

Shattuck, S. O., Barnett, N. J. 2007. Revision of the ant genus *Mayriella*, pp. 437-458. In Snelling, R. R., B. L. Fisher, and P. S. Ward (eds). *Advances in ant systematics (Hymenoptera: Formicidae): homage to E. O. Wilson – 50 years of contributions*. Memoirs of the American Entomological Institute, 80.

REVISION OF THE ANT GENUS *MAYRIELLA*

Steven O. Shattuck and Natalie J. Barnett
CSIRO Entomology
P. O. Box 1700
Canberra, ACT 2601, Australia
Steve.Shattuck@csiro.au

ABSTRACT

The ant genus *Mayriella* is revised at the species level. The genus contains seven species: *M. abstinens* Forel (north-east Australia and New Zealand), *M. ebbei* Shattuck & Barnett (new species) (south-east Australia), *M. granulata* (Vietnam), *M. overbecki* Viehmeyer (removed from synonymy with *M. abstinens*) (east-central Australia), *M. sharpi* Shattuck & Barnett (new species) (eastern Papua New Guinea), *M. spinosior* Wheeler (north-east Australia) and *M. transfuga* Baroni Urbani (Nepal and India east to Hong Kong and the Philippines and south to Borneo and Java, Indonesia). *M. hackeri* Wheeler and *M. venustula* Wheeler are synonymized with *M. abstinens*. All species occur in rainforest or wet sclerophyll forests and nest in soil, often under rocks, or in rotten wood on the ground.

Key words: Hymenoptera, Formicidae, Myrmicinae, *Mayriella*, taxonomy, new species, synonymy, Southeast Asia, Australia.

INTRODUCTION

Mayriella Forel is an Indo-Australian ant genus belonging to the subfamily Myrmicinae. The genus was established by Forel (1902) for the newly described species *M. abstinens* from Mackay, Queensland, Australia. Viehmeyer (1925) added a second species, *M. overbecki*, from material collected at Trial Bay, New South Wales. Wheeler (1935) revised *Mayriella* based on holdings in the Museum of Comparative Zoology, Harvard University. He synonymized *M. overbecki* with *M. abstinens* and established 3 new taxa, *M. abstinens hackeri*, *M. abstinens venustula* and *M. spinosior*. These taxa were based on material originating from Queensland. Unfortunately, Wheeler had access to only limited material including four workers and six queens of *M. a. hackeri*, single workers of *M. a. venustula* and *M. spinosior*, and apparently only a single syntype worker of *M. abstinens*.

Mayriella has since been found outside Australia. Taylor (1961) reported an introduced population of *M. abstinens* in New Zealand. He also gave the first detailed biological observations on these ants and questioned the validity of the forms described by Wheeler (1935). Taylor (1961) did not, however, formally synonymize Wheeler's names. Baroni Urbani (1977) greatly expanded the known range of *Mayriella* when he described *M. transfuga* from Nepal and Bhutan. This was the first published record of the genus outside the Australian region (although material had been present in collections since the mid-1950s). More recently, Dlussky and Radchenko (1990) added an additional species from South-east Asia, *M. granulata*, a species very similar to the wide-spread *M. transfuga*.

Mayriella was re-examined by Taylor (1991). He found the genus to be "intractable at species level" and containing anything from a single variable species to three or more sibling species in Australia. Taylor (1991) did not propose any new species-level synonymies as he found the available material showed extensive variation in size, propodeal spination, sculpturing and color, and because some series contained dealate queens while others contained apparent ergatoid queens. Taylor proposed the use of an "aggregate" name for the Australian species of *Mayriella*, and raised *M. abstinens hackeri* and *M. a. venustula* to full species rank "for ease of indexing." Finally, Taylor presented a detailed list of known collection localities for all species of the genus based on material in the Australian National Insect Collection and the Queensland Museum. More recently, Shattuck (1999) provided an overview of the genus in Australia, providing notes on biology and distribution.

During the present study, *Mayriella* was found to contain seven valid species. Five of these (*abstinens*, *granulata*, *overbecki*, *spinosior*, *transfuga*) were previously described, while two (*ebbei*, *sharpi*) were undescribed. Two of the previously described taxa (*hackeri*, *venustula*) were found to be conspecific with *M. abstinens*. Five of these species pose few taxonomic problems as they are easily diagnosed and show minimal morphological variation. However, *M. abstinens* (as defined here) possesses considerable variation in body color, propodeal spine development and, to a lesser extent, sculpture. This variation is considered intraspecific because (1) several nest series contain both color forms, (2) other nest series show intermediate color patterns, (3) propodeal spine morphology varies independently of color and (4) no other characters could be found to indicate two separate species are involved. See *M. abstinens* below for further details. It should also be noted that Taylor's (1961, 1991) suggestion that ergatoid (worker-like) queens are present in this species could not be confirmed. Finally, *M. granulata* shows only minor differences from *M. transfuga* and may prove to be conspecific with it.

Species of *Mayriella* show strong preference for moist, forested areas. Most specimens have been collected from rainforest or wet sclerophyll woodlands with relatively few collections from dry sclerophyll or scrub habitats (and these are restricted to Australia). Nests are normally found in soil under stones or with a small mound of loose dirt at the entrance. They have also been found nesting in rotten logs and occasionally arboreally. The number of workers in nests

averages between 50 and 100 and about one-half of the nest series containing queens contain more than one, suggesting that species are polygynous. Foraging workers are most commonly collected from litter samples. Nests appear to be locally abundant although patchily distributed on a larger scale. For example, in the Brindabella Ranges near Canberra, ACT, *M. ebbei* is infrequently encountered and is known from only a few localities. However, near Baroomba Rocks (located on the eastern slope of the Brindabella Ranges) *M. ebbei* occurs commonly under rocks in an area covering several hundred square meters. This population appears limited to this small area as nests could not be found in areas with similar geography and vegetation located several kilometers away. However, observations are limited and additional data will be required to determine if these habits are widespread and/or occur in other species. Additionally, while Taylor (1961) made similar observations for *M. abstinens*, these were based on the introduced population found in New Zealand and should be confirmed for naturally occurring populations of the genus.

Placement of *Mayriella* in the subfamily Myrmicinae

Forel (1902) placed *Mayriella* in the myrmicine tribe Meranoplini. This treatment was followed by Emery (1922) and Wheeler (1935). Wheeler (1935) supported this placement by discussing numerous characters which *Mayriella* shared with *Meranoplus*, *Willowsiella* and *Romblonella*. However, Wheeler also noted differences among these taxa which suggested they may not be as closely related as previously thought. More recent treatments of the tribal classification of the Myrmicinae have either followed Forel (Wheeler & Wheeler, 1973, 1985), or not placed the genus within a specific tribe (Hölldobler & Wilson, 1990), or only tentatively placed it (Bolton, 1994, in the tribe Stenammini). An examination of the sting apparatus of *M. ebbei* (reported as *M. abstinens*) by Kugler (1997) found similarities with the genus *Proatta*, suggesting a close relationship and thus a placement in the Stenammini, supporting the treatment of the genus by Bolton (1994). Finally, Bolton's (2003) recent review of the higher level classification of the entire family has moved *Mayriella* to the *Carebara* genus group of the tribe Solenopsidini and includes detailed lists of characters supporting this placement. Bolton also provides a more detailed overview of the literature concerning this genus than offered here.

Measurements

The following measurements were recorded in millimeters. Indices were calculated using the measurements indicated.

- CI cephalic index: HW/HL
- HL maximum head length in full face view, measured from the anterior clypeal margin (excluding the projecting clypeal teeth) to the midpoint of a line drawn across the posterior margin of the head
- HTL maximum length of hind tibia, excluding the proximal part of the articulation which is received into the distal end of the hind femur
- HW maximum head width in full face view, excluding eyes.
- ML mesosomal length measured from the point at which the pronotum meets the cervical shield to the posterior base of the metapleuron
- PW maximum pronotal width in dorsal view
- SI scape index: SL/HW
- SL length of the scape (first antennal segment) excluding the basal constriction and condylar bulb

Depositories

- ANIC – Australian National Insect Collection, Canberra, ACT, Australia
 BMNH – The Natural History Museum, London, United Kingdom
 MCZC – Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA.
 MHNG – Muséum d'Histoire Naturelle, Geneva, Switzerland
 TERC – CSIRO Tropical Ecology Research Centre (A. N. Andersen Collection), Darwin, Northern Territory, Australia
 NHMB – Naturhistorisches Museum, Basel, Switzerland
 UASK – Institute of Zoology, Ukrainian Academy of Science, Ukraine

Mayriella Forel, 1902
 Figures 1-25

Mayriella Forel, 1902: 425.

Type species. *Mayriella abstinens* Forel, 1902, by monotypy.

Diagnosis. Workers of *Mayriella* may be separated from other members of the Myrmicinae by the presence of a 10-segmented antenna with a 2-segmented club; well developed antennal scrobes; the clypeus with the mediolateral regions concave and the anterior margin with a bidentate process (these structures combining to form an extension of the scrobes which receive the terminal segments of the antennae when the antennae are retracted); and elongate compound eyes which are narrowed anteroventrally. These characters, especially the shape of the eyes and the configuration of the clypeus, are distinctive within the subfamily and it is unlikely these ants will be confused with close relatives.

Key to Species of *Mayriella* (workers)

- 1 In dorsal view, anterior region of outer margin of postpetiole expanded laterally compared to posterior regions so its overall outline is trapezoidal (Fig. 9) 2
- In dorsal view, outer margins of postpetiole approximately the same width anteriorly as posteriorly so its overall outline is cylindrical or slightly barrel-shaped (Fig. 5) 3
- 2 Dorsum of postpetiole with more than four erect hairs and dorsum of gaster with numerous erect hairs; dorsum of petiole in lateral profile uniformly convex and without distinct, separate dorsal and posterior faces (Fig. 8) *ebbei* Shattuck & Barnett
- Dorsum of postpetiole with at most four erect hairs and dorsum of gaster generally lacking erect hairs (rarely hairs present); dorsum of petiole in lateral profile angular and with distinct, separate dorsal and posterior faces (Fig. 22) *spinosior* Wheeler
- 3 Occurring in south-east Asia (Fig. 24) 4
- Occurring in Papua New Guinea or Australia 5
- 4 Propodeal spines relatively thin and appearing long, length greater than 1.5 times basal width (Fig. 25) *transfuga* Baroni Urbani
- Propodeal spines relatively broad and appearing short, length less than basal width (Fig. 12) *granulata* Dlussky and Radchenko

- 5 Ventral extension of compound eye terminating in a sharp point (Fig. 19); head approximately square (CI *ca.* 1.0) (Papua New Guinea)..... *sharpi* Shattuck & Barnett
 - Ventral extension of compound eye rounded below (Fig. 15); head longer than wide (CI < 0.98) (Australia)..... 6
- 6 Sculpturing in posterior section of antennal scrobe well developed and distinct; sculpturing on dorsal surface of mesosoma consisting of large, closely spaced (separated by less than their diameter) pits (Fig. 4); dorsum of petiole in lateral profile strongly angular, the posterior face relatively short (Fig. 3) *abstinens* Forel
 - Sculpturing in posterior section of antennal scrobe at most weakly developed and always indistinct; sculpturing on dorsal mesosoma consisting of small, widely spaced (separated by greater than their diameter) pits (Fig. 16); dorsum of petiole in lateral profile broadly rounded, the posterior face relatively long (Fig. 15) *overbecki* Viehmeyer

***Mayriella abstinens* Forel, 1902**

Figures 1-5

Mayriella abstinens Forel, 1902: 452.*Mayriella abstinens hackeri* Wheeler, 1935: 157 **syn. n.***Mayriella abstinens venustula* Wheeler, 1935: 158 **syn. n.***Mayriella hackeri*; Taylor, 1991: 602.*Mayriella venustula*; Taylor, 1991: 602.**TYPE MATERIAL**

M. abstinens: Worker syntypes (1 in MCZC, *examined*, additional in MHNG, not examined) from Mackay, Queensland. *M. hackeri*: Worker and queen syntypes (four workers and six queens in MCZC, *examined*) from nr. Brisbane, Queensland. *M. venustula*: Holotype worker (MCZC, *examined*) from Tambourine Mt., Queensland.

ADDITIONAL MATERIAL

(In ANIC unless otherwise noted). **Australia, New South Wales**: 10km S Mangrove Mt. (Lowery, B.B.); 15km E Legume (Greenslade, P.J.M.); 15mi N Lismore, Whian Whian State Forest (Lowery, B.B.); 1mi E Murwillumbah (Lowery, B.B.); 1mi E Murwillumbah Rail Station (Lowery, B.B.); 20km W Urbenville (Greenslade, P.J.M.); Blue Knob Mt., Nightcap Range (Lowery, B.B.); Brindle Creek, Border Ranges Natl. Pk, 28°22'S 153°05'E (Naumann, I.D.); Dorrigo Natl Pk, E end Blackbutt Track (Newton, A. & Thayer, M.) (MCZC); Doyle's River State Forest, Oxley Highway, W Wauchope (Lowery, B.B.); Foxground, 10mi S Kiama (Lowery, B.B.); Foxground, 8mi S Kiama (Lowery, B.B.); Genoa (Lowery, B.B.); Jerusalem Bay, Cowan, Sydney (Lowery, B.B.); Macksville (Lowery, B.B.); Mt. Keira, 34°24'S 150°51'E (Ward, P.S.); Mt. Ousley, near Wollongong, 34°23'S 150°52'E (Ward, P.S.); Mt. Saddleback, Kiama (Lowery, B.B.); Mt. Warning (Lowery, B.B.); Never Never Picnic area, Dorrigo Natl Pk (Newton, A., Thayer, M.); Ourimbah (collector unknown) (MCZC); Ourimbah State Forest, Wyong (Lowery, B.B.); Pymble (Lowery, B.B.); Royal Natl. Pk., 34°09'S 151°01'E (Ward, P.S.); Seal Rocks, 32°26'S 152°32'E (Ward, P.S.); Sheepstation Creek, Wiangaree State Forest (Newton, A., Thayer, M.) (MCZC); St. Ives, Sydney (Lowery, B.B.); Swampy forest behind 7 Mile Beach, Gerroa (Lowery, B.B.); Thone River, Oxley Highway, W Wouchope Tomewin, 10mi N Murwillumbah (Lowery, B.B.); Whian Whian State Forest, 28°39'S 153°20'E (Lowery, B.B.); (Ward, P.S.); upper Allyn Valley, nr. Eccleston (Taylor & Brooks; Taylor, R.W.);

Queensland: 1.5km EbyN Mt. Sorrow, 16°05'S 145°27'E (Calder, A. & Weir, T.); 3 mi S Blackall (Perkins, F.A.); 6km SSW North Tamborine, 27°56'S 153°11'E (Ward, P.S.); Alexandra Bay, 16°12'S 145°26'E (Taylor, R.W. & Feehan, J.); Bald Knob, 5km ESE Maleny, 26°46'S 152°53'E (Hill, L.); Binna Burra, Lamington Natl Pk (Lawrence, J. & N.); Boombana Natl. Pk., Mt. Glorious (Taylor, R.W.); Brisbane (Hacker, H.); Cairns District (Lea, A.M.); Camp Mt., Brisbane (Lowery, B.B.); Cape Tribulation, 16°04'S 145°28'E (Calder, A. & Weir, T.); Cedar Creek, Tamborine Mt. (Brown, W.L.) (MCZC); Clump Point (Woodward, T.E.); Coopers Plains Br. (Perkins, F.A.); Crawford's Lookout, Palmerston Natl. Pk (Taylor, R.W.); Cunningham's Gap (Lowery, B.B.); Dalsy Hill State Forest, 24km SE Brisbane (Lowery, B.B.); Eacham Natl Pk, 17°18'S 145°37'E (Taylor, R.W.); Eungella Natl. Pk., 50km W Mackay (Lowery, B.B.); Gadgarra (Greenslade, P.J.M.); Gayundah Creek, Hinchinbrook Island, 18°22'S 146°13'E (Davies, Thompson & Gallon; Monteith, Davies, Thompson & Gallon; Thompson, G.); Goodna, Brisbane (Lowery, B.B.); Ithica Creek, Brisbane (Lowery, B.B.); Kirrama Range, via Kennedy (Monteith, G.); Kondalilla Natl Pk, Blackall Ranges (Brown, W.L.) (MCZC); Kroombit Tops, 65km SW Gladstone (Monteith, G. & Thompson, G.); Kroombit Tops, SSW Calliope, Beauty Spot 98, 24°22'S 150°59'E (Monteith, G.); Kroombit Tops, SSW Calliope, Three Moon Scrub, 24°25'S 151°03'E (Monteith, G.); Kuranda (Brown, W.L.) (MCZC); Kuranda, Black Mt. Road, 16°45'S 145°33'E (Taylor, R.W. & Feehan, J.); Kweebank Cave track, Binna Burra, Lamington Natl. Pk. (Taylor, R.W.); Landsborough (Perkins, F.A.); Mackay (Ridy; Turner, G.); McNamee Creek, 17°40'S 145°48'E (Taylor, R.W. & Feehan, J.); Melita, Cooloola Natl Pk (Greenslade, P.J.M.); Mt. Coot-tha, Brisbane (Lowery, B.B.); Mt. Mee State Forest, 27°06'S 152°42'E (Monteith, G.B.); Mt. Nebo (Taylor, R.W.); Mt. Nebo, Brisbane (Lowery, B.B.); Mt. Webb Natl. Pk., 15°04'S 145°07'E (Calder, A. & Feehan, J.); Mulgrave River Road, 7km WbyS Bellenden Ker, 17°16'S 145°47'E (Calder, A. & Weir, T.); Noah Creek, 7km ENE Thornton Peak, 16°08'S 145°26'E (Calder, A. & Weir, T.); Noosa River, Cooloola Natl Pk (Greenslade, P.J.M.); Pingin Hill (Holt, J.); Shipton's Flat (S of Cooktown) (Darlington, P.F.) (MCZC); Spicers Gap, 28°05'S 152°25'E (Ward, P.S.); Tambourine Mt. (Lea, A.M.); Thornton Range, 16°14'S 145°26'E (Taylor, R.W., Feehan, J.); Tully Falls Natl. Pk., 17°47'S 145°33'E (Taylor, R.W. & Feehan, J.); Warrawonga, Cooloola Natl Pk (Greenslade, P.J.M.); Weipa (Andersen, A.N.) (TERC); Wongabel State Forest, 5km S Atherton (Monteith & Thompson); nr. Brisbane (Hacker, H.); **New Zealand**: Grey Lynn, Auckland (Taylor, R.W.) (MCZC); Mt. Alber, N side, Auckland (Taylor, R.W.); Mt. Eden, Auckland (Hammond, P.M.); Te Atatu, Auckland (Keall, J.B.).

DIAGNOSIS

This taxon can be separated from other Australian species of this genus by the presence of well developed sculpturing in the posterior section of the scrobe, the large, closely spaced pits on the mesosomal dorsum, and the parallel lateral surfaces of the postpetiole. It can be separated from the south-east Asian *M. transfuga* by the less angular petiolar node and more heavily sculptured postpetiole.

WORKER DESCRIPTION

Sculpturing in posterior section of antennal scrobe well developed and distinct; sculpturing on dorsal surface of mesosoma consisting of large, closely spaced pits (or rarely smaller and more widely spaced); propodeal spines varying from short and triangular to elongate and thin; dorsal surface of petiole in lateral profile uniformly convex, without distinct dorsal and posterior faces and forming an obtuse angle with the anterior face; in dorsal view, postpetiole with the

anterior and posterior regions approximately the same width (the region connecting them either flat or weakly convex); postpetiole and gaster lacking erect hairs dorsally.

Measurements. *Worker* ($n = 10$) - CI 0.89-0.97; HL 0.42-0.57; HTL 0.23-0.32; HW 0.39-0.50; ML 0.42-0.57; PW 0.29-0.37; SI 0.58-0.73; SL 0.24-0.36.

COMMENTS

As conceived here, *M. abstinens* shows considerable variation in several morphological traits. The most obvious of these include the overall body color and the length of the propodeal spines. The body color varies from uniform light yellow to uniform dark brown, as well as bicolored dark yellow and dark brown. This variation was noted by Wheeler (1935) during his revision and was used when establishing his subspecies *M. abstinens hackeri* and *M. a. venustula*. The propodeal spines vary in shape from short and triangular to elongate and thin.

During the present study, it was found that the majority of available material could be sorted into yellow forms and dark brown forms and that most of the variation in color occurred between nest series. However, a small number of nests were intermediate between the lightest and darkest forms or were bicolored yellow and brown and could not be easily placed in either form. To complicate matters further, a few series, apparently representing single nests, contained workers of both color forms. Thus color could not be used to sort the available material without arbitrarily placing some specimens.

Propodeal spine morphology shows similar variation to body color, except three classes could be established which overlap minimally. These include very short triangular spines, elongate triangular spines, and elongate thin spines. As with body color, the majority of specimens can be sorted into these three classes with only a small number of specimens being intermediate, and only a few nest series showing variation that spans more than a single class.

When body color and spine morphology are taken together, the same pattern as seen in the characters individually emerges again. The majority of dark individuals have elongate triangular spines with a few having short triangular or elongate thin spines. In contrast, most lightly colored individuals have short triangular spines but a significant number have elongate triangular or elongate thin spines. Thus the majority of the specimens show a consistent pattern as would be expected for two distinct species, but a minority of specimens do not fit with this pattern and suggest that a single species is involved.

Geographically, light body color ranges from the northern extreme of the species south to south-east Queensland while the dark body color ranges from approximately Kennedy (north of Ingham), Queensland south to the southern extreme of the range. All forms of the propodeal spines occur in the Queensland populations while only the intermediate form occurs in New South Wales. Thus body color shows a distinct geographic pattern with light individuals in the north, both color forms throughout the central part of the range, and dark forms occurring in the southern part of the range. Spinal morphology shows a similar pattern, but without the northern differentiation seen in body color.

In addition to color, several other characters show variation within this species. The sculpturing on the head and mesosoma is more pronounced in the darker form when compared with the lighter form. However, it is difficult to determine if this difference is caused by the underlying cuticular coloration accentuating the sculpturing differences, or if the difference is in the cuticular structure. In a few rare cases (for example specimens from Seal Rocks, New South Wales) the dorsum of the mesosoma is essentially smooth with small, widely spaced pits similar to those in *M. overbecki*. These specimens are placed here because of the relatively well developed sculpturing in the antennal scrobes and the angular petiole with a short posterior face. In addition to the sculpture, there is a weak trend for the darker form to have a more angular antero-dorsal petiolar face when compared with the lighter morph. However, this shows

considerable variation within both forms so that the entire range of variation can be found in each.

Because all of the characters show considerable variation, no individual character could be found to suggest that more than a single variable species is involved and because color and spine morphology do not covary, all specimens are here placed in a single species.

This species has been collected in habitats ranging from dry sclerophyll woodlands (less commonly) to rainforests (more commonly), and once in a garden. Nests are found mainly in soil, either in the open or between rocks, and they have been found nesting within the mounds of *Myrmecia auriventris*, *M. brevinoda* and *M. flavicoma* and *Pachycondyla (Bothroponera) mayri*. They also nest arboreally under dead bark and in rotten wood on the ground. Workers forage on the ground (where they are often found in leaf litter samples) as well as arboreally.

***Mayriella ebbei* Shattuck & Barnett, sp. nov.**

Figures 6-9

TYPE MATERIAL

Holotype worker from **Australia**, Booroomba Rocks, 35°33'S 148°59'E, Australian Capital Territory, 16 March 1992, S. O. Shattuck, eucalypt woodland (ANIC); ca. 60 worker and 1 dealate queen paratypes, same data as holotype (ANIC, BMNH, MCZC) (as well as numerous additional larvae and worker pupae and 2 male pupae).

ADDITIONAL MATERIAL

(In ANIC unless otherwise noted). **Australia, ACT**: 5km SW Orroral Tracking Station (Lowery, B.B.); Black Mt., S slope (lake road) (Taplin, I.C.); Blundells Creek Rd, 3.5km E Piccadilly Circus (Lawrence, J.); Booroomba Rocks, 35°33'S 148°59'E (Shattuck, S.O.); Brindabella Range (Lowery, B.B.); Wombat Creek, 6km NE Piccadilly Circus, 35°19'S 148°51'E (Weir, Lawrence & Johnson); foot of Mt. Majura (Lowery, B.B.); nr. Lees Spring, Brindabella Range (Taylor, R.W.); **New South Wales**: 4.5km WNW Pigeon House Mt., 35°21'S 150°13'E (Hill, L.); Burns Bay, Lane Cove, Sydney (Lowery, B.B.); Castle Flat, Clyde River floodplain, 32°21'S 150°13'E (Hill, L.); Gerroa, 10mi S Kiama (Lowery, B.B.); Kanangra Brook and Rocky Spur, Kanangra-Boyd Natl Pk (Hill, L.); Kanangra-Boyd Natl Pk (Hill, L.); Lane Cove, Sydney (Lowery, B.B.); Riverview College, Lane Cove, Sydney (Lowery, B.B.); Tallaganda State Forest, Captain's Flat (Lowery, B.B.); Tamborine Bay, Lane Cove, Sydney (Lowery, B.B.); Tamborine Bay, Sydney (Lowery, B.B.); **South Australia**: Belair (Greenslade, P.J.M.); Bridgewater (Hutson); Bridgewater, Englebrook (Greenslade, P.J.M.); Christenson Park, Sevenhill (Lowery, B.B.); Maclaren Flat (Kirkby, C.A.); Mt. Lofty, S Para (Hutson); Sevenhill (Lowery, B.B.); West Bay, Kangaroo Island (Greenslade, P.J.M.); **Tasmania**: Eddystone Point (Trueman, J. & Cranston, P.); **Victoria**: 12km E Warburton (Newton, A. & Thayer, M.); Arthur's Seat (McCrae) (Brown, W.L.) (MCZC); Mt. Buffalo Natl Pk (Newton, A. & Thayer, M.); Narbethong (McAreevy, J.); Oberon Creek, Summit Mt., Wilsons Prom. (Ettershank, G.); One Tree Hill, Melbourne (Lowery, B.B.); Portland (Beaughlehole, C.); Queenstown, nr. Hurstbridge (Lowery, B.B.).

DIAGNOSIS

This species can be separated from others in this genus by the presence of numerous erect hairs on the gaster. It shares the shape of the outer margins of the postpetiole with *M. spinosior*,

but differs from this species in the shape of the petiolar node and in having more than four erect hairs on the postpetiole.

WORKER DESCRIPTION

Sculpturing in posterior section of antennal scrobe well developed and distinct; sculpturing on dorsal surface of mesosoma consisting of large, closely spaced pits; propodeal spines relatively long and thin; dorsal surface of petiole in lateral profile uniformly convex, without distinct dorsal and posterior faces and forming an obtuse angle with the anterior face; in dorsal view, anterior region of postpetiole expanded relative to posterior region; dorsum of postpetiole with more than four erect hairs; dorsum of gaster with numerous erect hairs.

Measurements. *Worker* ($n = 10$) - CI 0.90-0.98; HL 0.47-0.58; HTL 0.26-0.34; HW 0.43-0.54; ML 0.49-0.64; PW 0.30-0.40; SI 0.62-0.66; SL 0.27-0.35.

COMMENTS

This is the southernmost species of *Mayriella* and occurs in generally drier sites compared to other species. Although widely distributed it shows minimal geographic variation in the characters examined during this study. Biologically, this species is found primarily in drier habitats such as sclerophyll woodlands, low scrub, ti-tree scrub and coastal heath and less commonly in wet sclerophyll and rainforests. Nests occur in soil in the open or under stones or other objects on the ground, and in rotten wood.

Mayriella granulata Dlussky & Radchenko, 1990

(Figs 10-12)

Mayriella granulata Dlussky & Radchenko, 1990: 123.

TYPE MATERIAL

Holotype worker and two paratype workers (UASK) from “Archipelago Baitylong, Isl. Dongho“, Quang Ninh Prov., **Vietnam** (*examined*). This island is also known as Đảo Đông Khoa, Ba Mùn Island and Cao Lô Island (and probably other names) and is located approx. 100km ENE of Hải Phòng at approx. 21°00'N 107°35'E. No additional material currently available.

DIAGNOSIS

This species is similar to *M. transfuga* and can be separated from it by the presence of relatively short and broad propodeal spines (the spines are at most about as long as the width of their bases while they are at least 1.5 times the width of the base in *M. transfuga*). It can be separated from the remaining species in the genus by the presence of well developed sculpturing in the posterior section of the scrobe, the large, closely spaced pits on the mesosomal dorsum, the parallel lateral surfaces of the postpetiole and the strongly angular petiolar node.

WORKER DESCRIPTION

Sculpturing in posterior section of antennal scrobe well developed and distinct; sculpturing on dorsal surface of mesosoma consisting of large, closely spaced pits; propodeal spines relatively long and broad; dorsal surface of petiole in lateral profile uniformly convex, without

distinct dorsal and posterior faces and forming a sharp angle with the anterior face; in dorsal view, postpetiole with the anterior and posterior regions approximately the same width (the region connecting them either flat or weakly convex); postpetiole and gaster lacking erect hairs dorsally.

Measurements. *Holotype* - CI 0.98; HL 0.43; HTL 0.22; HW 0.42; ML 0.45; PW 0.30; SI 0.57; SL 0.24.

COMMENTS

This species is essentially identical to *M. transfuga* in all characters examined during this study with the exception of the broader and slightly shorter propodeal spines (as pointed out in the original description) and the apparently longer hairs on the lateral margins of head, especially the pair originating immediately posterior to the eyes. But even here, the spines in one of the paratypes (the upper one) are noticeably narrower than those of the holotype and remaining paratype and approach those found in some *transfuga* specimens (for example from Kota Tinggi, E. Johore, Malaysia). Also, the lengths of the head hairs are difficult to assess critically because they vary considerably in the degree of curvature, making precise measurements difficult. While there is currently little support for treating this taxon as distinct from *transfuga*, it would be helpful to have additional material before deciding on its true status. Thus, this species is retained for the time being while noting that it may well represent little more than a slight variation of *transfuga*.

Mayriella overbecki Viehmeyer, 1925, n. stat.

Figures 13-16

Mayriella overbecki Viehmeyer, 1925: 26 (removed from synonymy with *M. abstinens*).

TYPE MATERIAL

Worker (NHMB) (*examined*) and 1 queen (MCZC) (*examined*) syntypes from **Australia**, Trial Bay, New South Wales.

ADDITIONAL MATERIAL

Australia, New South Wales: Brindle Creek, Wiangaree State Forest (collector unknown) (ANIC, MCZC); Bruxner Park, via Coffs Harbour (Monteith, G.) (ANIC); Dorrigo Natl Pk, E end Blackbutt Track (Newton, A. & Thayer, M.) (ANIC, MCZC); Mt. Warning (Lowery, B.B.) (ANIC).

DIAGNOSIS

This species can be separated from others in the genus by the combination of small, scattered pits on the mesosomal dorsum, weak sculpturing in the posterior sections of the antennal scrobes and the petiole with a relatively long posterior face and acute angle.

WORKER DESCRIPTION

Sculpturing in posterior section of antennal scrobe at most weakly developed and always indistinct; sculpturing on dorsal mesosoma consisting of small, widely spaced pits; propodeal spines relatively short and thick; dorsal surface of petiole in lateral profile uniformly convex,

without distinct dorsal and posterior faces and forming a blunt angle with the anterior face; in dorsal view, postpetiole with the anterior and posterior regions approximately the same width (the region connecting them either flat or weakly convex); postpetiole and gaster lacking erect hairs dorsally.

Measurements. *Worker* ($n = 7$) - CI 0.91-0.94; HL 0.51-0.57; HTL 0.30-0.35; HW 0.48-0.53; ML 0.54-0.62; PW 0.33-0.37; SI 0.62-0.68; SL 0.30-0.35.

COMMENTS

This is one of the rarer species of *Mayriella*, being known from only five collections. These collections were from rainforest in north-eastern New South Wales, with nests being found in rotten logs.

Mayriella overbecki was established for a number of workers and a queen collected at Trial Bay, New South Wales. It was considered a junior synonym of *M. abstinens* by Wheeler (1935), a treatment followed by subsequent authors. Wheeler, however, based his synonymy on Viehmeyer's original description and did not examine type material. This synonymy was curious given that Wheeler established two new species based on subtle characters and slight differences. This taxon is here removed from synonymy and recognized as a distinct species.

Mayriella sharpi Shattuck & Barnett, **sp. nov.**

Figures 17-19

TYPE MATERIAL

Holotype worker from Bisianumu, nr. Sogeri (approx. 9°24'S, 147°24'E), Central Province, Papua New Guinea, 15-20 March, 1955, E. O. Wilson, rainforest (ANIC).

DIAGNOSIS

M. sharpi is immediately recognizable by the sharply pointed anteroventral extensions of the compound eyes. It is also the only species currently known from Papua New Guinea.

WORKER DESCRIPTION

Sculpturing in posterior section of antennal scrobe well developed and distinct; compound eye forming a sharp point ventrally; sculpturing on dorsal mesosoma consisting of small, widely spaced pits; propodeal spines relatively short and thick; dorsal surface of petiole in lateral profile uniformly convex, without distinct dorsal and posterior faces and forming a blunt angle with the anterior face; in dorsal view, postpetiole with the anterior and posterior regions approximately the same width (the region connecting them either flat or weakly convex); postpetiole and gaster lacking erect hairs dorsally.

Measurements. *Holotype* - CI 1.01; HL 0.45; HTL 0.25; HW 0.46; ML 0.48; PW 0.32; SI 0.63; SL 0.29.

COMMENTS

The only known collection of this species consists of a single worker found in rainforest. The specimen is pale yellow and appears to be callow. The specimen is unusual in having the sting placed forward along the ventral surface of the gaster and directed downward. Given the possibly callow nature of the specimen it is difficult to assess whether this is its normal position

or if the gaster has been deformed during preservation in alcohol before being point mounted. Additional specimens will be required to ascertain the true nature of the sting placement.

Mayriella spinosior Wheeler, 1935

Figures 20-22

Mayriella spinosior Wheeler, 1935: 159.

TYPE MATERIAL

Holotype worker from **Australia**, Cairns district, Queensland (MCZC) (*examined*).

ADDITIONAL MATERIAL

(In ANIC unless otherwise noted). **Australia, Queensland**: 14km WbyS Eungella, 21°10'S 148°22'E (Gillison, A.); 1km W Imbil (Hill, L.); 1km W Kuranda (Doyen, J.) (MCZC); 8.5km WSW Seaforth, 20°56'S 148°53'E (Gillison, A.); Braemar State Forest, via Kogan, 27°13'S 150°50'E (Raven, P.); Burpengary, via Cabodture (Monteith, G.B.); Cape Tribulation, 16°04'S 145°28'E (Calder, A. & Weir, T.); Carnarvon Gorge (Woodward, T.E.); Lake Barrine, Atherton Tableland (Darlington) (MCZC); Melita, Cooloola Natl Pk (Greenslade, P.J.M.); Mossman Bluff Track, 5-10km W Mossman (Monteith & Thompson); Mt. Webb Natl. Pk., 15°04'S 145°07'E (Calder, A. & Feehan, J.); Plowman, Cooloola Natl Pk (Greenslade, P.J.M.); Reedy Creek, via Somerset Dam (Monteith, G.B.); Thornton Range, 16°14'S 145°26'E (Taylor, R.W. & Feehan, J.).

DIAGNOSIS

This species can be separated from others in this genus by the lateral margins of the postpetiole being expanded anteriorly and forming a trapezoid when viewed from above (similar to Fig. 9), combined with the lack of erect hairs on the gaster.

WORKER DESCRIPTION

Sculpturing in posterior section of antennal scrobe well developed and distinct; sculpturing on dorsal surface of mesosoma consisting of large, closely spaced pits; propodeal spines relatively long and thin; dorsal surface of petiole in lateral profile angular and with distinct dorsal and posterior faces; in dorsal view, anterior region of postpetiole expanded relative to posterior region; dorsum of postpetiole with at most four erect hairs; gaster generally lacking erect hairs dorsally, very rarely (only known in one specimen) erect hairs present.

Measurements. *Worker* ($n = 10$) - CI 0.91-0.97; HL 0.44-0.57; HTL 0.24-0.32; HW 0.41-0.55; ML 0.46-0.60; PW 0.29-0.40; SI 0.59-0.65; SL 0.26-0.33.

COMMENTS

This species has been found primarily in litter samples collected in rainforests with a few additional records from *Eucalyptus* woodlands. It occurs along essentially the entire Queensland coast with several inland records in the southern part of its range.

This species is sympatric with *M. abstinens*, to such an extent that they have been collected together in the same litter samples. This co-occurrence is at least partly the cause of earlier taxonomic confusion in the genus as several individual pins in the ANIC contained both species,

complicating initial species characterizations. Once this sympatry was recognized and the species separated, diagnoses were easily developed.

Mayriella transfuga Baroni Urbani, 1977

Figures 23-25

Mayriella transfuga Baroni Urbani, 1977: 411.

TYPE MATERIAL

Holotype worker and 7 worker paratypes from **Nepal**, 6 km NW Narainghat (NHMB, BMNH) (*examined*).

ADDITIONAL MATERIAL

(In ANIC unless otherwise noted). **China**, *Hong Kong SAR*: Tai Po Kau forest, New Territories (Winney, R.) (BMNH); **India**, *Uttar Pradesh*: Lachiwala forest, Dehra Dun, Garwal District (Lobl, I); **Indonesia**, *South Kalimantan*: 17-46km W Batulitjin (Brown, W.L.) (BMNH, MCZC); *West Java*: Bogor (Imadate, G.) (BMNH); *Lampung*: Liwa, 5 °04'S 104°03'E (Harvey, M.S.); **Malaysia**, *Johor*: Kota Tinggi (Murphy, D.H.); *Pahang*: Tanjong Bunga (Murphy, D.H.); *Perak*: Sungei Simei Falls, Cameron Highlands (Jaccoud, T. & Marcuard, P.); *Pulau Pinang*: George Town Botanic Gardens (Waterfall) (Taylor, R.W. & Barrett, R.A.); *Sabah*: Poring Hot Springs (Burckhardt & Löbl) (BMNH); Sepilok Forest Reserve, nr. Sandakan (Taylor, R.W.); Umas Umas nr. Tawau (Taylor, R.W.); *Sarawak*: Kampong Segu, 20mi SW Kuching (Taylor, R.W.); Semengoh Forest Reserve, 11mi SW Kuching (Taylor, R.W.); nr. Miri (Hammond, P.) (BMNH); G. Mulu Natl Pk, RGS Expd Long Pala (Bolton, B.) (BMNH); Gn. Mulu Natl Pk (Hammond, P. & Marshall, J.E.) (BMNH); *Selangor*: Gombak, vic. of Univ. of Malaya Field Station, 9th Mile (Murphy, D.H.); Ulu Gombak Forest Reserve (Crozier, R.) (MCZC); Ulu Gombak, nr. Kuala Lumpur (Taylor, R.W.); upper Gombak Valley (Murphy, D.H.) (MCZC); upper Gombak Valley, nr. Kuala Lumpur (Taylor, R.W.); **Nepal**: 6km NW Narainghat (Wittmer, W. & Baroni Urbani, C.) (BMNH); **Philippines**, *Luzon*: Mt. Makiling, Lagunas (Dumont, K. & Morse, R.) (MCZC); **Singapore**: Nee Soon (Taylor, R.W.); **Thailand**: Khao Sabap Natl Pk (Löbl & Burckhardt) (BMNH).

DIAGNOSIS

This taxon can be separated from other species in the genus by the presence of well developed sculpturing in the posterior section of the scrobe, the large, closely spaced pits on the mesosomal dorsum, the parallel lateral surfaces of the postpetiole, the strongly angular petiolar node and the relatively long propodeal spines (length greater than 1.5 times the width of their bases). It is most similar to *M. granulata* but can be separated based on the longer and narrower propodeal spines.

WORKER DESCRIPTION

Sculpturing in posterior section of antennal scrobe well developed and distinct; sculpturing on dorsal surface of mesosoma consisting of large, closely spaced pits; propodeal spines relatively long and thin; dorsal surface of petiole in lateral profile uniformly convex, without distinct dorsal and posterior faces and forming a sharp angle with the anterior face; in dorsal view, postpetiole with the anterior and posterior regions approximately the same width (the

region connecting them either flat or weakly convex); postpetiole and gaster lacking erect hairs dorsally.

Measurements. *Worker* ($n = 10$) - CI 0.95-1.01; HL 0.40-0.46; HTL 0.20-0.23; HW 0.39-0.45; ML 0.41-0.47; PW 0.28-0.35; SI 0.49-0.61; SL 0.22-0.25.

COMMENTS

M. transfuga was described by Baroni Urbani (1977) from material collected in Bhutan and Nepal. It is now known to occur much more widely, being found from Nepal and India east to Hong Kong and the Philippines and south to Borneo and Java, Indonesia. While this is by far the broadest geographic range of any species in the genus, this species shows minimal geographic variation and there is no suggestion that more than one species is involved. The majority of records are from primary and secondary rainforests where workers have been found foraging in leaf litter or nesting in soil.

Recently, the species *granulata* was described from Vietnam by Dlussky and Radchenko (1990). This species is morphologically similar to *transfuga* and may be conspecific with it. For further discussion see under that species.

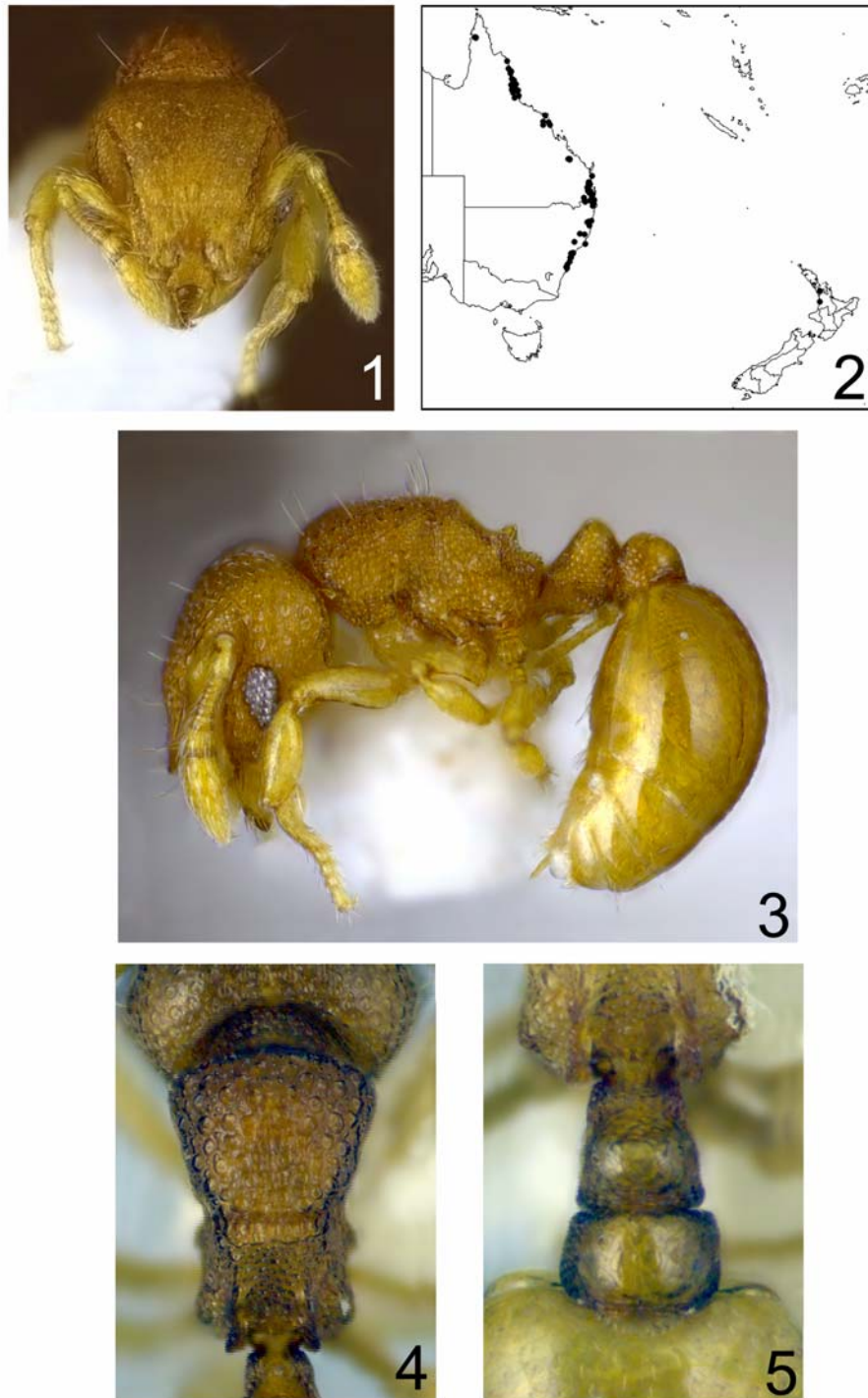
ACKNOWLEDGEMENTS

We would like to thank Stefan Cover (MCZC), Barry Bolton (BMNH), Roy Snelling (LACM) and Alex Radchenko (UASK) for making material in their care freely available; Bob Taylor for his extensive curation work in the ANIC; Frank Koch (Museum für Naturkunde, Berlin) for examining the types of *M. overbecki*; Ewa Slipinska for translating the *M. granulata* description, Alex Radchenko for information on the type locality of *M. granulata* and Charles Kugler for detailed notes on the sting apparatus. Comments on this manuscript provided by Gary Alpert, Roy Snelling, Phil Ward and an anonymous reviewer were most welcome.

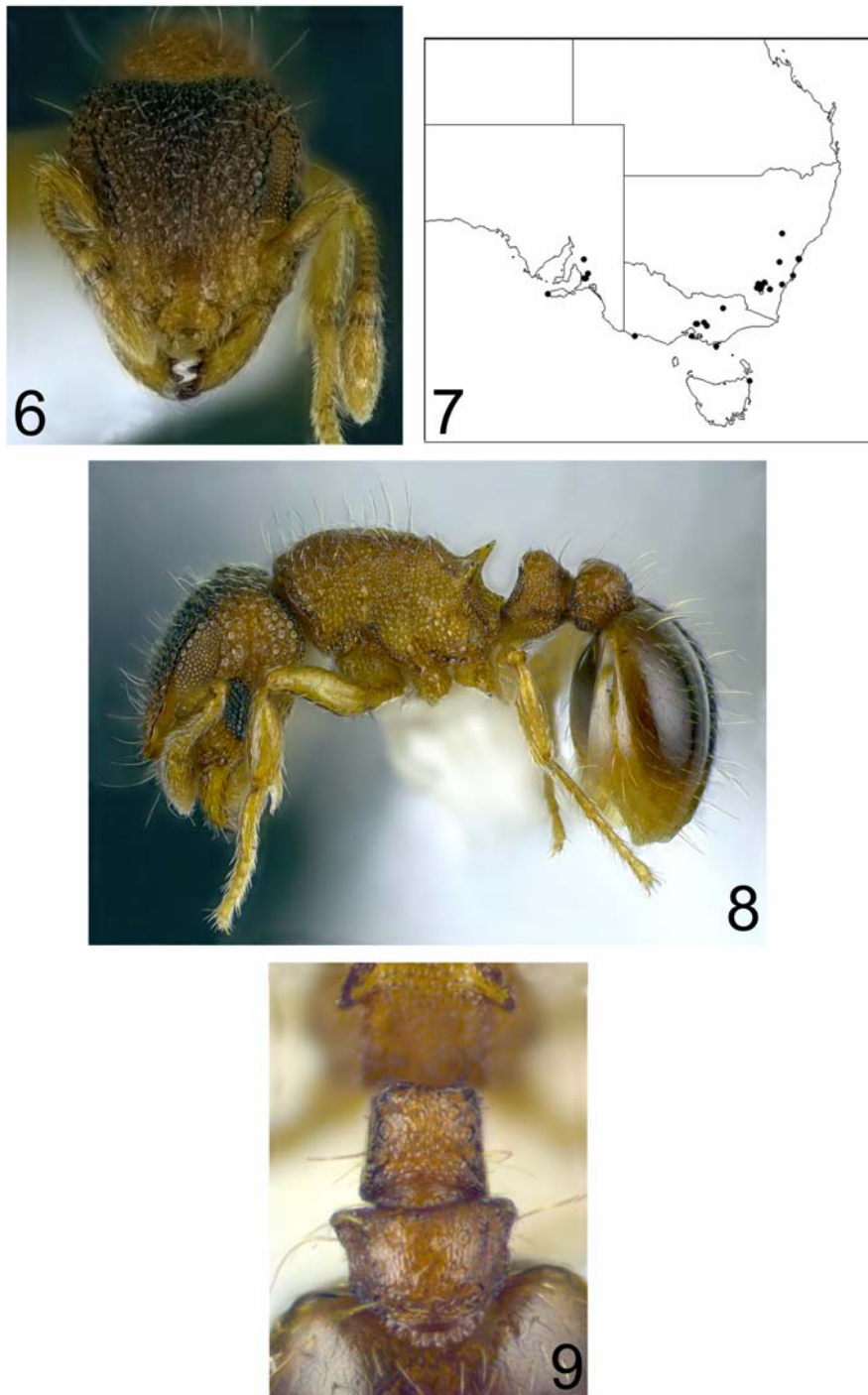
LITERATURE CITED

- Baroni Urbani, C.** 1977. Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel. Hymenoptera: Fam. Formicidae Genus *Mayriella*. *Entomologica Basiliensia* **2**: 411-414.
- Bolton, B.** 1994. *Identification guide to the ant genera of the world*. Harvard University Press, Cambridge, Mass., 222 pp.
- Bolton, B.** 2003. Synopsis and classification of Formicidae. *Memoirs of the American Entomological Institute* **71**: 1-370.
- Dlussky, G.M. & Radchenko, A.G.** 1990. The ants (Hymenoptera, Formicidae) of Vietnam. Subfamilies Pseudomyrmicinae and Myrmicinae (tribes Calyptomymecini, Meranoplini and Cataulacini). Pp. 119-125. In Akimov, I.A., Emelianov, I.G. & Zerova, M.D. (eds.). *News of Faunistics and Systematics*: 184 pp. Kiev (Naukova Dumka).
- Emery, C.** 1922. Hymenoptera. Fam. Formicidae. Subfam. Myrmicinae. [concl.] *In*: Wytsman, P. (Ed.) *Genera Insectorum, Fasc. 174C*. L. Desmet-Verteneuil, Brussels, pp. 207-397.
- Forel, A.** 1902. Fourmis nouvelles d'Australie. *Revue Suisse de Zoologie* **10**: 405-548.
- Hölldobler, B. & Wilson, E.O.** 1990. *The ants*. Harvard University Press, Cambridge, Mass., xii + 732 pp.
- Kugler, C.** 1997. Stings of some species of *Lordomyrma* and *Mayriella* (Formicidae: Myrmicinae). *Insecta Mundi* **11**: 193-199.
- Shattuck, S.O.** 1999. Australian Ants: Their biology and identification. *Monographs in Invertebrate Taxonomy* **3**: xi + 1-226.

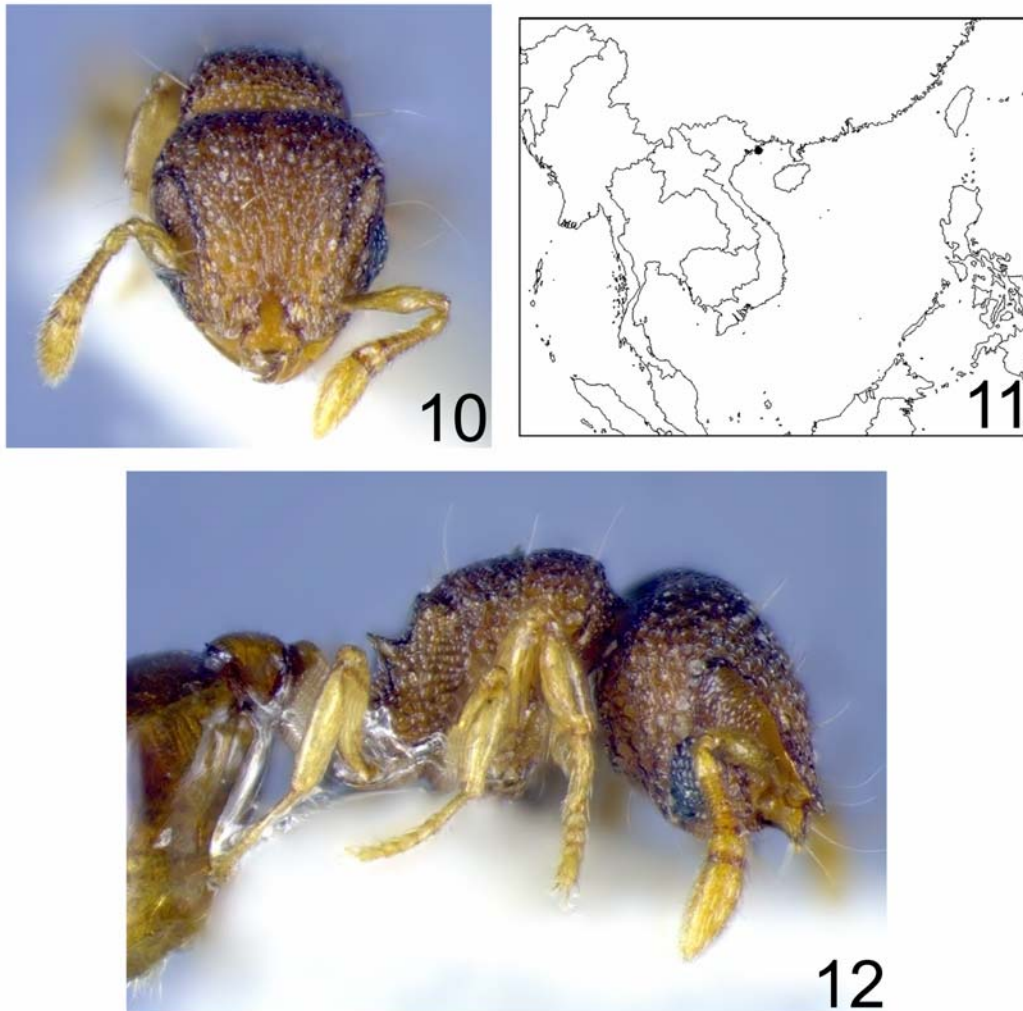
- Taylor, R.W.** 1961. Notes and new records of exotic ants introduced into New Zealand. *New Zealand Entomologist* **2**(6): 28-37.
- Taylor, R.W.** 1991. Nomenclature and distribution of some Australasian ants of the Myrmicinae (Hymenoptera: Formicidae). *Memoirs of the Queensland Museum* **30**: 599-614.
- Viehmeyer, H.** 1925. Formiciden der australischen Faunenregion. (Fortsetzung.) *Entomologische Mitteilungen* **14**: 25-39.
- Wheeler, G.C. & Wheeler, J.** 1973. The ant larvae of six tribes: second supplement (Hymenoptera: Formicidae: Myrmicinae). *Journal of the Georgia Entomological Society* **8**: 27-39.
- Wheeler, G.C. & Wheeler, J.** 1985. A simplified conspectus of the Formicidae. *Transactions of the American Entomological Society* **111**: 255-264.
- Wheeler, W.M.** 1935. The Australian ant genus *Mayriella* Forel. *Psyche (Cambridge)* **42**: 151-160.



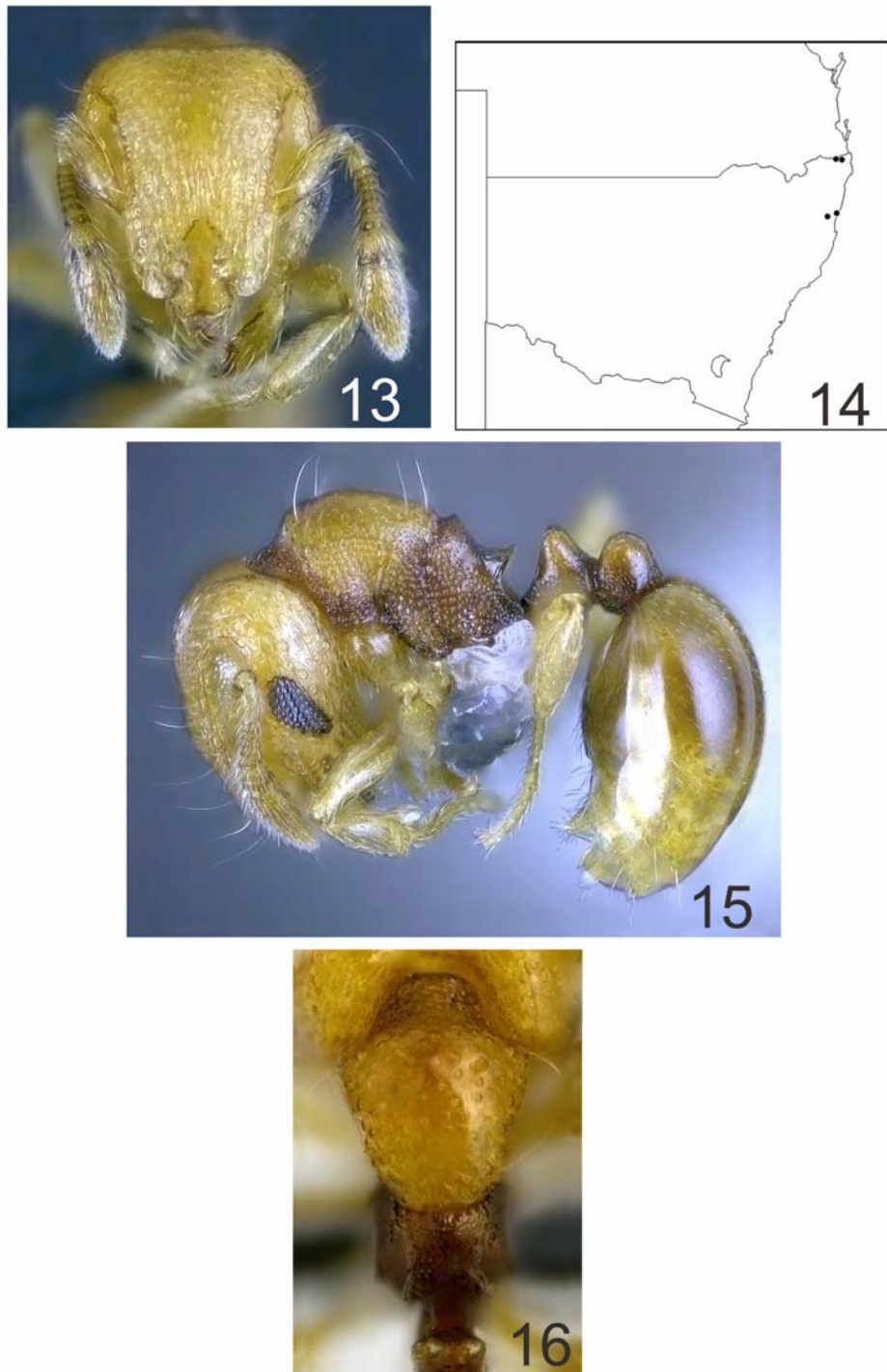
Figs. 1-5. *Mayriella abstinens* Forel (Hinchinbrook Is., Gayundah Ck., Queensland; ANIC Specimen Number 32-014526). 1, front of head; 2, distribution of material examined; 3, lateral body; 4, dorsum of mesosoma; 5, postpetiole in dorsal view.



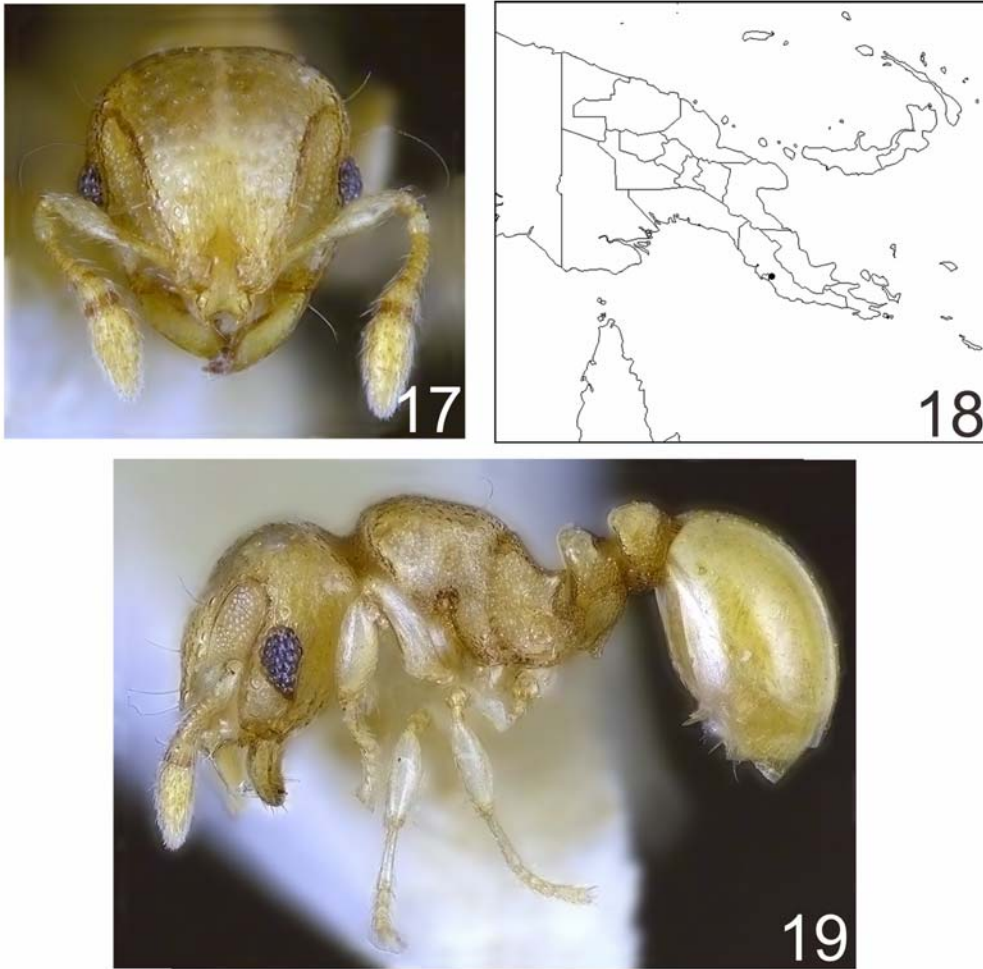
Figs. 6-9. *Mayriella ebbei* Shattuck & Barnett (Blundells Creek Rd, 3.5km E Piccadilly Circus, ACT; ANIC Specimen Number 32-014469). 6, front of head; 7, distribution of material examined; 8, lateral body; 9, postpetiole in dorsal view.



Figs. 10-12. *Mayriella granulata* Dlussky & Radchenko (holotype). 10, front of head; 11, distribution of material examined (type locality); 12, lateral body.



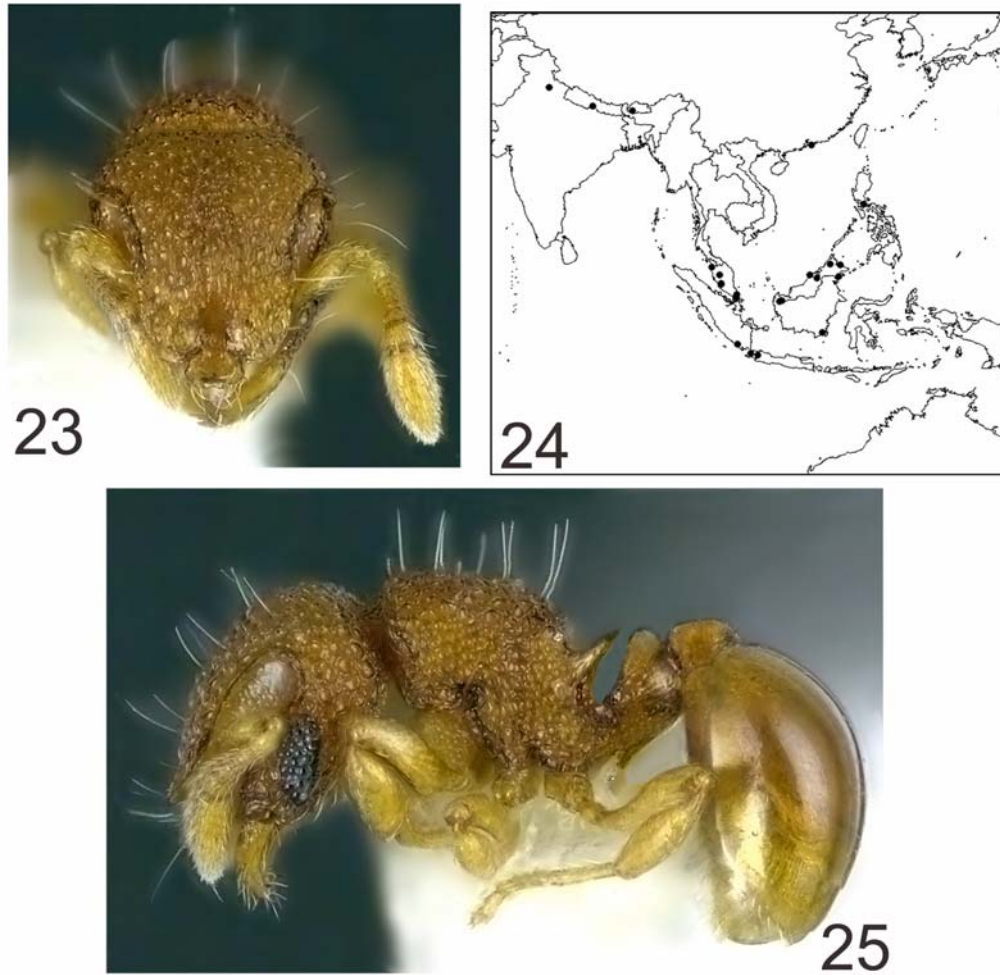
Figs. 13-16. *Mayriella overbecki* Viehmeyer (Brindle Creek, Wiangaree State Forest, New South Wales; ANIC Specimen Number 32-014041). 13, front of head; 14, distribution of material examined; 15, lateral body; 16, dorsum of mesosoma.



Figs. 17-19. *Mayriella sharpi* Shattuck & Barnett (holotype; ANIC Specimen Number 32-014459). 17, front of head; 18, distribution of material examined; 19, lateral body.



Figs. 20-22. *Mayriella spinosior* Wheeler (1km W Kuranda, Queensland; ANIC Specimen Number 32-014058). 20, front of head; 21, distribution of material examined; 22, lateral body.



Figs. 23-25. *Mayriella transfuga* Baroni Urbani (Sungei Simei Falls, Cameron Highlands, Malaysia; ANIC Specimen Number 32-001550). 23, front of head; 24, distribution of material examined; 25, lateral body