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MORPHOLOGY AND DISTRIBUTION OF *AUSTRALOBIUS SCABRIOR* (CHILOPODA: LITHOBIOMORPHA: LITHOBIIDAE)

GREGORY D. EDGECOMBE AND LAUREN M. HOLLINGTON

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Australobius scabrior Chamberlin, 1920, is the type species of the Indo-Malay lithobiid genus *Australobius* Chamberlin, 1920, and was hitherto known from three specimens from the Wet Tropics, north Queensland. We revise the species based on extensive collections ranging from Cape York to Sydney, with one record in central Victoria. Electron microscopic study of *A. scabrior* permits documentation of morphological features not treated in previous work on the genus. *Australobius* is the only member of Lithobiidae native to Australia. ❐ *Australobius, Chilopoda, Lithobiidae, Queensland, New South Wales.*

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Australobius Chamberlin, 1920 is a widely distributed chilopod genus in the Indo-Malay region (Eason, 1978). Some 30 nominal species belong to the genus, which ranges from the Seychelles, Kazakhstan, Kirghizia and Nepal through southeast Asia and the Indonesian Archipelago to New Guinea and eastern Australia (Eason, 1980, 1986, 1989, 1992, 1993, 1997). The type species, *A. scabrior* Chamberlin, 1920, is the only recorded Australian species. Chamberlin (1920) described *A. scabrior* from a single specimen from Kuranda in north QLD. Eason (1974) cautioned that *A. scabrior* may be an introduced species, as no endemic Lithobiidae are otherwise known from Australia. Later, Eason (1996) announced the rediscovery of *Australobius scabrior* based on two specimens from Fitzroy Island on the Great Barrier Reef.

Previous work would thus indicate that native Lithobiidae are of uncertain status in Australia; Lithobiomorpha is otherwise represented by the Henicopidae, which has a predominantly southern temperate distribution. However, collections from many sites along the Great Divide demonstrate that *Australobius* is widely distributed and abundant in QLD, and occurs in NSW as far south as Sydney. We document the morphology of *Australobius* by electron microscope study, presenting a detailed description of characters (e.g. mouthparts) hitherto neglected. Availability of a large sample over a wide geographic range permits appraisal of intraspecific variation.

Abbreviations cited in this work are as follow: AM – Australian Museum, Sydney; ANIC – Australian National Insect Collection, Canberra; CAS – California Academy of Sciences, San Francisco; MCZ – Museum of Comparative Zoology, Harvard University, Cambridge; NMV – Museum Victoria, Melbourne; NSW – New South Wales; QLD – Queensland; QM – Queensland Museum, Brisbane; UQ – University of Queensland, Brisbane; VIC – Victoria. Abbreviations for collectors are as follow: DC – D. Cook; DKY – D.K. Yeates; GAM – G.A. Milledge; GBM – G.B. Monteith; GC – G. Cassis; GDE – G.D. Edgecombe; GT – G. Thompson; HJ – H. Janetzki; MRG – M.R. Gray. Other abbreviations: Ck – Creek; NP – National Park; Ra. – Range; Rd – Road; rf – rainforest; SF – State Forest.

For electron microscopy, specimens were air-dried and photographed on a Leo 435VP using a Robinson backscatter collector.

SYSTEMATICS

Australobius Chamberlin, 1920

For synonymy see Eason (1978).

TYPE SPECIES. *Australobius scabrior* Chamberlin, 1920; by original designation.

Australobius scabrior Chamberlin, 1920

Australobius scabrior Chamberlin, 1920: 76; Eason, 1996: 91; Edgecombe et al., 2002: figs 3B, 8A,F.

HOLOTYPE. MCZ 14538 (TC-489), male, Kuranda, QLD, H.L. Clark, 6-8.ix.1914.

OTHER MATERIAL. Not all early post-larval stages [e.g., Agenitalis stage(s)] have been sexed, in which case they are recorded simply as juvenile.

NORTHEASTERN QUEENSLAND (CAPE YORK). ANIC: female, 9km ENE Mt Tozer, 12º43'S 143º18'E, T. Weir, 11-16.vii.1986, rf; ♂, 2 juveniles, larva, 3km ENE Mt Tozer, 12º44'S 143º14'E, T. Weir, 14.vii.1986; ♀, McIlwraith Ra., 13º45'S 143º20'E, c. 400m, R.W. Taylor, 27.vii.1977, rf; 5 ♀♀, 4♂♂, 9 juveniles, 6 larvae, McIlwraith Ra., 11km W by N Bald Hill, 13º44'S 143º20'E, 520m, T.A. Weir, 27.vi.-12-vii.1989; UQ: ♀, Lankelly Ck, McIlwraith Ra., near Coen, B. Cantrell, 28-31.x.1969.

NORTHEASTERN QUEENSLAND (WET TROPICS). QMS18010, 2♂♂, Mossman Bluff, 10km W Mossman, 16º26'54"S 145º16'53"E, 1100-1300m, GBM and GT, 17-18.xii.1988; QM S21803, ♂, Mt Lewis Rd, 10km N Mt Lewis, 16º31'17"S 145º16'23"E, 1100m, GBM, GT, DC, Sheridan and HJ, 25.xi.1990; QM S45074, ♂, 2 juveniles, QMS45075, ♂, 2.5km SW Mt Hartley, 15º47'S 145º19'E, 610m, GBM, DKY and DC, 24.iv.1982, rf; QMS45076, male, Mt Finnigan, summit, 15º48'S 145º17'E, 1100m, GBM and DC, 30.xi.1985, rf; QMS45077, ♂, Mt Finnigan via Helenvale, 15º48'53"S 145º16'28"E, 850-950m, GBM, GT, DC, Sheridan and Roberts, 3-5.xii.1990; QMS45078, ♂, Mt Finley, 15º49'S 145º21'E, Qld. Mus., 2.xii.1975; QMS45079, ♀, ♂, 12 Mile Scrub, RM and V.E. Davies, 22-27.xi.1975; QM S45080, 4 ♀, 6 ♂, Mt Halcyon, 16º03'S 145º 25'E, 870m, GBM and HJ, 24.xi.1983, rf; QMS45081, ♂, QMS45082, ♂, Mt Pieter Bottle, 16º04'S 145º24'E, 950m, GBM, HJ, Roberts and DC, 21.xi.-8.xii.1993; QMS45083, 2 ♂, Roaring Meg Ck, 6km W Cape Tribulation, 16º04'S 145º24'E, 740m, GBM, DKY and GT, 5.x.1982, rf; QMS45084, ♀, Pilgrim Sands, 16º04'20"S 145º28'E, R.J. and S. Raven and P. and E. Lawless, 29.xi.1992-17.iv.1993; QMS45085, ♂, 4.5-5km W Cape Tribulation (Top Camp), 16º05'S 145º26'E, 760-780m, GBM, DKY and GT, 2.x.1982, rf; QM S45086, ♀, QMS45087, ♂, QMS45088, ♂, 1.5km NW Cape Tribulation, 16º05'S 145º28'E, 0m, GBM, DKY and GT, 3.x.1982-23.iv.1983, rf; QMS45089, ♂, QMS45090, ♂, juvenile, 2km WNW Cape Tribulation,16º05'S 145º28'E, 50m, GBM, i.1983, GBM, DKY and GT, 3.x.1982 rf; QMS45091, 2 larvae, QMS45092, 2 ♂, 1.5km W Cape Tribulation, 16º05'S 145º28'E, 150m, GBM and DKY, 2.i., 21.iv.1983, rf; QM S45093, ♀, 3 ♂, larva, QMS45094, ♀, 2.5km W Cape Tribulation, 16º05'S 145º27'E, 180m, GBM and DKY, 2.i., 20-23.iv.1983, rf; QMS45095, ♀, QMS45096, ♀, ♂, 2 larvae, 2.7km W Cape Tribulation, 16º05'S 145º27'E, 400m, GBM, i.1983, rf; QMS45097, ♂, QMS45098, larva, 4.5km W Cape Tribulation, 16º05'S 145º26'E, 760m, GBM and DKY, i.1983, 23.iv.1983, rf; QMS45099, ♀, 5km W Cape Tribulation, 16º05'S 145º26'E, 780m, GBM, DKY and GT, 29-30.ix.1982, rf; QMS45100, 7 ♀, 6 ♂, Mt Hemmant, 16º07'S 145º25'E, 1050m, GBM and HJ, 27.xi.1993, rf; QM S45107, 3 ♀, Table Mt, 10km S Cape Tribulation, 16º09'S 145º26'E, 320m, GBM and DC, 24.iv.1983, rf; QMS45108, ♂, Thornton Peak via Daintree, 1000-1300m, GBM and DC, 20-22.xi.1981; QM S45109, ♂, QMS45110, ♀, ♂, Thornton Peak, 11km NE Daintree, 16º10'S 145º22'E, 1100-1200m, GBM, DKY and GT, 30.x.-1.xi.1983; QMS45111, ♂, QMS45112, ♀, Thornton Peak, 1100-1300m, GBM and S.R. Monteith, 24-27.ix.1984; QMS45113, ♂, Devil's Thumb, 12km NW Mossman, 1000m, ANZSES, 27.xii.1989; QMS45114, 2 ♀, ♂, Mt Spurgeon via Mt Carbine, 16º27'S 145º12'E, 1100m, GBM and GT, rf; QMS45115, ♂, 4 juveniles, QMS45116, ♀, ♂, QMS45117, ♀, The Bluff, 11km W Mossman, 16º27'S 145º16'E, 1050m, GBM and DKY, 27.iv.1983, rf, QMS45118, ♂, The Bluff, 1100m, GBM, DKY and GT, 2.xi.1983; QM S45119, ♀, Spear Ck, V.E. Davies and R. Raven, 3-10.xi.1975; QMS45120, ♀, ♂, QMS45122, ♂, QMS45123, ♂, Windsor Tableland, 35km NNW Mt Carbine, 1050m, 850m, GBM, DKY and DC, 16-26.iv.1982, rf; QMS45124, ♂, Mossman Bluff track, 9-10km W Mossman, GBM and GT, ANZSES, 21.xii.1989; QMS45125, ♂, QMS45126, 2 ♂, Mt Demi, 7km SW Mossman, 16º30'S 145º19'E, 900-1000m, GBM and DKY, 26.iv.1983, rf; QMS45127,♀, 5.5km N Mt Lewis via Julatten, GBM and DC, 1100m, rf; QMS45128, 2 ♀, 2 ♂, Mt Lewis, Upper Leichhardt, 16º35'S 145º16'E, 840m, GBM, 18.xi.1997, rf; QMS45129, ♀, Kingfisher, Julatten, 16º36'S 145º21'E, 400m, GBM, 18.xi.1997, rf; QMS45130, ♀, Mt Gorton, 16º57'S 145º53'E, 750m, HJ, 18.xi.1993, rf; QMS45131, ♂, Copperlode Dam Rd, 16º58'30"S 145º42'30"E, P. Lawless, R. Raven and M. Shaw, 27.x.1991-23.vii.1992; QMS45132, ♂, QMS45133, ♀, Lambs Head, 10km W Edmonton, 17º01'23"S 145º38'33"E, 1200m, GBM, GT and HJ, 10-12.xii.1989; QMS45133, ♀, Lamb's Head, 10km W Edmonton, 1200m, GBM, GT and HJ, 10-12.xii.1989; QMS45134, 4 ♀, 3 juveniles, Lamb's Head, 20km SW Cairns, 17º02'S 145º39'E, 1200m, GBM, 10.xi.1981, rf with *Agathis*; QMS45135, 4 ♀, 5 ♂, Mt Murray Prior, 16º56'S 145º51'E, 770m, GBM, 30.x.1995, rf; QMS45136, 2 ♂, 2 juveniles, North Bell Peak, via Gordonvale, 900-1000m, GBM and DC, 16.ix.1981, rf; QMS45137, ♂, Bell Peak North, 10km E Gordonvale, 17º06'S 145º53'E, 850-1000m, GBM, DKY and GT, 13.x.1982, rf; QMS45138, ♂, Cathedral Fig, 13km NW Yungaburra, 17º11'S 145º39'E, 750m, GBM and GT, 10.xii.1988, rf; QMS45139, ♀, Massey Ra., 12km S Gondonvale, 17º16'S 145º49'E, 1300m, GBM, 2.v.1983, rf; QMS45140, 2 ♀, 5 ♂, Russell River at Bellenden Ker Landing, 17º16'S 145º49'E, 5m, Earthwatch/Qld. Mus., 24-31.x.1981, QMS45146, larva, same locality, palm swamp, moss on tree trunks; QM S45141, 3 ♀, 3 ♂, 4 juveniles, 3 larvae, QMS45142, 8 larvae,QMS45143, 4 ♀, 4 ♂, 5 juveniles, six larvae, Bellenden Ker Ra., Cableway Base Stn, 17º16'S 145º54'E, 100m, Earthwatch/Qld. Mus., 17-24.x.1981, rf, QMS45145, ♀, 4 ♂, 5 juveniles, larva, same locality, 25-31.x.1981; QMS45147, juvenile,QMS45148, ♂, QMS45149, juvenile, QMS45150, 2 ♀, ♂, larva, Bellenden Ker Ra., Cable Tower 3, 17º16'S 145º52'E, 1054m, Earthwatch/Qld. Mus., 25-31.x.1981, rf; QMS45151, ♀, 2♂, Bellenden Ker Ra., Cable Tower 5, 532m, Earthwatch/Qld. Mus., 17-24.x.1981; QMS45152, ♂, Bellenden Ker Ra., 1km S Cable Tower 6, 500m, Earthwatch/Qld. Mus., 17.x.-5.xi.1981; QMS45153, ♀, Bellenden Ker Ra.,

0.5km S Cable Tower 7, 500m, Earthwatch/Qld. Mus., 25-31.x.1981; QMS45154, ♀, 2 ♂ , QMS45155, female, QMS45156, ♂, QMS45157, ♂, QMS45158, ♂, Bellenden Ker Ra., Summit TV Stn, 17°16'S 145°51'E, 1560m, Earthwatch/Qld. Mus., 17.x.-7.xi.1981, rf; QMS45159, ♀, ♂, QMS45160, male, Bellenden Ker Ra., summit TV Stn, 17°16'S 145°51'E, 1560m, GBM and DKY, 29.iv.-2.v.1983, rf; QMS45161, ♂, 3 juveniles, Mt Bartle-Frere, summit creek, 1500m, GBM and DC, 24.ix.1981, rf, QMS45162, ♀, Mt Bartle-Frere, W. base, 17°23'S 145°46'E, 1230m, GBM and Hasenpusch, 7.iii.-15.v.1995; QMS45163, 4 ♂, QMS45164, 2 ♂, Mt Bartle-Frere, 0.5km N of Sth peak, 17°24'S 145°49'E, 1500m, QMS45168, ♀ , ♂, 2 juveniles, Sth Peak summit, 1620m, Earthwatch/Qld. Mus., 6-8.xi.1981, rf; QMS45165, ♂, Mt Bartle Frere, Central Ridge, 1500m, GBM, 27.xii.1989; QMS45166, juvenile, S.45167, female, Mt Bartle-Frere, NW/Centre Peak ridge, 17°23'S 145°48'E, 1400-1500m, Earthwatch/Qld. Mus., 7-8.xi.1981, rf; QMS45169, ♂, Boonjee, R. Raven and V.E. Davies, 3-6.iv.1978; QM S45170, ♂, Hughes Rd, Topaz district, 17°26'S 145°42'E, 650m, GBM and HJ, 5.xii.1993, rf; QM S45171, ♀, QMS45172, 3 ♀, 2♂, tower S of Crater NP, 17°27'S 145°29'E, 1230m, GBM and J. Hasenpusch, 25.xi.1994-10.i. 1995 (S. 45171), GBM, 16.v.1995 (S. 45172), rf; QMS45173, ♂, Stone Ck, 17°28'S 146°01'E, 100m, J. Hasenpusch, 1.xi.1995-6.ii.1996; QMS45174, 3 ♀, 2♂, Mt Fisher (Kjellberg), 17°32'S 145°33'E, 1100m, GBM,17.v.1995, rf; QMS45175, ♀, Mt Father Clancy, 9km S. Millaa Millaa, 950m, GBM and GT, 6.xii.1988; QMS45176, ♂, Upper Boulder Ck, 11km NNW Tully, 1000m, Davies, GBM, Gallon, DC and GT, 17-18.xi.1984; QMS45177, 2 ♂, Mt Pershouse, Kirrama Ra., 18°12'S 145°45'E, 930m, GBM and GT, 12.xii.1986, rf; QMS45178, 2 ♂, Cardwell Ra., Upper Broadwater Ck Valley, 750m, GBM, GT and S. Hamlet, 18.xii.1986-14.i.1987, rf; QMS45195, ♀, Gap Ck, 12 Mile Scrub, V.E. Davies, 23-28.xi.1975; AM KS 57831, ♂, Goldsborough Valley SF, ca. 1.5km from campsite, 17°14'S 145°46'E, GAM and H. Smith, 22.v.2000, rf; AM KS 57859, ♀, Goldsborough Valley SF, ca. 15km from Atherton Rd, 17°13'35"S 145°45'49"E, GAM and H. Smith, 22.v.2000, rf; AM KS 57863, ♂, Cardwell Ra., Kirrama Rd, 4.5km from turnoff from Kennedy Ck Rd, 18°11'54"S 145°51'59"E, GAM and H. Smith, 24.v.2000; AM KS68715, ♀, ♂, Mount Lewis, 11.3km from rd between Mossman and Mount Molloy, 16°35'31"S 145°16'15"E, 1000m, GDE and GAM, 30.iv.1998, rf; AM KS68716, ♀, Tully Gorge NP, Tully Gorge lookout, 17°46'37"S 145°33'23"E, 700m, GAM, 23.iv.1998; AM KS68717, ♀, Cloehesy River SF, 3.3km SE Kennedy Highway, 16°55'20"S 145°36'14"E, GDE and GC, 5.v.1998, wet sclerophyll; AM KS68718, Mount Hypipamee NP, 17°25'29"S 145°29'00"E, GDE, GC and GAM, 25.iv.1998, rf; AM KS68719, 2 ♂, Tinaroo Dam area, Robson Ck Rd, 17°06'12"S 145°37'40"E, GDE, GC and GAM, 26.iv.1998, rf; ANIC, 14 ♀, 4 ♂, Mt Webb NP, 15°04'S 145°07'E, A. Calder and J. Feehan, 27-30.iv.1981; ANIC, 6 ♀, 4 ♂, 1.5km E by N Mt Sorrow, 16°05'S 145°27', A. Calder and T. Weir, 25.iii.1984, rf; ANIC, ♂, Noah Ck, 7km ENE Thornton Peak, 16°08'S 145°26'E, A. Calder and T. Weir, 27.iii.1984, rf; ANIC, 2 ♀, Mt Lewis, 16°33'S 145°13'E, 970m, R.W. Taylor, 8.ix.1975; ANIC, ♀, 38km W Kuranda, 16°45'S 145°25'E, J.G. Brooks, 12.ii.1970, rf; ANIC, 4♀, 2♂, Kuranda, 16°45'S 145°35'E, 430m, R.W. Taylor, 29.vii.1977, rf; ANIC, ♂, Eacham NP, 17°18'S 145°37'E, J.G. Brooks, 11.i.1971; ANIC, ♂, Mt Fisher, 17°33'S 145°32'E, 1150m, P. Zborowski, 5.iv.-3.v.1995; ANIC, 6 ♀, 5♂, Crawfords Lookout, 17°37'S 145°48'E, R.W. Taylor and J. Feehan, 5.vii.1971; ANIC, ♀, McNamee Ck, 17°40'S 145°49'E, ca 300m, R.W. Taylor and J. Feehan, 8.vii.1971, rf; CAS, ♂, 1mi. NE Ravenshoe, 975m, E.S. Ross and D.Q. Cavagnaro, 7.xi.1962; CAS, ♂, Malanda, 700m, E.S. Ross and D.Q. Cavagnaro, 8.xi.1962; CAS, ♂, The Boulders, near Babinda, 100m, E.S. Ross and D.Q. Cavagnaro, 10.xi.1962; CAS, 2 ♀, ♂, Cape Tribulation NP, Emmagen Ck, 16°04'S 145°27'E, sea level, C.E. Griswold, 26.vii.1992, rf.

MID-EASTERN QUEENSLAND. QMS45179, ♀, S.45180, 2 ♀, ♂, Mt Dryander summit, 20°15'S 148°33'E, 740m, GBM, 24.iv.1979, rf; QMS45181, QMS45182, 2♂, Conway SF, Brandy Ck Rd, 20°20'S 148°42'E, 60m, GBM, 23, 25.iv.1979, rf; QMS45183, ♀, Cathu SF, Mt Macartney, 20°51'S 148°33'E, 750m, GBM, 22.iv.1979, rf; QMS45185, ♀, Eungella NP, Broken River, 21°10'S 148°30'30"E, R. Raven, P. and E. Lawless and M. Shaw, 29.vii.-4.xii.1992; AM KS68720, 3 ♂, Eungella NP, Dalrymple Rd, 1.7km NE Snake Rd, 21°04'S 148°34'30"E, GDE, S. Davis and GAM, 18 and 21.iv.1998, rf; ANIC, ♀, Finch Hatton Gorge, 21°05'S 148°38'E, 200m, R.W. Taylor and A. Weir, 11.xi.1976, rf; ANIC, ♀, 3 ♂, Eungella NP, 21°09'S 148°30'E, 760m, R.W. Taylor and A. Weir, 10.xi.1976, rf; CAS, ♀, 2mi. E Eungella, 450m, E.S. Ross and D.Q. Cavagnaro, 18.xi.1962; CAS, ♀, 8mi. NE Eungella, 950m, E.S. Ross and D.Q. Cavagnaro, 18.xi.1962.

SOUTHEASTERN QUEENSLAND. QMS45186, ♀, Kroombit Tops, 24°22'S 150°59'E, R. Raven, 25.xi.1982; QMS45187, ♂, ♀, Marys Ck SF via Gympie, 26°15'44"S 152°33'40"E, 183m, GBM and S.R. Monteith, 1974-1975; QMS45188, ♂, Cooloola, E.C. Dahms, 21.viii.1970, rf; QMS45189, ♀, ♂, Cooloola, 25°57'31"S 153°06'54"E, V. E. Davies and R. Raven, 4.ii.1976; QMS45190, ♀, ♂, Mary Cairncross Park, via Maleny, 26°46'52"S 152°52'56"E, 488m, GBM and S.R. Monteith, 1974-1975; QMS45191, ♂, Brookfield, 27°29'46"S 152°54'25"E, 110m, GBM and S.R. Monteith, 1974-1975; AM KS68721, intersection of Sunday Ck Rd and Gigher Ck Rd, 26°41'54"S 152°33'05"E, GDE, S. Davis and GAM, 7.v.1998, wet sclerophyll; AM KS68722, ♀, ♂, Kenilworth SF, Sunday Ck Rd, 9.8km W of Charlie Moreland Park, 26°40'11"S 152°36'35"E, GAM, 6 and 7.v.1998, wet sclerophyll; AM KS68723, ♀, Kenilworth SF, Booloumba Ck Rd, 26°41'13"S 152°37'06"E, GAM, 6.v.1998, wet sclerophyll.

NEW SOUTH WALES. AM KS68724, ♂, Border Ranges NP, 450m N Sheep Station Ck camping area, 28°24'S 153°01'E, MRG and GC, 4.ii.-9.iv.1993; AM KS51014, ♂, Tweed Ra., 28°26'S 152°53'E, 300-400m, Smith,

Hines, Pugh and Webber, 22.ii.1989, rf; AM KS68725, 2 ♂, Richmond Ra. SF, Goanna Ck Rd, 0.4km from junction with Sandy Ck Rd, 28°37'S 152°42'E, 575m, MRG and GC, 4.ii.-9.iv.1993; AM KS68726, ♂, Whian Whian SF, Big Scrub Flora Reserve, Gibbergunyah Ra. Rd, 150m W Rocky Ck crossing, 28°38'S 153°19'E, 180m, MRG and GC, 4.ii.-9.iv.1993; AM KS68727, ♀, 5.9km NE from creek crossing on Morgan Ck, 28°46'S 152°18'E, 620m, MRG and GC, 4.ii.-9.iv.1993; AM KS9356, ♀, Washpool NP, Coombadjah Ck, 29°16'S 152°22'E, C. Horseman, 12.ii.1982; AM KS68728, ♂, Chaelundi SF, 3.8km W along Stockyard Fire Trail from Chandler Ck, 29°57'S 152°32'E, 450m, MRG and GC, 4.ii.-9.iv.1993; AM KS68729, ♀, Marengo SF, 0.4km SW along Chimney Rd from junction of Buckboard and Foamy Ck Rds, 30°06'S 152°25'E, 1090m, MRG and GC, 4.ii.-9.iv.1993; AM KS68730, ♀, Dorrigo NP, Dome Rd, about 1km W Never Never picnic area, 30°21'S 152°47'E, 690m, MRG and GC, 4.ii.-9.iv.1993; AM KS68731, ♀, Enfield SF, Dodds Fire Trail, about 3km from Enfield Rd, 31°24'S 151°52'E, 910m, MRG and GC, 4.ii.-9.iv.1993; AM KS68732, ♀, Bulga SF, Wild Cattle Ck, 400m NE Spur Track, 31°36'S 152°07'E, 400m, MRG and GC, 4.ii.-9.iv.1993; AM KS68733, ♀,Wilson River Flora Reserve, 31°12'S 152°28'E, 244m, GDE and Z. Johanson, 3.xii.1999, rf; AM KS35583, ♂, Lorien Wildlife Refuge, 3km N Lansdowne via Taree, G. Williams, 14.viii.1990; AM KS35859, 2 ♀, ♂, Kiwarrak SF, S Taree, G. Williams, 25.ii.1991; AM KS68734, ♀, Chichester SF, Barrington Tops, Middle Ridge Rd, 550m N Dixies Top trail, 32°10'S 151°42'E, GDE and Z. Johanson, 15.iii.1999; AM KS68735, ♀, Allyn Stm, Barrington Tops, P.M. Johns, 19.i.1975, rf; AM KS 58467, ♂, Woodford, Ridge St, 33°43'50"S 150°28'40"E, Aust. Mus. Bus. Serv., 30.ix.1996; AM KS44882, ♀, Jamieson Park, Narrabeen, 33°43'S 151°18'E, 20m, MRG and H.M. Smith, 6-20.xi.1995, *Angophora costata* woodland; AM KS 72034, ♂, Sydney Harbour NP, Bradleys Head, GDE, 14.vii.2001; QMS45192, ♀, Whian Whian SF, via Dunoon, 28°38'25"S 153°20'01"E, 200m, GBM and S.R. Monteith, 1974-1975; QMS45193, ♂, Victoria Park, via Alstonville, 28°54'20"S 153°24'37"E, 213m, GBM and S.R. Monteith, 1974-1975; QMS45194, ♀, Brunxner Park, via Coffs Harbour, 30°15'00"S 153°06'10"E, 150m, GBM, 1980-1981, rf; CAS, ♀, 2 ♂, near Catherine Hill Bay, 60m, E.S. Ross and D.Q. Cavagnaro, 2.xii.1962.

VICTORIA. NMV61, ♀, Fraser NP, A. Burns, 29.xi.1946.

ECOLOGY. Most specimens were collected in rainforest, though in SE QLD (Fig. 1) *A. scabrior* appears to be more common in wet sclerophyll forest than in the adjacent rainforest. The species is collected in greatest abundance under the bark of standing eucalypts, with as many as 20 specimens obtained from a single large tree (AM KS 68721). The total altitudinal range is from near sea level to 1560m. The species has been collected year-round; in NE QLD, records are concentrated in October-December and March-May.

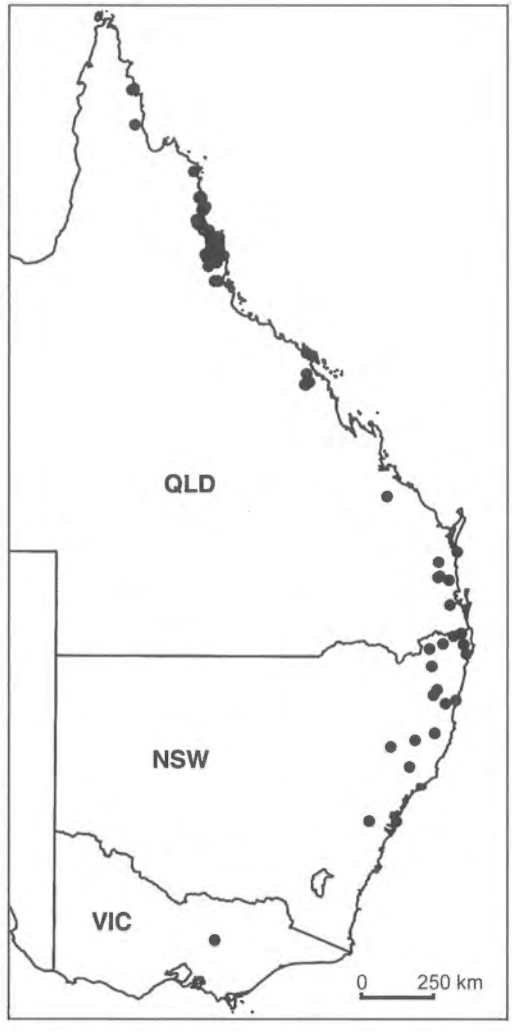

FIG. 1. Distribution of *Australobius scabrior* in eastern Australia.

DESCRIPTION. Maximum length (head shield to end of telson) 17.1mm (QMS45116, Fig. 2); maximum width of head shield 2.4mm; antenna 8.7mm long; anal leg 6.6mm long from trochanter to pretarsus.

Colour. Head and tergites mottled reddish brown, occasionally with slight purple tinge. Antenna light orange-brown, brighter orange distally. Maxillipede coxosternite and telopodite pale orange. Trunk sternites generally pale yellow with light purple tinge; sternites 14-15, genital sternite and gonopods pale orange. Legs

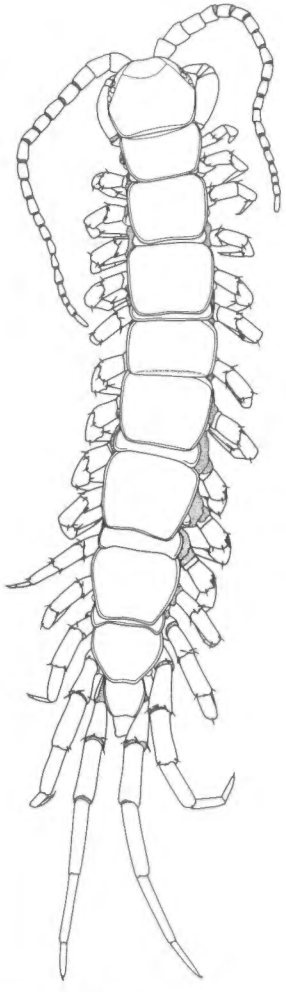

FIG. 2. *Australobius scabrior* Chamberlin, 1920. Dorsal view of male, QMS45116, The Bluff, 11km W Mossman, Qld. Width of head 2.4mm.

pale proximally, purple pigmentation increasing to tibia; tarsus pale orange; 14th and 15th legs commonly striped with alternating purplish-brown and white bands, podomeres less pigmentated distally.

Head shield. Head as broad as long, or slightly broader, feebly concave posteriorly; head smooth relative to tergites, wider than TT1-5, about equal in width to T7; marginal ridge running along posterior margin and halfway along each side; ridge thickened posteromedially (Fig. 3A). Anterior third of head shield bounded posteriorly with transverse suture; antennocellar suture with anterior branch running forwards and inwards to base of antenna, posterior branch running to marginal notch, behind major ocellus. Longitudinal median furrow on anterior part of head shield incised for about ¾ length to transverse suture. Posteromedian depression shallow.

Clypeus with blunt, triangular projection bearing a number of large setae on its apex (Fig. 4A); lateral margins of this projection fringed by shorter setae. Posterior margin of clypeus concave; row of four short setae medially, directly in front of labrum (Fig. 4B). Labral sidepiece fringed posteriorly with bristles (Fig. 4B) which are branched extensively (Fig. 4C). Labral midpiece bears small rectangular tooth with small notch on each side; another pair of larger, rounded notches separate sidepiece from midpiece on each side (Fig. 4B); slender transverse seta extends from a depression anterior to each of these notches, extending to rectangular tooth.

Antenna. Antenna consistently slightly less than half length of body. 17-23 articles, overwhelming majority of specimens with 20 articles on each side; articles slightly elongate, covered with long straight setae (finely ridged trichoid sensilla) on all sides (Fig. 3B,D); two widely separated, digitiform thin-walled basiconic sensilla on anterior face of each article along its anterior sclerotised edge, just behind band of arthrodial membrane that separates articles. Terminal article typically 2.5 times as long as broad, 1.4-2.1 times length of preceding article.

Ocelli. Pale. Major ocellus circular or narrowly elliptical, usually slightly larger than largest of seriate ocelli, sometimes equal in size; five or six (exceptionally seven) seriate ocelli in two rows (Fig. 5); usually three ocelli in superior row, at least two, often three, in inferior row; ocelli of inferior row frequently slightly smaller than those of superior row; seriate ocelli usually contiguous. Major ocellus less raised than seriate ocelli, distinguished from surrounding area by lack of pores and setae (Fig. 3G); surfaces of lenses bear fingerprint-like ridges (Fig. 3H). Tömösváry organ situated on subtriangular sclerotisation immediately below and usually between the anterior two ocelli of inferior row (Fig. 3C,E). Tömösváry organ slightly elliptical, much smaller than all ocelli, surrounded by raised rim; sclerotisation bearing Tömösváry organ bordered anteriorly and posteriorly by arthrodial membrane with warty texture (Fig. 3F).

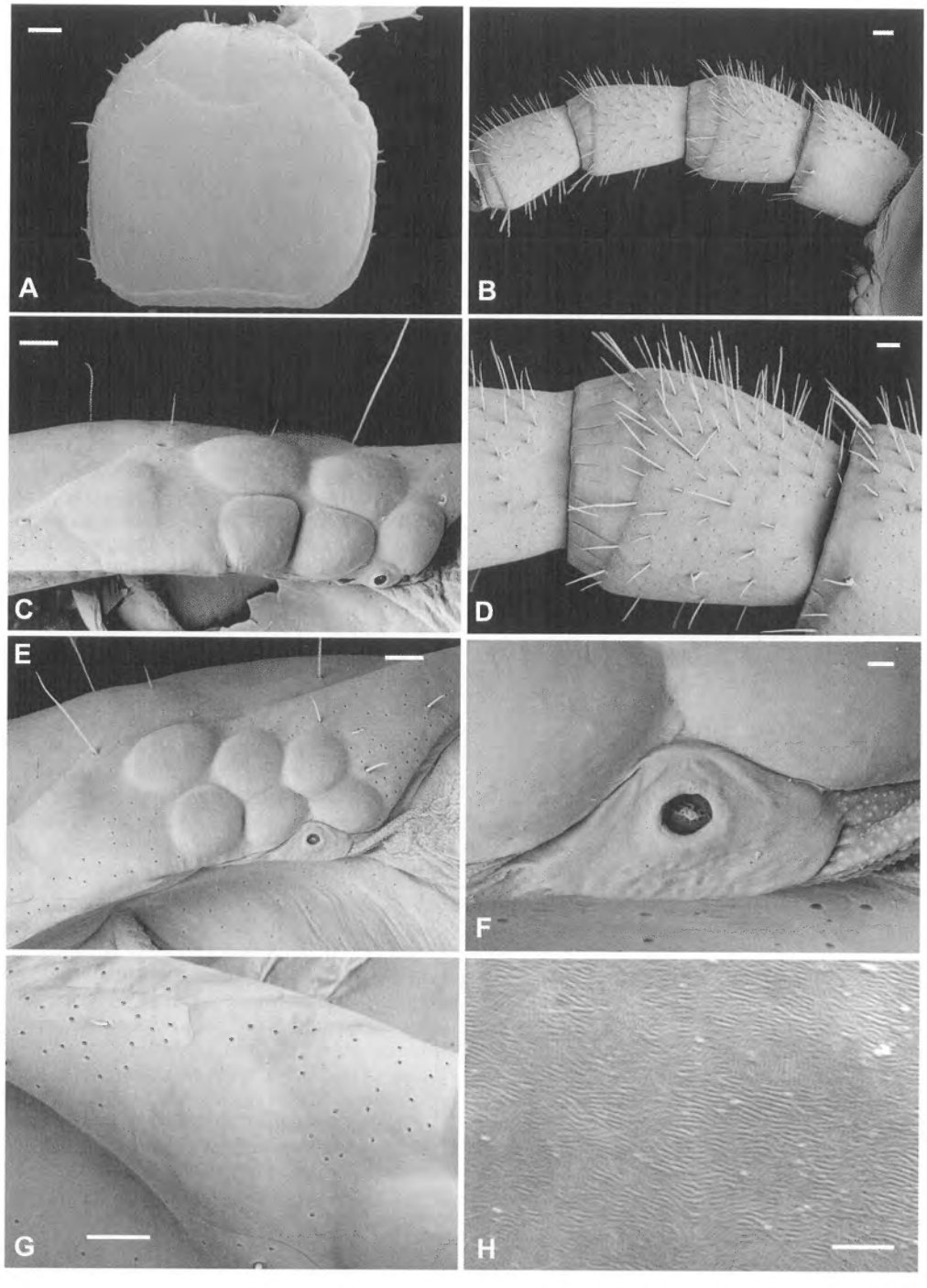

FIG. 3. *Australobius scabrior* Chamberlin, 1920. SEMs. A, AM KS68721, female, Kenilworth SF, SE Qld. Dorsal view of head shield, scale 200µm. B, D-H, AM KS9356, female, Washpool NP, NSW. B, D, proximal part of antenna, ventral views, scales 100µm, 50 µm; E, ocelli, scale 50µm; F, Tömösváry organ, scale 10 µm; G, H, major ocellus and surface of lens, scales 50µm, 3µm. C, AM KS68718, female, Mt Hypipamee NP, NE Qld. Ocelli, scale 50µm.

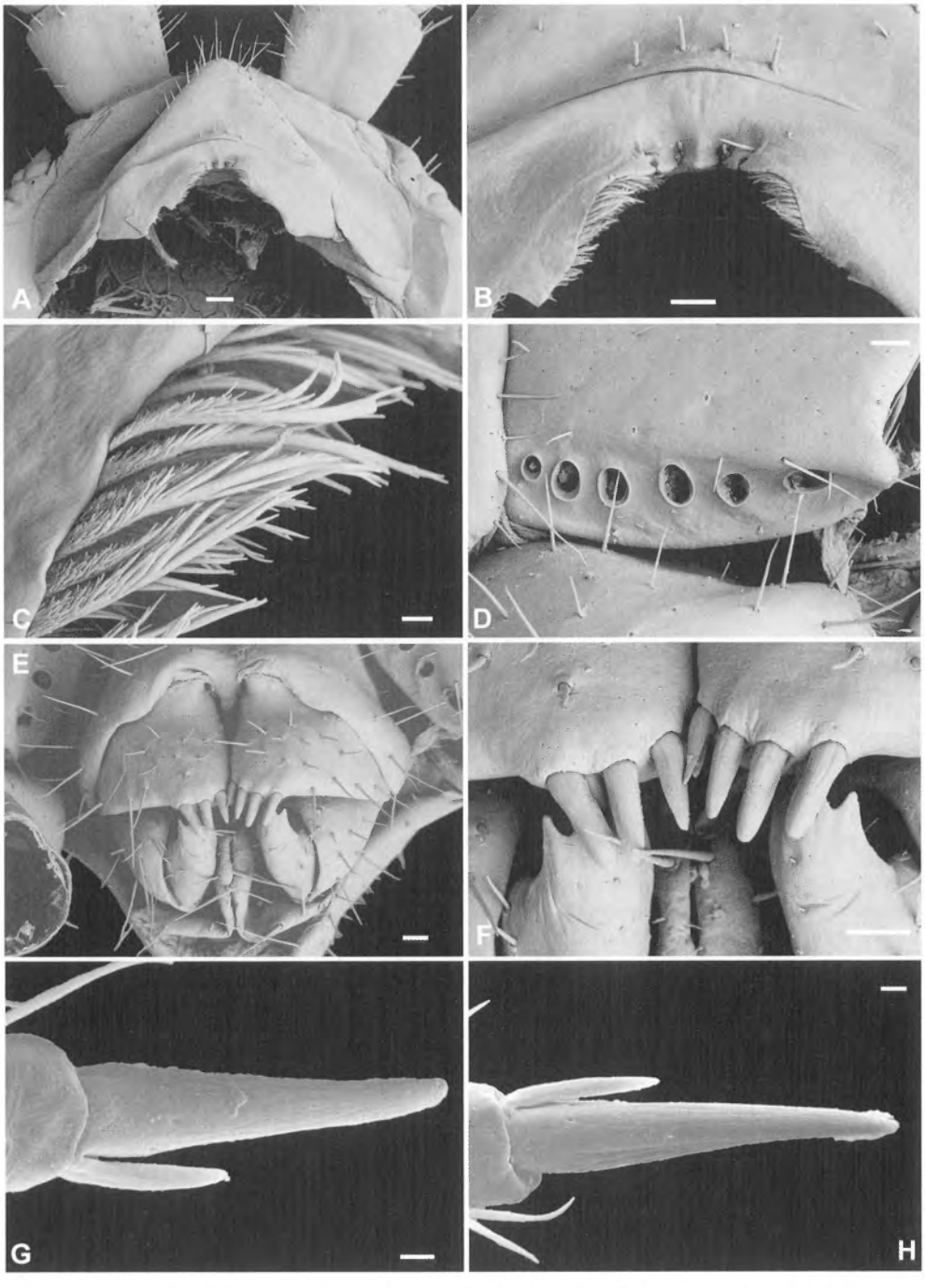

FIG. 4. *Australobius scabrior* Chamberlin, 1920. SEMs. A-F, AM KS9356, female, Washpool NP, NSW. A, ventral view of clypeus and labrum, scale 100μm; B, labrum, scale 50μm; C, bristles on labral margin, scale 5μm; D, coxal pores on leg 15, scale 50μm; E, gonopods, scale 50μm; F, spurs and claws on gonopods, scale 50μm. G-H, AM KS68721, female, Kenilworth SF, SE Qld. G, pretarsus of leg 14, scale 10μm; H, pretarsus of leg 15, scale 10μm.

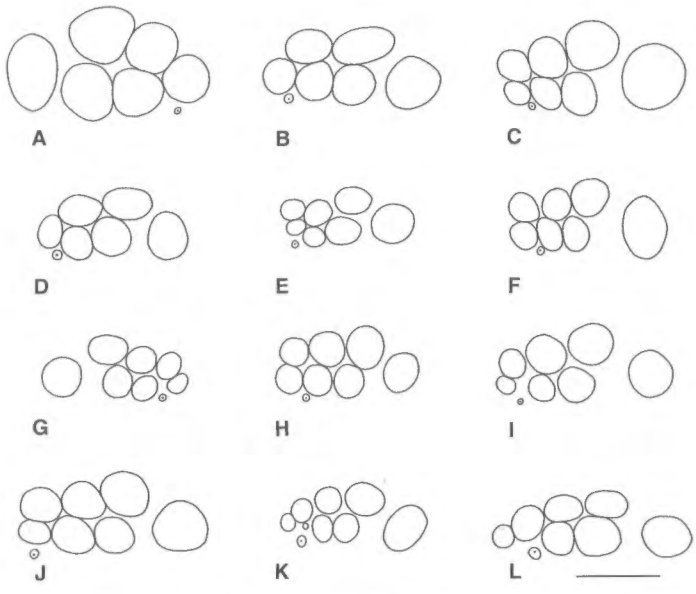

FIG. 5. *Australobius scabrior* Chamberlin, 1920. Arrangements of ocelli and Tömösváry organ. A-C, NE QLD; D-E, ME QLD; F-H, SE QLD; I-L, New South Wales. A, QMS45085, W Cape Tribulation; B, QM S.45132, Lambs Head, W Edmonton; C, QM S45176, Upper Boulder Ck, NNW Tully; D, AM KS68720, Eungella NP; E, QMS45182, Conway SF; F, QMS45191, Brookfield; G, QMS45189, Cooloola; H, QMS45187, Marys Ck SF via Gympie; I, AM KS68724, Border Ranges NP; J, AM KS68729, Marengo SF; K, AM KS35583, Lorien Wildlife Refuge; L, AM KS44882, Narrabeen. Scale for all figures 0.25mm.

Maxillipede. Coxosternite roughly trapeziform, with feebly convex lateral margins (Fig. 6A, B, F). Dental margin set off as a rim by furrow that is impressed behind all but outermost teeth; rim extends backward from median notch, terminating at median suture (Fig. 6E); each half of dental margin convex (Fig. 7), separated by U-shaped median notch; teeth strongly chitinised; teeth closest to median notch largest, with outer teeth smaller (Fig. 6C,E,G); lateral teeth situated posteriorly in relation to other teeth (Fig. 6C); number of prosternal teeth in large specimens ranges from 4+4 to 10+9 (Fig. 11). Porodont small, about the size of large seta, arising from shallow, semi-circular socket, generally between second and third teeth as counted from medial to lateral (Fig. 6E,H). Coxosternite sparsely covered in setae, typically concentrated in anterior half (Figs 6B,F;7), abundant pores (Fig. 6C); surface of teeth ornamented with interconnected polygons, with an occasional pore between polygons (Fig. 6D). Telopodite bearing long , straight setae and many pores on all segments (Fig. 6G); pretarsal and tarsal parts of tarsungulum about equal in length.

Mandible. Shank of mandible divided by single fissure separating lamina condylifera. Dentate lamella composed of four tricuspid teeth, single-cusped fifth tooth on one side (Fig. 8A, H); teeth bear rows of serrated accessory denticles (Fig. 8H); field of accessory denticles set off by strong grooved ridge. Furry pad a tuft of small, curved, faintly plumose bristles, strongly differentiated from accessory denticles on mandibular teeth. Pectinate lamella of approximately 10 large, sickle-shaped aciculae, strongly serrated on their concave edges (Fig. 8E-G); separate cluster of five larger aciculae extending from ventral margin of mandible (Fig. 8E); each acicula bears median ridge on internal surface, with pinnate margins (Fig. 8F). Inner ventral margin of mandible with row of three small, curved spines (Fig. 8D). Two narrow rows of small branching bristles fringe mandibular teeth (Fig. 8C), extending from furry pad (Fig. 8H) to (approximately) ventral margin of third tooth, where the two rows grade into a single row of long plumose bristles that extends to ventrolateral margin of mandible (Fig. 8B, E); plumose bristles evenly branching along their length apart from hairless base (Fig. 8G).

First maxilla. Coxosternite divided medially, median suture terminates in front of tiny triangular sternite. Coxal projection conical, with large tuft of setae at apex (Fig. 9E); setae of three types: straight, finely ridged setae, found on all parts of projection (Fig. 9C); small plumose setae, generally found near lateral margin of projection (Fig. 9C), and compound setae, which superficially resemble simple setae, but are composed of numerous threadlike hairs extending together from a common base (Fig. 9D). Cluster of several sensilla microtrichoidea between coxal projection and telopod. Distal article of first maxillary telopod fringed medially with rows of large, densely plumose setae (Fig.

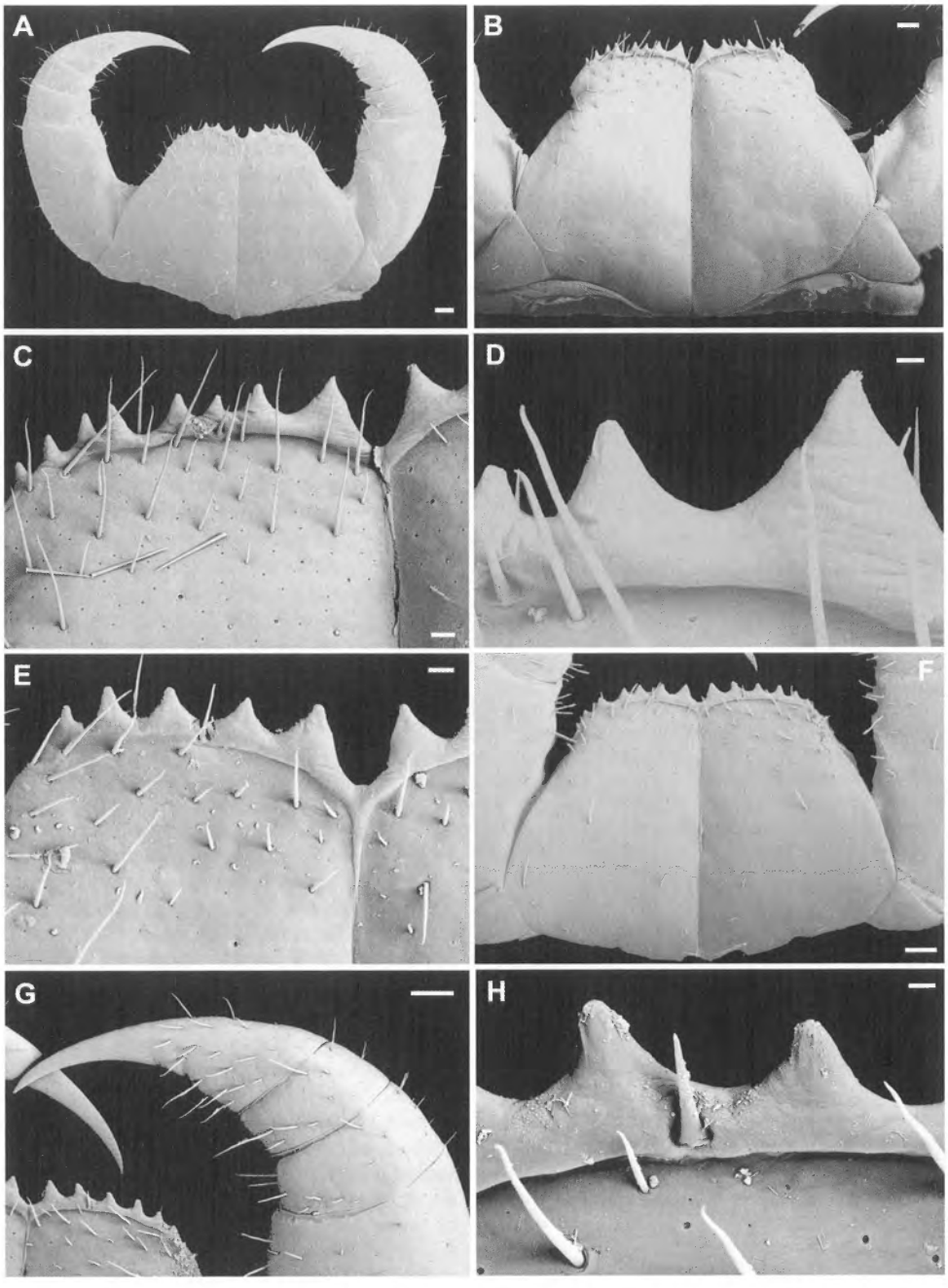

FIG. 6. *Australobius scabrior* Chamberlin, 1920. SEMs of maxillipede. A, AM KS68721, ♀, Kenilworth SF, SE Qld. Ventral view of maxillipede, scale 100µm. B-D, AM KS9356, female, Washpool NP, NSW. B, ventral view of coxosternite, scale 100µm; C, D, dental margin of coxosternite, detail of inner teeth (porodont at left), scales 30µm, 10µm. E, AM KS68718, female, Mt Hypipamee NP, NE Qld. Dental margin of coxosternite, scale 30µm. F-H, AM KS68725, ♂, Richmond Ra. SF, NSW. F, ventral view of coxosternite, scale 100µm; G, distal part of telopodite, scale 100µm; H, dental margin of coxosternite, showing porodont, scale 10µm.

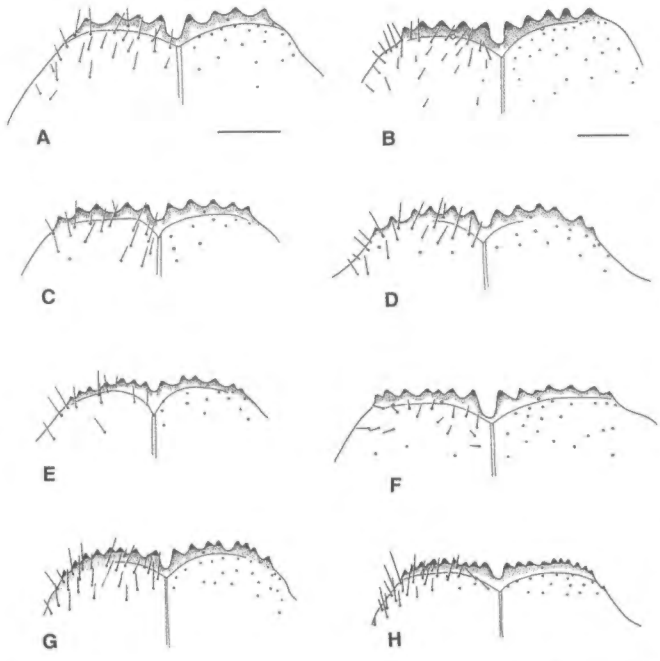

FIG. 7. *Australobius scabrior* Chamberlin, 1920. Maxillipede coxosternite, showing variation in teeth on dental margin and setation (only setal bases shown on one side). A, B, F, NE QLD; E, SE QLD; C, D,G, H, New South Wales. Scales 0.25mm; scale for A applies to C-F, scale for B applies to G,H. A, QMS45174, Mt Fisher; B, QMS45116, The Bluff, W Mossman; C, QMS45193, Victoria Park via Alstonville; D, AM KS68724, Border Ranges NP; E, QMS45190, Mary Cairncross Park via Maleny; F. QMS45135, Mt Murray Prior; G, AM KS68730, Dorrigo NP; H, AM KS68732, Bulga SF.

9E,F), with row of shorter, simple setae in arthrodial membrane on each side of plumose setae (Fig. 9E).

Second maxilla. Coxosternite concave anteriorly, sternite represented by shallow, narrow, V-shaped depression. Inner surface of tarsus fringed with long, large plumose setae; outer surfaces with evenly scattered simple setae (Fig. 9B); other articles of telopod bearing sparse simple setae (Fig. 9A). Pretarsal claw typically bears five digits: long, thick median digit, shorter lateral digits, needle-like intermediate digits (Fig. 9G).

Tergites (Fig. 2). T1 trapeziform, with marginal ridge entire, posterior rim raised; on TT3, 5, 8, 10, 12 marginal ridge entire, slightly raised, without median thickening. TT1 and 3 about equal in width; lateral borders of TT3 and 5 slightly convergent posteriorly, posterior angles rounded. T7 with parallel lateral borders, median thickening of marginal ridge. T10 largest. Posterior border of T7 straight, that of TT1 and 8 straight or, more commonly, weakly concave; borders of TT3, 5, 10, 12 and 14 gently concave. Posterior angles of TT10 and 12 abruptly rounded; short subangular projections on TT11 and 13, smaller projection on T9; feeble, rounded posterior projection variably present on TT4 and 6. Posterior border of T14 and intermediate tergite concave in both sexes; intermediate tergite narrower in male, similarly sclerotised in both sexes. Tergites wrinkled; parallel rows of tubercles separated by longitudinal median furrow on TT(3) 5, 7, 8, 10 and 12; posterolaterally directed furrow across inner half of long tergites 3-12, radiating from front of median furrow; borders tuberculate.

Coxal pores. On legs 12-15; circular to oval, with continuous, raised rims, separated from each other by a space about equal to or less than their own diameter (Fig. 4D), set in shallow groove. Number of coxal pores tending to increase with size of specimen; maximum of 49 pores in total (female maximum 5,6,7,6 + 5,6,7,7, male maximum 5,6,7,6 + 4,7,6,6); larger specimens (width of head >1.7mm) usually with a combination of 4, 5 and 6 coxal pores, exceptionally 3 or 7 on one or two legs. Usual sexual dimorphism in number of coxal pores, with females having slightly higher pore counts.

Legs. Tarsal articulation distinct on all legs; accessory apical claw on legs 14 and 15 nearly half length of principal claw, which is long, slender (Fig. 4G,H). Sensory spurs absent. Legs 14 and 15 thickened in both males and females, without sexual dimorphism; gradual increase in size of legs along length of body (Fig. 2); anal leg approximately 1/3 to slightly less than 1/2 length of body. Dense glandular pores on femur, tibia and basitarsus of legs 13-15. Plectrotaxy as shown in Table 1 (NE QLD) and Table 2 (New South Wales); variable spurs that are usually present: leg 11 (VmP), leg 13 (VpF, DaT), leg 14 (Vmt, VpF, DpF), leg 15 (VmP).

Female. First genital sternite with weak longitudinal median desclerotised strip. Gonopods with elongate, conical to

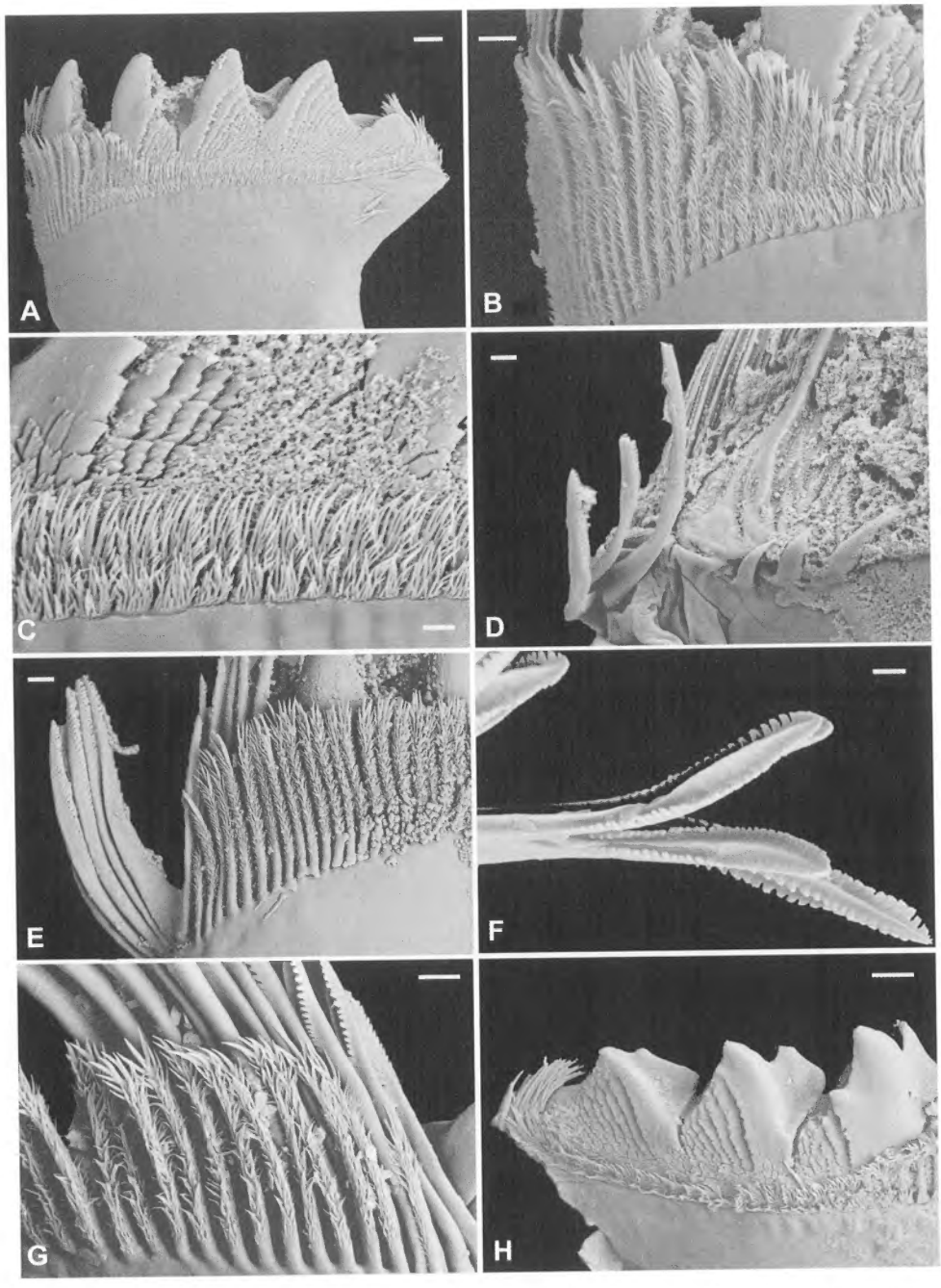

FIG. 8. *Australobius scabrior* Chamberlin, 1920. SEMs of mandibles. A-D, AM KS68718, ♀, Mt Hypipamee NP, NE Qld. A, gnathal lobe, scale 20μm; B, fringe of branching bristles on ventral part of mandible, scale 20μm; C, fringe of branching bristles, scale 5μm; D, aciculae and cluster of spines on inner surface of gnathal lobe, scale 10μm. E, AM KS68725, ♂, Richmond Ra. SF, NSW. Aciculae and fringe of branching bristles on ventral part of mandible, scale 10μm. F-H, AM KS68721, ♀, Kenilworth SF, SE Qld. F, aciculae, scale 5μm; G, aciculae and fringe of branching bristles on ventral part of mandible, scale 10μm; H, dorsal three pairs of teeth and furry pad, scale 10μm.

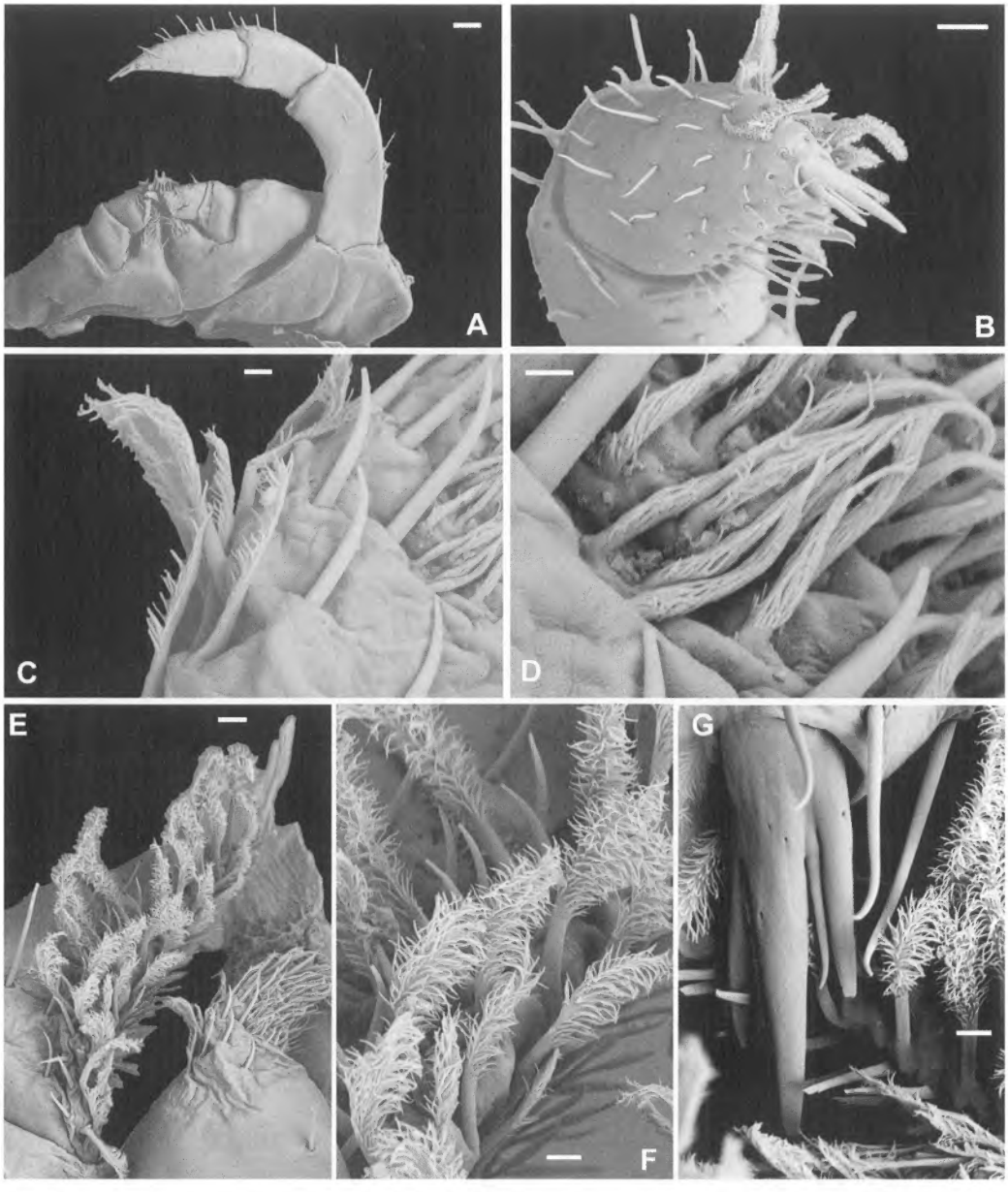

FIG. 9. *Australobius scabrior* Chamberlin, 1920. SEMs of maxillae. A, AM KS68718, ♀, Mt Hypipamee NP, NE Qld. First maxillae and second maxilla, scale 100μm. B-G, AM KS9356, ♀, Washpool NP, NSW. B, tarsus and pretarsus of second maxilla, scale 50μm; C, setae on coxal process of first maxilla, scale 5μm; D, complex setae on coxal process of first maxilla, scale 3μm; E, distal article of telopod and coxal process of first maxilla, scale 20μm; F, plumose setae on distal article of telopod of first maxilla, scale 10μm; G, pretarsus of second maxilla, scale 10μm.

bullet-shaped spurs (Figs 4F, 10); number of spurs on mature specimens most commonly 3+3 (Fig. 10A) or 4+4 (Fig. 10C), occasionally 5+5 (Fig. 10D); 2+2 spurs in immature specimens; innermost spur (when more than three present) shorter, more slender than others, other spurs

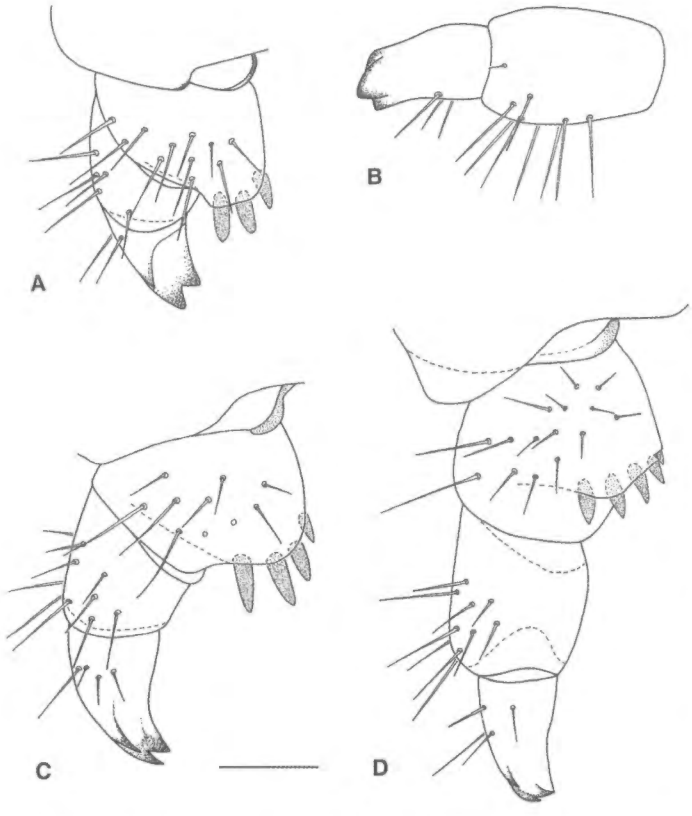

FIG. 10. *Australobius scabrior* Chamberlin, 1920. Female gonopods, showing variation in spur number. All ventral view except B, dorsolateral view. A, CAS, NE Eungella. B,C, QMS45117, The Bluff, W Mossman, NE QLD. D, QMS45175, Mt Father Clancy, NE QLD. Scale for all figures 0.25mm.

with slight increase in size from medial to lateral. First genital sternite and all articles of gonopods bear long, simple setae; setae evenly distributed on first genital sternite; 10-15 setae on basal article of gonopod, 5-10 on ventrolateral aspect of second article, tiny seta dorsolaterally near distal edge of article variably present (Fig. 10B), 2-4 setae on third article of gonopod. Claw tridentate, with both dorsal and ventral denticles distinct.

Male. First genital sternite bearing about 30 evenly scattered setae, longer on posterior part of sternite. Second genital sternite bearing two pairs of setae. Small gonopod of a single article, bearing one seta.

Larvae. Three larval stages correspond to 2-4 larval stages of *Lithobius variegatus* (Eason, 1964) or LII-LIV of *L. forficatus* (Andersson, 1976, table 1) with respect to leg and limb bud numbers.

Larva with 8 legs and two limb buds (LII) (QMS45141 – 45143): Length 3.1-3.7mm; width of head shield 0.53-0.55mm. 14 antennal articles. Two ocelli. 2 + 2 teeth on dental margin of maxillipede. Tarsal articulations indistinct.

Larva with 10 legs and two limb buds (LIII) (QMS45142, 45143): Width of head shield 0.58-0.59mm. 14 antennal articles. Two ocelli. 3+3 teeth on dental margin of maxillipede.

Larva with 12 legs and three limb buds (LIV) (QMS45091, 45093, 45096, 45141, 45143, 45146, 45150): Length 4.3-4.6mm; width of head shield 0.64-0.7mm. 17 antennal articles. Three ocelli. 3+3 teeth on dental margin of maxillipede. All tergites lacking projections. One coxal pore on leg 12.

DISCUSSION. The original description of *Australobius scabrior* was based on a single male, identifying the species using a small number of features, mainly: a general purple tinge; 21/22 antennal articles; large pale ocelli, the major ocellus being the largest, with an arrangement 1+2,2; dark, strongly chitinised maxillipede teeth with a 5+5 configuration; circular to weakly elliptical coxal pores of arrangement 3,5,5,4 (Chamberlin, 1920). Eason's (1996) description agreed with Chamberlin's except that his specimens had 20/21 antennal articles (an overwhelming majority of specimens in this study have 20); an arrangement of coxal pores of 3,4,5,4; and 4+5 teeth on the maxillipede. Eason indentified the porodont medial to the lateral tooth. The female gonopods were described as having 2+3 spurs and bidentate claws. The low spur number and absence of the third denticle on the claw may be accounted for by the size of the specimen; large females of *A. scabrior* consistently have a pair of accessory denticles on the gonopod claw.

All Australian material of *Australobius* is united by some diagnosible characters relative to non-Australian species (e.g., similar ocelli

TABLE 1. Plectrotaxy of *Australobius scabrior* based on several exemplar specimens from NE QLD. C = coxa, t = trochanter, P = prefemur, F = femur, T = tibia, a= anterior spur, m = median spur, p = posterior spur. Variable spurs indicated in parentheses.

Legs	Ventral					Dorsal				
	C	t	P	F	T	C	t	P	F	T
1	-	-	p	(a)	(m)	-	-	amp	a	a
2	-	-	p	(a)(m)	m	-	-	amp	ap	a
3-5	-	-	p	am	(a)m	-	-	amp	ap	a
6	-	-	p	am	am	-	-	amp	ap	a
7-8	-	-	p	am	am	-	-	amp	ap	a
9	-	-	(m)p	am	am	-	-	amp	ap	a
10-11	-	-	(m)p	am	am	(a)	-	amp	ap	a
12	-	-	(a)mp	am	am	(a)	-	amp	ap	a
13	-	(m)	amp	am(p)	a(m)	(a)	-	amp	p	a
14	-	m	amp	amp	a	(a)	-	amp	(p)	-
15	-	m	amp	(a)m(p)	(a)	a	-	mp	-	-

distributions and shared position of the Tömösváry organ) and Australian *Australobius* may be regarded as a monophyletic group. However, several features that are routinely used to diagnose species in *Australobius* are variable within the Australian sample, and some exhibit distinct geographic trends. Perhaps the most conspicuous variation pertains to the number of teeth on the dental margin of the maxillipede. Accounting for the general trend towards an increase in tooth number ontogenetically, the range in large specimens is from four teeth per margin to 10 (Figs 7, 11). In general, specimens from the southern part of the range have more teeth: specimens from New South Wales often have six to eight teeth per margin (Fig. 7D,G), whereas those from north QLD commonly have five teeth per margin (Fig. 7B). This character does not, however, permit a consistent basis for distinguishing the samples geographically, as some QLD specimens have higher tooth counts (Figs 7F, 11) whereas some from NSW have only five teeth (Fig. 7C). Tooth number is variable within single populations. Samples for which numerous large specimens are available show a range from 4+4 to 6+6 teeth (QMS45080, NE QLD), 4+4 to 7+7 teeth (QMS45135, NE QLD) and 5+5 to 6+7 teeth (AM KS68721, SE QLD). The total range in maxillipede dentition in *A. scabrior* is similar to that recorded in reared samples of *Lithobius forficatus* by Andersson (1976) (5+4 to 10+8 teeth per margin in the most mature stage, PL9).

Ocellus arrangements also display slight geographic variation (Fig. 5). Specimens from

TABLE 2. Plectrotaxy of *Australobius scabrior* based on several exemplar specimens from New South Wales. Abbreviations as in Table 1.

Legs	Ventral					Dorsal				
	C	t	P	F	T	C	t	P	F	T
1	-	-	p	(a)(m)p	m	-	-	amp	a	a
2	-	-	p	(a)(m)p	(a)m	-	-	amp	ap	a
3-5	-	-	p	amp	(a)m	-	-	amp	ap	a
6	-	-	p	amp	am	-	-	amp	ap	a
7-8	-	-	p	amp	am	(a)	-	amp	ap	a
9-10	-	-	p	amp	am	(a)	-	amp	ap	a
11	-	-	(m)p	amp	am	(a)	-	amp	ap	a
12	-	-	(a)mp	amp	am	a	-	amp	ap	a
13	-	(m)	a(m)p	am(p)	a(m)	a	-	amp	(a)p	(a)
14	-	(m)	amp	am(p)	(a)	a	-	amp	(p)	(a)
15	-	m	a(m)p	(a)m(p)	(a)	a	-	(a)mp	-	-

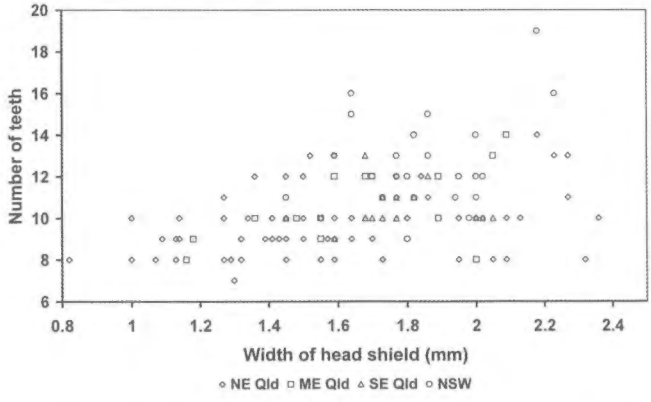

FIG. 11. Graph of number of teeth on dental margin of maxillipede, size (width of head shield used as proxy for body size) and geographic occurrence for *Australobius scabrior*.

the Wet Tropics region of NE QLD most commonly have a total of five ocelli in the two rows of seriate ocelli (Fig. 5A,B), though some have six (Fig. 5C). Most specimens from Cape York as well as NSW (Fig. 5I-L) have six ocelli in these two rows, though some have five. Specimens from ME QLD (Fig. 5D,E) and SE QLD (Fig. 5F-H) have a more even mix of either five or six seriate ocelli.

The number of spurs on the female gonopod in large specimens ranges from 3+3 to 5+5 across the samples from each of NE QLD, ME QLD and NSW (3+3 to 4+5 in SE QLD), though the frequency of different spur counts shows some geographic variation. Specimens from NE QLD have a similar representation of 3+3 and 4+4 spurs, whereas in specimens from SE QLD and NSW 4+4 spurs are considerably more common.

With respect to plectrotaxy, Aust- ralian *Australobius* displays con- siderable variability (Tables 1,2), again with some discernible geog- raphic patterns. For example, spec- imens from NSW reach the anterior dispersional limit (Crabill, 1962) of the DaC spur on leg 7, and all spec- imens from New South Wales have this spur present on at least legs 12-15 (the anteriormost DaC on leg 7 is most common in New South Wales, but an anteriormost spur on any of legs 7-12 is observed). In samples from SE QLD, DaC is on legs 10-15 to 14-15. Most specimens from NE QLD have DaC restricted to legs 13-15 or 14-15, and sometimes confined to leg 15. These geographic trends are not consistently expressed, some NE QLD specimens having an anterior dispersional limit of DaC on leg 10, farther forward than in some NSW specimens.

Another spur series that displays marked variation with respect to its anterior dispersional limit is VpF. Specimens from New South Wales and SE QLD have VpF on all trunk legs, whereas specimens from NE QLD typically lack VpF on legs 1-12. However, specimens from Eungella (ME QLD) have VpF with an anterior dispersional limit of leg 4. As well, specimens from NSW and SE QLD have VaT on legs 2-14 versus legs 6-14 in ME and NE QLD.

The inconsistent cline-like variation displayed by such features as maxillipede dentition and anterior dispersional limits of the DaC and VpF spurs is most readily interpreted as geographic variation in a native species. Accordingly, we consider Eason's (1974) speculation that *Australobius scabrior* could be a synanthropic introduction in Australia to be improbable.

Many species of *Australobius* have been based on small samples, in several cases only the holotype, sometimes without illustration. The degree of intraspecific variation observed in *A. scabrior* cautions that species distinguished by slight differences in maxillipede tooth number or female gonopod spur number are of dubious validity when they fall within the morphological range of *A. scabrior*. Many species require revision before their status can be further evaluated, several of the species named from New Guinea falling into this category. Four species of *Australobius* have been described from New Guinea: *A. loriae* (Silvestri, 1894), *A. viduus* Attems, 1932, *A. ethodes* (Chamberlin, 1939) and *A. tenuiunguis* Eason, 1980, each based on only one or a few specimens. Only *A. tenuiunguis* has been illustrated and thoroughly described. The types of *A. tenuiunguis* are from the Star Mountains. We have examined an additional, new specimen of this species, a male from the Highland Highway near Komum, Papua New Guinea, with 9+10 teeth on the dental margin of the maxillipede (ANIC Berlese sample 418, G. Baker, 16.vii.1972). *A. scabrior* is easily distinguished from *A. tenuiunguis* by its shorter antenna, without the elongate, tubular articles of the latter species, and *A. scabrior* has a substantially more tuberculate tergum and lacks

median thickenings of the marginal ridge on the long tergites except for T7.

Some samples from eastern Papua New Guinea in the Australian National Insect Collection (ANIC Berlesate 384, near Kokoda, c. 500m; ANIC Berlesate 393, "Timber Track", 16km NW Lae, c. 220m) include *Australobius* specimens that do not present obvious distinctions from *A. scabrior* specimens from Cape York or the Wet Tropics. Study of larger collections from PNG is required before the specific status of these specimens can be determined with confidence.

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