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Megalopinus casuarius sp. nov. from the Cape York Peninsula and new distribution data of *Megalopinus* species in eastern Australia (Staphylinidae, Megalopsidiinae).

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Abstract

A new species of the staphylinid genus *Megalopinus* Eichelbaum, 1915 is described from Australia, Queensland, Cape York Peninsula: *Megalopinus casuarius* Mainda sp. nov. Furthermore, a new term for elytral puncture-rows is introduced: epipleural complex: merged sublateral and epipleural rows. In addition, new distribution data of *Megalopinus acaciae* Steel, 1955 and *M. nodipennis* (MacLeay, 1873) are reported from Queensland (*M. acaciae*, *M. nodipennis*) and from New South Wales (*M.nodipennis*). Particularly for *M. nodipennis*, this represents the first record of this species for Queensland.

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Introduction

The genus *Megalopinus* Eichelbaum, 1915 (Staphylinidae, Megalopsidiinae) contains rove beetles characterized by their distinct squat habitus, large eyes, short antennae with clubbed last antennomeres, and a tarsal formula of 5-5-5 (Brunke et al. 2011). *Megalopinus* species occur mainly circumtropical and consists of around 430 predatory species that mainly inhabit fungal decaying logs (Leschen & Newton 2003). In Australia, *Megalopinus* was so far represented by only four species (Puthz 2012). The decades-long collecting efforts (1980-1999) of the renowned Australian entomologist Geoff B. Monteith (Queensland Museum, Brisbane), which focused primarily on Queensland, resulted in a total of 82 *Megalopinus* specimens. During his expeditions, he collected two female *Megalopinus* specimens from the northeastern-most part of Australia, the Cape York Peninsula. These two females represent a new species. In this paper, we provide the description and images of the new species, including a morphological comparison with its potential closely-related species and with all other Australian species of the genus. In addition to Mainda (2024), the designation of the elytral punctation introduced by Mainda (2022) must be extended once again: In the new species the epipleural row (epr) and the sublateral row (slr) merge to form the epipleural complex (epl-c). Furthermore, distribu-

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tion data of two other Australian *Megalopinus* species are presented.

List of described Megalopinus species of Australia:

M. *nodipennis* (MacLeay, 1873) New South Wales, Queensland (new record)

M. *melbournensis* (Wilson, 1921) Victoria

M. *acaciae* Steel, 1955 New South Wales, Queensland, Victoria

M. *australicus* Puthz, 2012 Australian Capital Territory, New South Wales, Victoria

M. *casuarius* Mainda sp. nov. Queensland (Cape York Peninsula)

Methods

Material. All 82 *Megalopinus* specimens were kindly made available to us by the team of the Queensland Museum, Brisbane, for identification. The material mentioned below is deposited in the following collections: **QM** – Queensland Museum, South Bank, South Brisbane, Queensland, Australia; **ZIMG** – Zoological Institute and Museum Greifswald, Germany.

Methods. The morphological studies were carried out using a stereoscopic microscope (Euromex DZ 1105) and a compound microscope (Euromex BB.1153.PLI). High-resolution extended-focus image of the holotype of the new species was obtained using the BK PLUS Lab system with a Canon MPE 65 mm 1–5× micro-photography lens mounted on a Canon 6D camera. Image stacks were captured with Adobe Lightroom and processed using Zerene Stacker. The images were edited using Adobe Photoshop CS6. The description of the elytral puncture-rows follows Mainda (2022, 2024). Only the existing rows are indicated with puncture numbers.

The following acronyms are used: **BL**: length of body; **DE**: average distance between eyes; **dsr**: dorsal row; **EL**: maximal length of elytra; **epl-c**: epipleural complex; **EW**: maximal width of elytra; **FBL**: length of forebody (head, pronotum, elytra); **HW**: head width; **PL**: pronotal length; **PW**: pronotal width; **shr**: subhumeral row; **SL**: sutural length of elytra, **ssr**: subsutural row, **ssr-c**: subsutural-complex. All measurements are in mm.

Taxonomy

Megalopinus casuarius Mainda, sp. nov.

Figs. 1-3

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Holotype: ♀ "3 km E. Lockerbie, Cape York, N.Qld., 19-23 Mar 1987, G.B. Monteith, Pyrethrum on logs, RF" / "female HOLOTYPE *Megalopinus casuarius* nov. sp. design. Mainda 2024" printed on red paper / "QM Reg. No. T261278" (QM).

Paratype: ♀ "East Claudie R., Iron Range, N. Qld., 6 Dec 1985, G. Monteith & D. Cook, Pyrethrum knockdown/RF" / "female PARATYPE *Megalopinus casuarius* nov. sp. design. Mainda 2024" printed on yellow paper / "QM Reg. No. T261279" (QM).

Comparative notes (diagnosis): The identification key of Oriental *Megalopinus* species from Puthz (2012) would lead to number 21 (*Megalopinus sulawesicus* Puthz, 2012) or 29 (*Megalopinus acutangulus* (Waterhouse, 1883)). From *M*. *sulawesicus*, the new species is best differentiated by its smaller size, the thinner yellowish elytral pattern, the overall lighter coloration and by antennomere XI of female being 3.3 times as long as antennomere X instead of 2.6 times. *Megalopinus casuarius* sp. nov. is immediately distinguished from *M*. *acutangulus* by its overall lighter coloration and the smaller size. Moreover, it is separated by antennomere XI of females being 3.3 times as long as antennomere X instead of 2.7 times in *M*. *acutangulus*. Tergite X is coarsely and sparsely punctate as in *M*. *acutangulus*, but in *M*. *casuarius* sp. nov. it is shiny and not microsculptured. From *M. nodipennis*, the new species is separated by smaller size and the lack of elytral elevations. *Megalopinus melbournensis* is directly distinguished by the completely red elytra and the narrower head. *Megalopinus acaciae* differs from the new species by smaller size, less punctate elytra with different yellow pattern, shorter lateral lines on tergite V and the absence of furrows on the pronotum with the presence of two anteriomedian and one posteromedian elevation. *Megalopinus australicus* is immediately distinguishable from the new species by its completely impunctate elytra and the uniform reddish-brown, very shiny body coloration.

Description: Measurements of the holotype in mm: BL: 2.90, DE: 0.58, FBL: 1.75, EL: 0.70, EW: 0.98, HW: 0.95, PL: 0.68, PW: 0.80, SL: 0.53. Measurements of the paratype in mm: BL: 3.10, DE: 0.58, FBL: 1.80, EL: 0.75, EW: 0.99, HW: 0.96, PL: 0.68, PW: 0.83, SL: 0.55.

Habitus as in Figs. 1-2. Brownish-yellow, without microsculpture; head brown, posterior third yellowish; pronotum brown, lightened anteriorly and posteriorly; elytra brown with yellow crossband with median connection to anterior margin on each elytron and in posterior third along suture to posterior margin; three/four rows of punctures and some punctures in sutural third; abdomen lighter brown; antennae and legs yellowish.

Head 0.97 times as wide as elytra; frons coarsely punctured; diameter of punctures as large as apical cross-section of antennomere II.

Pronotum 1.22 times as broad as long; broadest in anterior third; with four transverse rows (anterior to posterior) of coarse punctures; third row distinctly separated medially and mediolaterally by impunctate, shiny ridge; punctures always separate; one large puncture in posterolateral third on both sides. Each side of pronotum with two distinct pointed denticles in anterior half and two rounded ones in posterior half.

Figure 1: *Megalopinus casuarius* sp. nov. holotype. Scale = 1 mm.

Figure 2: *Megalopinus casuarius* sp. nov. paratype. Scale = 1 mm.

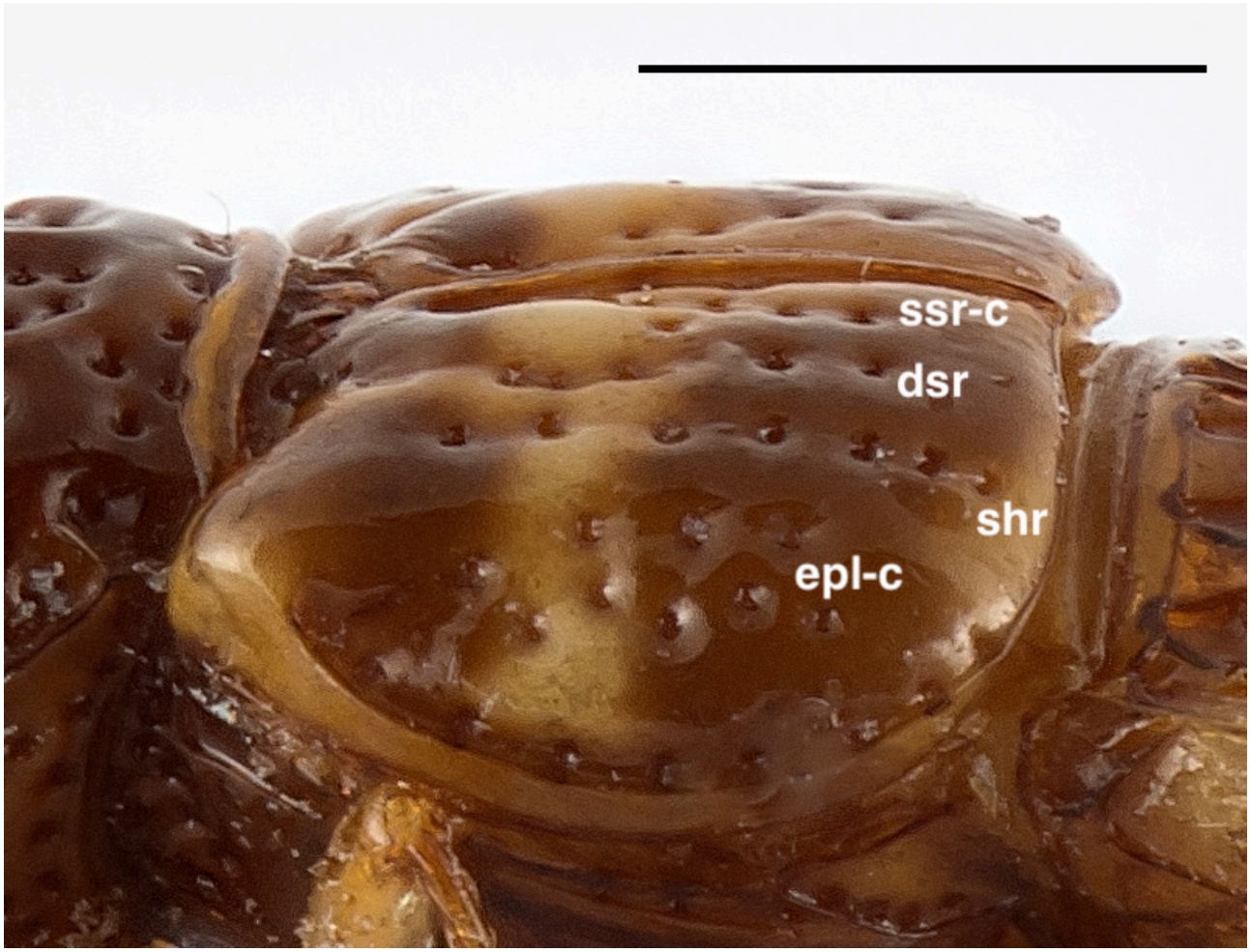

Figure 3: Left elytron, *Megalopinus casuarius* sp. nov. paratype; epipleural complex (epl-c), subhumeral row (shr), dorsal row (dsr), subsutural complex (ssr-c). Scale = 0.5 mm.

Elytra (Fig. 3) 1.32 times as broad as long; humeral calli prominent. Scutellum with two small impressions, without punctures; broadest in middle; posterior and lateral margins convexly rounded. Elytral punctures: Holotype: left elytron: epl-c (4), shr (5), dsr (7), ssr-c (7); right elytron: epl-c (6), shr (6), dsr (4), ssr-c (10). Paratype: left elytron: epl-c (9), shr (7), dsr (5), ssr-c (9); right elytron: epl-c (8), shr (8), dsr (6), ssr-c (6).

Abdomen as broad as head, shiny, with distinct impunctate paratergites. Basolateral striae of tergite V nearly extending to posterior margin; tergite VII with membranous fringe at posterior margin (metathoraric wings fully developed); tergite X distinctly punctured, without microsculpture, shiny.

Male: Unknown.

Female: Antennomere XI 3.3 times as long and 1.3 times as wide as antennomere X.

Etymology: The choice of the species epithet "*casuarius*" refers to the Southern cassowary *Casuarius casuarius* (Linnaeus, 1758), the iconic bird of tropical Queensland, which inhabits the same tropical rainforests as the new *Megalopinus* species and is also found on New Guinea.

Distribution: The species is known only from the "closed canopy" rainforests of Lockerbie Scrub (63 m; -10.780, 142.485) and Iron Range (43 m; -12.710, 143.285) in the far north of Cape York Peninsula (Queensland, Australia).

Discussion: The possibly closely related *Megalopinus* species do not live in Australia, but west of the Wallace line on Sulawesi, Java, Thailand and Malaysia (Puthz 2012). New Guinea could serve as an additional stepping stone, from where only *Megalopinus melanesicus* Puthz, 2012 is known so far. That only one *Megalopinus* species is known from New Guinea is astonishing, given the rich biodiversity of this island. Moreover, it is particularly striking that no *Megalopinus* species is yet known from the Lesser Sunda Islands. The discovery of *M. casuarius* and its possible closer relationship with species from the Malay Archipelago and the Hind Indies than with Australian species indicates, that there are possibly more undescribed species to be discovered in the area.

Megalopinus acaciae Steel, 1955

Fig. 4

Megalopinus acaciae Steel, 1955: 180f.

Material examined (*n* = 58): **Australia, Queensland**: 1× "Queensland (NEQ), Wallmann Falls, via Ingham, 1 Oct 1980, G.B. Monteith, Q.M.Berlesate N. 226, Rainforest, 100m, Sieved litter" (QM), 1× " NE.Qld. 21km S Atherton, 1040-1100m, 5 Nov 1983, Pyrethrum knockdown in RF, D.K. Yeates & G.I. Thompson" (QM), 1× "NE QLD 2.5km N Mt. Lewis via Julatten, Pyrethrum knockdown in RF, 3 Nov 1983, 1040m, D.K. Yeates & G.I. Thompson" (QM), 2× "Downey Creek, 25km SE Millaa Millaa, N.Qld., Pyrethrum/Logs & Trees, 7 Dec 1988, 400m, Monteith & Thompson" (QM, ZIMG), 3× "Bartle Frere Track 17km W Malanda, N.Qld., 8 Dec 1988, 700m, Pyrethrum/Logs & Trees, Monteith & Thompson" (2× QM, 1× ZIMG), 1× "Lamb Range, 19km SE Mareeba, N.Qld., 11 Dec 1988, 1200m, Pyrethrum/Logs & Trees, Monteith & Thompson" (QM), 2× "2km SE Mt Spurgeon via Mt Carbine, NEQ, 20-21 Dec 1988, 1100m, Rainforest Pitfalls, Monteith & Thompson" (QM, ZIMG), 1× "Mossman Bluff Track 10 km W Mossman, N.Qld., 17 Dec 1988, 1200m, Pyrethrum/ Trees & Logs, Monteith & Thompson" (QM), 1× "Mossman Bluff Track, 5-10km W Mossman, N.Qld., 1-16 Jan 1989, Site 4, 600m, flt. Intercept, Monteith, Thomspon & ANZES" (QM), 1× "Mossman Bluff Track, 5-10km W Mossman, N.Qld., 20 Dec 1989 - 15 Jan 1990, Site 7, 1000m, flt intercept, Monteith, Thomson & ANZSES" (QM), 1× "Mt Fisher, 1050-1100m, 7km SW Millaa Millaa, N.Q., 27-29 Apr. 1982, Pyrethrum knockdown, Monteith, Yeates & Cook" (QM), 1× "Bell Peak North, N.Qld, Malbon Thompson Ra., 22 Nov 1990, 600m, Pyrethrum-Trees & Logs, Monteith & Thompson" (QM), 2× "NEQ: 17°32'Sx145°33'E, Mt Fisher (Kjellberg Rd), 17 May 1995, 1100m, Pyrethrum-logs&trees, G. B. Monteith" (QM, ZIMG), 3× "NEQ: 17°33'Sx145°33'E, Mt Fisher, summit, 1360m, 8 Feb 1999, rainforest, pyrethrum-trees & logs, 2176, GB Monteith" (2× QM, 1× ZIMG), 1× "Tully R. Xing, 10km S. Koomboolooma Dam, N.Qld., 8 Dec 1989 – 4 Jan 1990, 750m, Pitfall & Intercept Traps, Monteith, Thompson & Janetzki" (QM), 1× "Tully R. Xing, 10km S. Koomboolooma Dam, N.Q., 4 Jan 1990, 750m, Pyrethrum, Logs, G.B. Monteith" (QM), 2× "NEQ: 17°54'SX145°41'E, Mt Kooroomool, summit, 7km S, 4 Dec 1998, 1050m, Pyrethrum, trees & Logs, 2011, G.B. Monteith" (QM, ZIMG), 1× "Carbine Tableland, N.Qld, Pauls Luck, 29 Nov 1990, 1100m, Pyrethrum-Trees & Logs, Monteith & Janetzki" (QM), 1× "Mt Finnigan Summit, via Helenvale, N. Qld., 3-5 Dec 1990, 1050m, Pyrethrum, Monteith, Sheridan, Roberts & Thompson" (QM), 1× "NEQ: 17°03'Sx145°41'E, Upper Isley Ck., 750m, 29 Nov 1993, Pyrethrum/trees&logs, Monteith & Janetzki" (QM), 2× "Paluma Dam Rd, N.Qld., Site 1, 900m, 8 Dec 1990 – 5 Feb 1991, Flight intercept trap, Monteith & Seymour" (QM, ZIMG), 1× "Paluma Dam Rd, Site 4, 750m, N.Qld., Nov 17 – Dec 8 1990, Flight intercept trap, Monteith & Seymour" (QM), 1× "Paluma Dam Rd., N.Qld., Site 2, 720m, Nov 17 – Dec 8 1990, Flight Intercept Trap, Monteith & Seymour" (QM), 1×"Charmillian Ck. Xing, 950m, Tully Falls Rd., N. QLD., 8 Dec 1989 – 5 Jan 1990, Pitfall & Intercept Traps, Monteith, Thomson & Janetski" (QM), 1× "NEQ: 15°532'Sx145°13'E, Mt Misery Road, 730m, 6 Dec 1990 – 17 Jan 1991, Flight intercept, Site 1, Qld Mus. & ANZSES" (QM), 1x "NEQ: 17°24'S 145°41'E, Westcott Rd, Topaz, 6 Dec 1993 – 25 Feb 1994, RF Intercept, 680m, Monteith, Cook, Janetzki" (QM), 1× "AUST: NQ: 16°23'x145°17', Upper Whyanbeel Ck., 5 Sept 1992, 1150m, Pyrethrum, mossy rocks, G. Monteith" (QM), 1× "NE.Q: 17°16'S x 145°50'E, Massey/Bellenden Ker saddle, 9 Oct 1991, 950m, Pyrethrum, trees & logs, Monteith, Janetzki & Cook" (QM), 1× "NEQ: 16°57'Sx145°53'E, Mt Gorton summit, 750m, Pyrethrum/trees&logs, H. Janetzki" (QM), 1× "NEQ: 16°55'Sx145°40'E, Mt Williams, 1000m, 2 Dec 1993, Pyrethrum/trees&logs, Monteith & Janetzki" (QM), 1× "17°24'S, 145°41'E, PEI Road, Topaz, RF intercept, 580m, 6 Dec 1993 – 25 Feb 1994, Monteith, Cook & Janetzki" (QM), 4 × "NEQ: 17°26'S, 145°42'E, Hughes Road, Topaz, RF intercept, 650m, 6 Dec 1993 – 25 Feb 1994, Monteith, Cook, Janetzki" (3× QM, 1× ZIMG), 2× "NE. Qld: 15°43'S, 145°17'E, Big Tableland, 618m, Flight intercept trap, 21 Dec 1990 – 9 Jan 1991, ANZSES Expedition" (QM, ZIMG), 1× "NEQ: 17°17'Sx145°58'E, Graham Range, 550m, 1 Nov 1995, Pyrethrum, trees & logs, G. Monteith" (QM), 1× "NEQ: 17°12'Sx145°40'E, Danbulla Scient. Res., 2 Nov 1995, 740m, Pyrethrum, trees & logs, G.B. Monteith" (QM), 2× "NEQ: 17°37'Sx145°46'E, Palmerston NP, E Margin, 9 Dec 1995, Pyrethrum, trees&logs, G. Monteith" (QM, ZIMG), 2× "NEQ: 17°13'Sx145°25'E, 3km W. Bones Knob, 10 Dec 1995, 1100m, Pyrethrum, trees, Monteith, Cook, Thomson" (QM, ZIMG), 1× "NEQ: 16°56'Sx145°51E, Mt Murray Prior, 31 Oct 1995, 770m, Pyrethrum, trees&rocks, Monteith & Cook" (QM), 1× "NEQ: 16°56'Sx145°51'E, Mt Murray Prior, 770m, 7 Dec 1995, Pyrethrum, trees&logs, G. Monteith" (QM), 2× "NEQ: 16°56'SX145°51'E, Mt Murray Prior, 8 Dec 1998, Pyrethr. Rainfor., G. Monteith" (QM, ZIMG). All with white label "*Megalopinus acaciae*, Steel, 1955, det. T. Mainda 2023".

Megalopinus nodipennis (MacLeay, 1873)

Fig. 5

Megalops nodipennis MacLeay, 1873: 150.

Material examined (*n* = 22): **Australia, Queensland:** 1× "Lake Barrine, N. Qld., 8 Oct 1980, Rainforest, G.B. Monteith" (QM), 1× "Malanda Falls, Malanda, N. Qld., 8-12 Oct 1980, Rainforest, 750m, G.B. Monteith" (QM), 1× "Kroombit Tops, 65km SW Gladstone, Q. 1000-1100m, 22-26 Feb. 1982, Rainfor., Monteith, Thomson & Yeates" (QM), 2× "Windsor Tableland, 35km NNW Mt Carbine, N. Qld., Bargoo Ck, RF, 850m, 15-18 Apr., 1982, Monteith, Yeates & Cook" (QM, ZIMG), 2× "Seaview Range, NE QLD (Mt Fox Rd, RF, 600m), 15 Dec 1986, Monteith, Thompson & Hamlet" (QM, ZIMG), 3× "The Crater Nat.

Figure 4: *Megalopinus acaciae*, Millaa Millaa, Queensland. Scale = 1 mm.

Figure 5: *Megalopinus nodipennis*, Rundle Range National Park, Queensland. Scale = 1 mm.

Pk., Atherton Tbld., N. Qld., 5 Dec 1988, 1000m, Monteith & Thomson" (2× QM, 1× ZIMG), 1× "2km SE Mt Spurgeon via Mt Carbine, NQLD, 20 Dec 1988 – 4 Jan 1989, 1000m, RF, Flt. Intercept, Monteith, Thomson & ANZSES" (QM), 1× "NEQ: Lake Eacham, 750m, Pitfall & Intercept, 9 Dec 1989 – 14 Jan 1990, Monteith, Thomson & Janetzki" (QM), 1× "NE. Q: 16°54'S x 145°42'E. Whitefield Range, 550m, Pitfall & Intercept traps, 28 Aug – 19 Oct 1991, Monteith & Janetzki" (QM), 1× "Paluma Dam Rd, Site 4, 750m, Flight intercept trap, Nov 17 – Dec 8 1990, Monteith & Seymour" (QM), 1× "Paluma Dam Rd, N.Qld., Site 1, 900m, Flight intercept trap, 8 Dec 1990 – 5 Feb 1991, Monteith & Seymour" (QM), 1× "SEQ: 27°20'Sx152°48'E, Stony Ck, via Samford, Intercept trap, open forest, 22 Oct 94 – 2 Feb 1995, H. Janetzki & G. Monteith" (QM), 1× "NEQ: 17°13'Sx145°25'E, 3km W.Bones Knob, 1100m, 10 Dec 1995, Monteith, Cook, Thomson" (QM), 2× "SEQ: 23°39'Sx150°58'E, Rundle Ra. NP, Site 1, vine scrub, intercept, 15m, 9111, 15 Dec 1999 – 20 Mar 2000, Monteith" (QM, ZIMG), 1× "QLD: 26°14'Sx152°46'E, Gympie, 11km ESE, 100m, FIT, 11499, 28 Feb – 15 Jul 2002, J.F. Lawrence" (QM), 1× "N.E.QLD, Bakers Blue Mt, 17 km W Mt Molloy, 1100m, RF, 12.ix.1981, G. Monteith & D. Cook (QM). **Australia, New South Wales:** 1× "Wilson River Reserve, 240m, via Wauchope, NSW, 13 Jan 1986, G.B. Monteith" (QM). All with white label "*Megalopinus nodipennis*, (MacLeay, 1873), det. T. Mainda 2023".

Disclosures

The authors are unaware of any conflicts of interest regarding the subject matter of this paper.

Acknowledgments

Before species can be described, someone has to collect them and thus discover them for the first time. Only then can the taxonomist discover the species a second time and subsequently name it. This paper is an example of countless others that would not exist without industrious and adventurous collectors. Without the extensive collecting of the late Geoff B. Monteith (1942-2024), we would probably not know of the existence of *M*. *casuarius* sp. nov. We would like to take this opportunity to thank him not only for his detailed information on the localities where the new species was found. We would also like to dedicate this paper to him. His life's work should be a model for future generations of adventurous Australian naturalists.

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