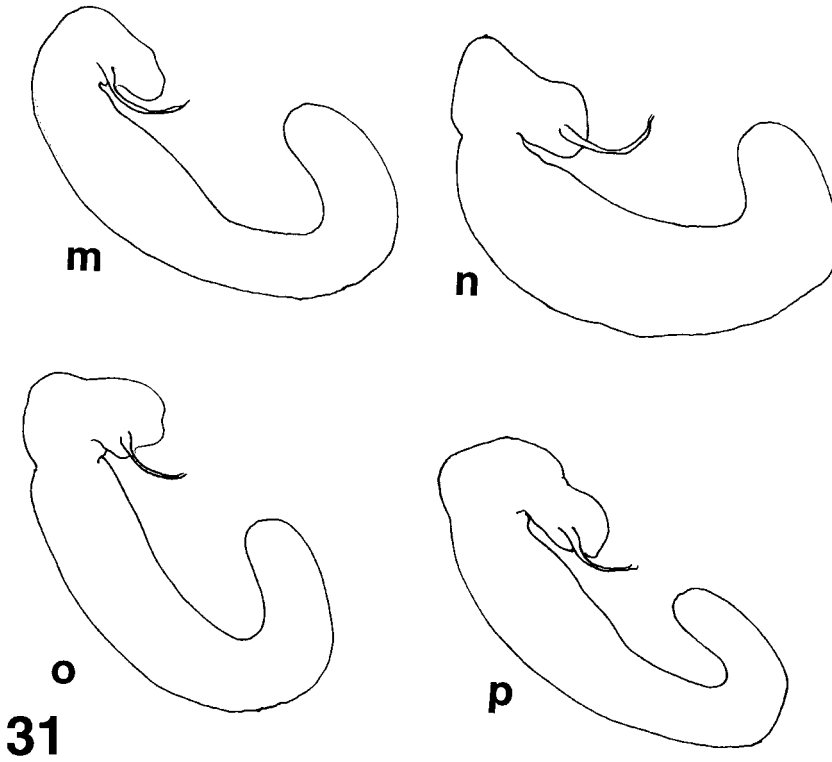
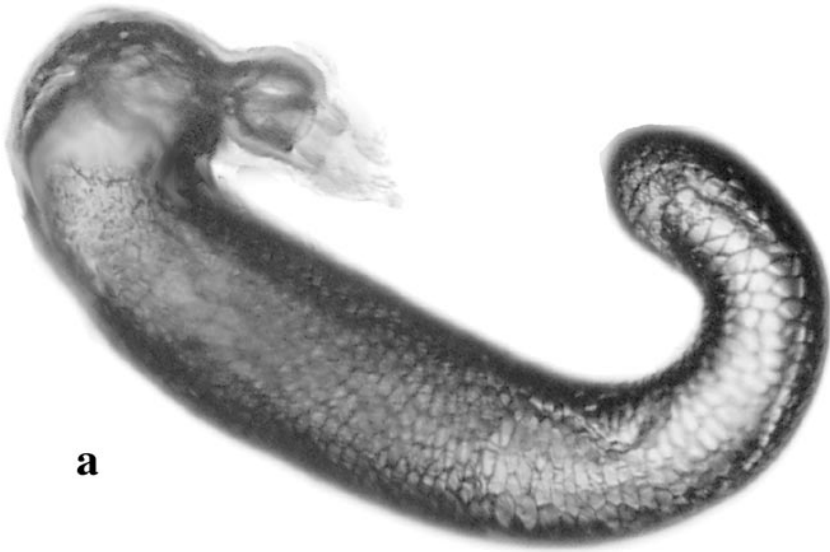


Fig. 31. Spermathecae of *Pedethma* species. **m)** *P. pinnipenis* Lingafelter and Konstantinov, new species; **n)** *P. humeromaculata* Lingafelter and Konstantinov, new species; **o)** *P. seymourensis* Lingafelter and Konstantinov, new species; **p)** *P. demiensis* Lingafelter and Konstantinov, new species.

Summit TV Stn., 1,560 m, 17 Oct.–Nov.5, 1981, EARTHWATCH/ QLD. MUSEUM, Malaise trap, rainforest” (ANIC).

Paratypes. “[AUSTRALIA]: Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Malaise trap, rainforest” (ANIC, 2 specimens); “[AUSTRALIA]: Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Beating, rainforest” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ, Cable Tower, 3, 1,054 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Beating, rainforest” (ANIC, 3 specimens; NMNH, 3 specimens); “[AUSTRALIA]: Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM” (ANIC, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Pyrethrum knockdown” (ANIC, 2 specimens; NMNH, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/ QLD. MUSEUM, Pitfall trap, rainforest” (ANIC, 1 specimen; NMNH, 1 specimen); “[AUSTRALIA]: Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, Oct. 25–31, 1981, EARTH-



a



b

32

Fig. 32. Spermathecal surface sculpturing in *Pedethma*. **a)** *P. suturalis* Lingafelter and Konstantinov, new species; **b)** *P. howdeni* Lingafelter and Konstantinov, new species.

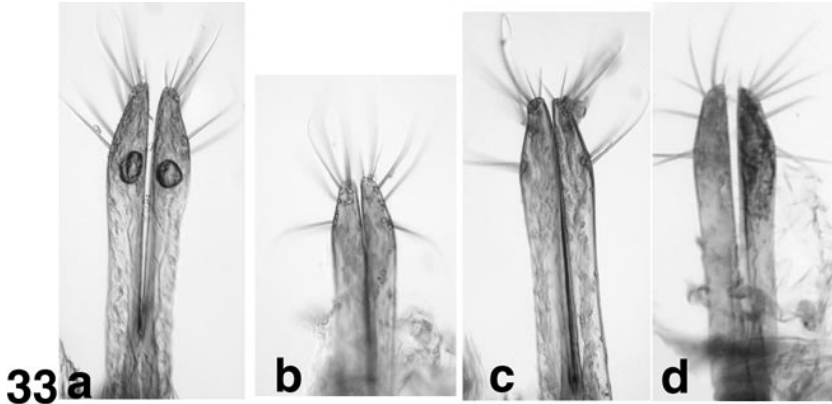


Fig. 33. Vaginal palpi in *Pedethma* species. **a)** *P. kurandensis* Lingafelter and Konstantinov new species; **b)** *P. fuscipennis* Weise; **c)** *P. suturalis* Weise; **d)** *P. pubescens* Lingafelter and Konstantinov new species.

WATCH/ QLD. MUSEUM, Q. M. BERLESATE No. 372, 17.16S 145.51E, Rainforest, Sieved litter, A.N.I.C. COLEOPTERA Voucher No. 83-1094,” (ANIC, 1 specimen).

Other Material. “Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/QLD. MUSEUM, Beating, Rainforest” (QMBA, 2 specimens); “Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, Nov. 1–7, 1981, EARTHWATCH/QLD. MUSEUM; Yellow pan trap in rainforest” (QMBA, 1 specimen); “Bellenden Ker Range, NQ, Summit TV Stn., 1,560 m, 17 Oct.–Nov. 5, 1981, EARTHWATCH/QLD. MUSEUM, Pyrethrum knockdown; A.N.I.C., COLEOPTERA Voucher No. 83-1094” (QMBA, 1 specimen); “NE.Q: 17°14’S × 145°48’E, Massey Ra., 6 km NW of Bellenden Ker, 1,150 m, 11 Oct 1991. PYRETHRUM, Monteith and Janetzki” (QMBA, 1 specimen).

Pedethma pinnipenis Lingafelter and Konstantinov, **new species**
(Figs. 16e, 23g, 27c, 31m)

Description. Measurements listed in Table 1. Antennae about two-thirds length of body in males, slightly more than one-half length of body in females. Most antennomeres pale, becoming darker brown at apex of antenna. Antennal calli pale yellow to reddish-brown, of same color as head. Vertex with two to three setiferous pores on each side between upper portion of eye, forming straight line. Supracallinal sulcus well developed. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending between antennal socket and frontal ridge. A row of large pores between antennal callus and orbit. Orbit extremely narrow, less than one-half width of antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli less than one-fifth width of transverse diameter of antennal socket. Lower part of frontal ridge forming obtuse angle with upper part, narrower than latter. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 1.9 as high as wide, slightly higher than distance between eyes (above antennal sockets). Pronotal shape with moderate antemedial expansion and posterior constriction. Posterior pronotal depression nearly straight with slight posterior dip at middle and sides. Pronotum reddish-brown, darker

at sides. Elytra (Fig. 16e) variable, pale yellow-brown with darker epipleura and periscutellar region on holotype and some paratypes to uniformly pale yellow on other paratypes. Abdominal venter and metasternum yellow to reddish-brown. Aedeagus (Figs. 23g, 27c) long, with strong arrowhead apex, strongly constricted anteapically. Aedeagus with transverse dorsal ridges. Aedeagus moderately curved as viewed from lateral perspective. Spermatheca (Fig. 31m) moderately curved at each end, body more thickened at base; proximal and distal ends moderately separated by about one-third to one-half of overall length of spermatheca.

Diagnostic and Other Comments. The very distinctive arrowhead shaped aedeagus with very strong anteapical constriction readily identifies this species.

Distribution. Rainforests of northeast Queensland (Map 1, locality #2).

Etymology. The specific epithet refers to the abruptly arrow-headed aedeagus.

Material. Holotype (Male): "Hugh Nelson Ra, 2.5 km S of Crater N.P., N.Qld., 5 Dec 1988, 1,100 m. Monteith and Thompson, Pyrethrum/Logs and Trees" (QMBA, QMT 62962).

Paratypes. "Hugh Nelson Ra, 2.5 km S of Crater N.P., N.Qld., 5 Dec 1988, 1100 m. Monteith and Thompson, Pyrethrum/Logs and Trees" (QMBA, 1 specimen); "Sluice Ck, 9 km WSW Millaa Millaa, NEQ, 5–14 Dec 1988, 1,150 m, Monteith and Thompson, Flight Intercept Trap" (QMBA, 2 specimens); "NE QLD. 1.5 km W of Cape Tribulation (Site 3), 23 Sept.–7 Oct. 1982, 150 m. Monteith, Yeates and Thompson, Baited flight trap, RF" (QMBA, 1 specimen); "NE QLD. 1.5 km W of Cape Tribulation (Site 3), 25 Sept 1982, 150 m. Monteith, Yeates and Thompson; QM Berlesate No. 425, 16.05S 145.28E, Rainforest, 150 m, Stick brushing" (QMBA, 1 specimen); "NE QLD. 1.5 km W of Cape Tribulation (Site 3), 23 Sept.–7 Oct. 1982, 150 m. Monteith, Yeates and Thompson, Rainforest pitfall traps" (QMBA, 1 specimen); "NE QLD. 1.5 km W of Cape Tribulation (Site 10), 28 Sept. 1982, 780 m. Monteith, Yeates and Thompson, Pyrethrum knockdown, RF" (QMBA, 1 specimen); "North Summit, Bakers Blue Mt., 17 km W Mt Molloy, NQ, 1–18 Jan 1990, 1,000 m, anzsens, Flt. Intercept, Site 2" (QMBA, 1 specimens; NMNH, 1 specimen).

Pedethma pubescens Lingafelter and Konstantinov, **new species**

(Figs. 14f, 21, 22e, 26b, 28i, 29e, 33d)

Description. Measurements listed in Table 1. Antennae nearly length of body in male, slightly shorter in females. Basal antennomeres pale, apical antennomeres dark reddish-brown to piceous. Antennal calli similar in coloration to surrounding portions of head. Vertex with two setiferous pores on each side between upper portion of eye, forming straight line. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal sulcus poorly developed. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores separate callus and orbit. Orbit extremely narrow, 0.54 times width of antennal callus. Antennal socket situated very close to eye margin. Upper part of frontal ridge between antennal calli 0.48 times width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No narrow ridges situated between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye size of males extremely large and protuberant, occupying about two-thirds of head as viewed from lateral perspective. Of females, eyes smaller, but still protuberant. Pronotum (Figs. 14f, 21) densely pubescent with long hairs, broad, with moderate antemedial expansion and posterior constriction. Posterior pronotal depression nearly horizontal with only slight posterior tapering at ends. Pronotum pale yellowish. Elytra (Figs. 14f, 21) densely pubescent with long hairs, dark reddish-brown, appearing black. Abdominal venter dark brown; metasternum reddish-brown. Aedeagus

(Figs. 22e, 26b) long, tapering continuously to narrow point at apex (as in *P. kurandensis*) with transverse dorsal ridges and minute ventral striae present at middle third. Aedeagus strongly curved with very narrow apical fifth as viewed from lateral perspective. Spermatheca (Figs. 28i, 29e) moderately, symmetrically curved at distal and proximal ends (as in *P. howdeni* and *P. suturalis*) with separation approximately one-third length of spermatheca.

Diagnostic and Other Comments. Although this species is extremely similar to *P. kurandensis* in the shape of the aedeagus, it is easily recognized by its abundant and uniformly distributed long setae on the elytra and pronotum.

Distribution. Rainforests of northeast Queensland (Map 1, locality #2).

Etymology. The specific epithet refers to the hairy elytra and pronotum.

Material. Holotype (Male): “[AUSTRALIA]: Bamboo Ck, near Miallo, N. of Mossman, N. Qld., 25 Apr. 1967, D. H. Colless” (ANIC).

Paratypes. “[AUSTRALIA]: Bamboo Ck, near Miallo, N. of Mossman, N. Qld., 25 Apr. 1967, D. H. Colless” (ANIC, 3 specimens; NMNH, 1 specimen).

Pedethma seymourensis Lingafelter and Konstantinov, **new species**

(Figs. 16g, 27f, 31o)

Description. Measurements listed in Table 1. Antennae about two-thirds length of body in both sexes. In holotype and allotype, basal 4–5 antennomeres pale, apical antennomeres dark brown to piceous; in other material, most antennomeres are uniformly reddish-brown. Antennal calli pale yellow but similar in color to surrounding head. Vertex with two or three setiferous pores of unequal size on each side between upper portion of eye, not forming very straight line. Supracallinal sulcus poorly developed. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores between antennal callus and orbit. Orbit narrow, nearly as wide as antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli one-fifth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. Area lateral of lower part of frontal ridge slightly swollen. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 2.2 times as high as wide, slightly higher than distance between eyes (above antennal sockets). Pronotal shape with moderate antemedial expansion and posterior constriction; more pronounced in male than female. Posterior pronotal depression straight to slightly recurved. Pronotum pale yellow. Elytra (Fig. 16g) pale with piceous epipleura in holotype and allotype; dark periscutellar region in other specimens. Abdominal venter piceous in holotype and allotype; reddish-brown in others; metasternum reddish-brown. Aedeagus (Fig. 27f) long, moderately tapered apically, but not as strongly as in *P. pubescens* or *P. kurandensis*. Aedeagus with dorsal transverse ridges and rounded apex. Aedeagus moderately curved as viewed from lateral perspective. Spermatheca (Figs. 31o) nondistinct, curved at each end but more strongly at apex of body. Proximal and distal ends moderately separated by about one-third of overall length of spermatheca.

Diagnostic and Other Comments. The aedeagus, lacking an arrowhead apex, and with the dorsal, but not ventral transverse ridges is most diagnostic for this species.

Distribution. Rainforests of northeastern Queensland (Map 1, localities #4, 5).

Etymology. The specific epithet refers to the type locality.

Material. Holotype (Male, on same point with allotype): “[AUSTRALIA]: NE.Q: 17°28'S 146°02'E, Polly Ck, Seymour Ra. 12 Sept–22 Oct 1991. 80 m, Monteith and Janetzki, Pitfall and Intercept traps” (QMBA, QMT 62970).

Paratype (Allotype). “NE.Q: 17°28'S 146°02'E, Polly Ck, Seymour Ra. 12 Sept–22 Oct 1991. 80 m, Monteith and Janetzki, Pitfall and Intercept traps” (QMBA, 1 female specimen, on same point with holotype).

Other Material. “NEQ: 17°26'S 145°42'E, Hughes Road, Topaz. 6 Dec 1993–25 Feb 1994. Monteith, Cook, Janetzki, RF Pitfalls, 650 m.” (QMBA, 1 specimen); “NEQ: 17°35'S 145°35'E, Maalan SF on Hwy. 25 Nov 1994–10 Jan 1995. Monteith and Hasenpusch, Flt. intercept trap, 850 m.” (QMBA, 1 specimen).

Pedethma sinuatipenis Lingafelter and Konstantinov, **new species**
(Figs. 16b, 23a–b, 27a)

Description. Measurements listed in Table 1. Male with antennae slightly shorter than body (females unknown). Antennae reddish brown to piceous at apex. Antennal calli not noticeably paler than surrounding region of head. Vertex with three setiferous pores, of differing size, on each side between upper portion of eye, not forming straight line. Supracallinal sulcus poorly developed. Midfrontal and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores between antennal callus and orbit. Orbit extremely narrow, one-half width of antennal callus. Antennal socket very close to eye margin. Upper part of frontal ridge between antennal calli one-fifth width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, narrower than latter. No ridges between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye twice as high as wide, slightly higher than distance between eyes (above antennal sockets). Pronotal shape nearly quadrate with very weak antemedial expansion and posterior constriction. Posterior pronotal depression nearly straight with slight posterior dip at sides. Pronotum pale reddish-brown. Elytra (Fig. 16b) diffusely darkened at epipleura and base. Abdominal venter and metasternum reddish-brown. Aedeagus (Figs. 23a–b, 27a) long, slightly tapering apically. Aedeagus without dorsal or ventral transverse ridges present. Aedeagus strongly sinuate as viewed from lateral perspective. Spermatheca unknown.

Diagnostic and Other Comments. The relatively long and very strongly sinuate aedeagus is most characteristic for this species. The nearly quadrate pronotum with weak antemedial expansion is also distinctive.

Distribution. Rainforests of northeastern Queensland (Map 1, locality #4).

Etymology. The specific epithet refers to the serpentine curvature of the aedeagus when viewed from lateral perspective.

Material. Holotype (Male): “Mt Bartle Frere, N.Qld. Sth Peak Summit, 1,620 m, 6–8 Nov., 1981. EARTHWATCH/ QLD.MUSEUM, Pyrethrum knockdown; A.N.I.C., Voucher No. 83–1095” (QMBA, QMT 62972).

Pedethma suturalis Weise
(Figs. 14a, 25c, 28j, 29f, 32a, 33c)

Description. Measurements listed in Table 1. Dimorphic antennal lengths: males have antennae approximately the length of the body with the apical antennomere widest just distal to middle; females have antennae less than two-thirds length of body and widest portion of apical antennomere is at distal one-third or distad to this point. Basal antennomeres reddish brown, apical antennomeres darker brown to piceous. Antennal calli not noticeably paler than surrounding region of head. Vertex with three setiferous pores on each side between upper portion of eye forming straight line. Supracallinal, midfrontal, and supraantennal sulci well developed. Supraorbital sulcus absent. Supracallinal and midfrontal sulci straight, supraantennal sulcus concave, bent around antennal socket.

Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores separate antennal callus and orbit. Orbit narrow, 0.58 times width of antennal callus. Antennal socket situated close to eye margin. Upper part of frontal ridge between antennal calli 0.29 times width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, slightly narrower than latter. No ridges situated between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 1.94 times higher than wide. Pronotal margin strongly produced anterolaterally, with bulge extending at least as far as anterior corners. Posterior pronotal depression nearly horizontal with only slight posterior dip at middle. Posterior pronotal margin moderately constricted forming a very sinuate margin. Pronotum uniformly reddish brown. Elytra (Fig. 14a) with distinct periscutellar patch that tapers along suture. Elytral epipleura black to brown. Color of venter of abdomen piceous. Color of metasternum piceous. Aedeagus (Fig. 25c) slightly tapering apically. Apex of aedeagus truncate, not constricted (as in *P. malandensis*). A slight longitudinal impression extending approximately one-third length of aedeagus from apex. Aedeagus thick and moderately curved from lateral perspective. Spermatheca (Figs. 28j, 29f, 32a) broadly curved distally as in *P. howdeni*, with a wide separation between distal and proximal ends. Surface sculpture of spermatheca distinctly imbricate (Fig. 32a).

Diagnostic and Other Comments. This species was described by Weise (1923:120–121). It is a distinctively maculate species with the periscutellar maculation extending along suture to the elytral apex, and possessing widely produced pronotal margins. Less maculate forms resemble *P. howdeni*, but the aedeagi differ between the two significantly. The spermathecae of both species are similar in shape, but the surface sculpturing varies: In *P. suturalis* it is imbricate, in *P. howdeni* it is fissate.

Distribution. Rainforests of northeast Queensland (Map 1, locality #4).

Material. Lectotype (designated herein): (Male: labels numbered): 1) Herberton; 2) Queensl., Mjoberg; 3) (no data); 4) type; 5) Typus; 6) *Pedethma suturalis* m.; 7) Lectotype *Pedethma suturalis* Weise des. A. Konstantinov, 1995 (NHRS).

Paralectotype. Labels 1–3 as in lectotype; 4) loan 1135/94; 5) Paralectotype *Pedethma suturalis* Weise des. A. Konstantinov, 1995 (NHRS, 1 specimen).

Other Material. “AUSTRALIA, Atherton, Qld., 8.II.1975, H. and A. Howden” (CMNC, 1 specimen; NMNH, 2 specimens).

Pedethma weisei Lingafelter and Konstantinov, **new species**
(Figs. 20, 22j, 26f)

Description. Measurements listed in Table 1. Antennae of male approximately two-thirds length of body, pale at basal one-half, with apical antennomeres gradually becoming dark brown to piceous. Antennal calli slightly paler than surrounding region of head. Vertex with one setiferous pore on each side between upper portion of eyes. Supracallinal and midfrontal sulcus poorly developed, midfrontal sulcus deeper after point of bifurcation. Supraantennal sulcus well developed. Supraorbital sulcus absent. Midfrontal sulcus straight, supraantennal sulcus concave, bent around antennal socket. Lower part of antennal callus narrow and long, extending far between antennal socket and frontal ridge. A few large pores separate callus and orbit. Orbit extremely narrow, one-half times width of antennal callus. Antennal socket situated close to eye margin. Upper part of frontal ridge between antennal calli 0.63 times width of transverse diameter of antennal socket. Lower part of frontal ridge forming almost straight angle with upper part, slightly narrower than latter. No ridges situated between lower part of frontal ridge and lateral third of clypeus. Anterofrontal ridge absent. Eye 2.13 times higher than wide. Pronotum nearly rectangular with only slight antemedial bulge and posterior constriction. Posterior pronotal transverse impression slightly sinuate, short and not conspicuous (as in *P. kirejts-huki*) due to the numerous, coarse punctures surrounding it. Pronotum reddish-brown

with piceous lateral margins and dark brown anterior and posterior margins. Elytra (Fig. 20) conspicuously maculate with piceous sutural and lateral margins and a darkened periscutellar region. Otherwise reddish-brown. Abdominal venter and metasternum piceous. Aedeagus (Figs. 22j, 26f) relatively short with ante-apical constriction and rounded apex with complex pattern of medial-longitudinal impressions with interior elevations running from apex to base. Aedeagus thickened and straight from lateral perspective. Spermatheca unknown (no females known for this species).

Diagnostic and Other Comments. This species has a coarsely and heavily punctate pronotum similar to *P. kirejtshuki*. However, the punctures are moderately evenly spaced and not touching, in contrast to those of *P. kirejtshuki* which are mostly confluent. The longitudinal aedeagal excavations and impressions, the piceous margins of the pronotum and elytra, the piceous venter with pale legs, and the nearly rectangular pronotum readily distinguish this species.

Distribution. Forests of Southeast New South Wales (Map 1, locality #16).

Etymology. The specific epithet refers to the prolific early twentieth century coleopterist, J. Weise.

Material. Holotype (Male): "AUSTRALIA: NSW, Monga State Forest, 19–24.I.1984, L. Masner, *Eucalyptus* forest, 700 m.; on ferns" (CMNC).

Paratypes. "[AUSTRALIA]: Clyde Mtn., NSW, West slope, 1 Feb. 1973, D. H. Colless" (ANIC, 2 specimens); "[AUSTRALIA]: Clyde Mtn., NSW, West slope, 1 Feb. 1973, D. H. Colless," (NMNH, 1 specimen).

Key to Species of *Pedethma*

The original structure of this key was developed through the use of DELTA (Dallwitz, *et al.* 1993) and was based on 21 characters. The aedeagus is most diagnostic for species of *Pedethma*, and an attempt to match them would be a preferable first start for identification. Females of *P. australiensis*, *P. cookensis*, *P. kirejtshuki*, *P. sinuatipenis*, and *P. weisei* are unknown. Because of this, the key is biased toward identification of male individuals.

- | | |
|--|-------------------------------------|
| 1. Dorsal surface of aedeagus with transverse ridges (Figs. 23i, 27b,f) | 2 |
| 1' Dorsal surface of aedeagus without transverse ridges | 9 |
| 2(1). Elytra uniformly dark or light | 3 |
| 2' Elytra with at least one macula (occasionally with indistinct maculae) | 5 |
| 3(2). Elytral pubescence limited to apex and margins (Figs. 17–20) | 4 |
| 3' Elytral pubescence as numerous hairs over entire surface of elytron (Fig. 21) | <i>P. pubescens</i> , new species |
| 4(3). Antennae pale yellow to antennomere 7; antennomeres 8–11 dark brown (Fig. 16a). Elytron with vague punctures at apex. Aedeagus of uniform width, with truncate apex and two extending arms (Figs. 24a, 25a) | <i>P. malandensis</i> Weise |
| 4'. Antennomere coloration variable, but rarely with abrupt difference in color of the basal 7 and apical 4 antennomeres as in <i>P. malandensis</i> . Elytron with typical punctation, striae complete (or nearly so) to apex. Aedeagus strongly tapering to a very narrowly rounded apex (Figs. 22h, 26a) as in <i>P. pubescens</i> ; aedeagus has fine ventral ridges antemedially; spermathecal body elongate with weak curvature of distal and proximal ends (Figs. 28k–l, 30k–l) | <i>P. kurandensis</i> , new species |

- 5(2). Middle pronotal maculation present (Figs. 14d, 19); antennomeres bicolored, darker at base and lighter at apex
P. maculata, new species
- 5'. Middle pronotal maculation absent; antennomeres mostly unicolorous 6
- 6(5). Aedeagal apex with vague or distinct arrowhead (Figs. 23g–i) 7
- 6'. Aedeagal apex without arrowhead 8
- 7(6). Aedeagal apex with strong constriction before apex (Fig. 23g)
P. pinnipenis, new species
- 7'. Aedeagal apex without strong constriction before apex (Fig. 23h–i)
P. humeromaculata, new species
- 8(6). Aedeagus venter with transverse ridges near apex (Figs. 22f, 26c) -
P. howdeni, new species
- 8'. Aedeagus venter without transverse ridges near apex (Figs. 24c, 27f)
P. seymourensis, new species
- 9(1). Pronotal punctation very inconspicuous and fine (*e.g.*, Figs. 17–19) 11
- 9'. Pronotal punctation conspicuous, deep, and numerous (Fig. 20) 10
- 10(9). Elytra with very distinct maculations; pronotum with coarse punctures of approximately equal size and uniform distribution; pronotal width variable; median lobe of aedeagus constricted antepically, straight in lateral view, ventral side deeply canaliculate (Figs. 22j, 26f); length of body less than 3.0 mm *P. weisei*, new species
- 10'. Elytra uniformly pale or light brown; pronotum with unequal sized, confluent, coarse punctures making surface appear very heavily sculptured; pronotum much wider than long; median lobe of aedeagus curved in lateral view, ventral side not deeply canaliculate (Figs. 22g, 25d); length of body greater than 3.0 mm
P. kirejtshuki, new species
- 11(9). Elytra color dark reddish brown to piceous (appearing black) 12
- 11'. Elytra color not dark reddish brown to piceous 14
- 12(11). Aedeagus broad for most of length with a well defined arrowhead and moderate antepical constriction (Figs. 22c–d, 26e); spermathecal body strongly curved with proximal and distal apices very close to one another (Figs. 28a–c); body nearly always longer than 2.5 mm
P. fuscipennis Weise (in part)
- 12'. Aedeagus without constriction before apex; apex not shaped as arrowhead (Figs. 22a–b, k); body length averages 2.5 mm and only rarely exceeds 3.0 mm 13
- 13(12). Aedeagus very broad toward apex and then abruptly angles to an arrowhead apex (Figs. 22a–b, 25e–f); venter of body not piceous; spermatheca unknown *P. australiensis*, new species (in part)
- 13'. Aedeagus gradually widening toward apex which is broadly rounded (Fig. 22k); elytra and venter of body always dark piceous, appendages pale yellow; spermatheca (Figs. 28e, 29c) with sinuate body and widely separate proximal and distal ends
P. nigra, new species
- 14(11). Aedeagus shape from lateral view with sinuate curvature (Figs. 23b, f; 27a, e) 15
- 14'. Aedeagus shape from lateral view broadly curved or with weak curvature 16
- 15(14). Aedeagus very long with apex much narrower than base and very

- strong sinuate curvature (Figs. 23a–b; 27a)
 *P. sinuatipennis*, new species
- 15'. Aedeagus relatively short with apex approximately as wide as base and weak sinuate curvature (Figs. 23e–f; 27e)
 *P. demiensis*, new species
- 16(14). Aedeagal apex with distinct point or arrowhead (e.g., Figs. 22c–d; 25b; 26e) 17
- 16'. Aedeagal apex rounded or truncate, without arrowhead 18
- 17(16). Aedeagal apex with constriction, making spadelike appearance (Figs. 22c–d, 25b, 26e); spermathecal body strongly curved with proximal and distal apices very close to one another (Figs. 28a–c, g–h); body averages 3.5 mm and nearly always longer than 3.0 mm
 *P. fuscipennis* Weise (in part)
- 17'. Aedeagal apex without constriction, not appearing spadelike (Figs. 22a–b, 25e–f); spermatheca unknown; body length averages 2.53 mm, never over 3.0 mm *P. australiensis*, new species (in part)
- 18(16). Aedeagus with broadly rounded apex with oblong impression on ventral face, gradually tapering to apex (Fig. 23c–d); spermatheca unknown; elytra with humeri darkened on most specimens and suture darkened narrowly at extreme edge *P. cookensis*, new species
- 18'. Aedeagus long with slight constriction anteapically (Fig. 25c); spermatheca as in *P. howdeni*, but with imbricate surface sculpturing (Figs. 28j, 32a); head piceous; pronotum strongly expanded antemedially (Fig. 14a) *P. suturalis* Weise

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