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## An illustrated review of the known peacock spiders of the genus *Maratus* from Australia, with description of a new species (Araneae: Salticidae: Euophryinae)

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### Abstract

The males of 11 species of the Australian salticid genus *Maratus* Karsch 1878 are depicted in new photographs that will allow living spiders to be readily identified. Of these species, 7 have been previously described, *Maratus harrisi* Otto and Hill, new species, is described herein, and 3 species remain unnamed at this time, pending the completion of related studies.

### Introduction

The small (males 3.8–6.0 mm) *Maratus* spiders of Australia are remarkable in that, as first described by Dunn (1957), the males rear and extend the flaps of their brightly-colored opisthosoma as they present a vivid display to courted females. Until recently (Waldock 1993, 2007), however, the popular impression for more than a century (Pickard-Cambridge 1974, Mascord 1970) was that they used these 'abdominal flaps' to fly or glide. Žabka (1991) first pulled several of these out of *Saitis* and into a separate genus, *Maratus*, described much earlier by Karsch (1878). Few species were known prior to the recent description of *M. mungaich* and *M. linnaei* (Waldock 1995, 2008). Subsequent observations by a number of field naturalists in Australia have begun to reveal many more species within this group, and a total of 11 distinct species photographed by one of the authors (J. Otto) are listed here. These include 4 previously unnamed species, and one of these will also be named. Specimens of the other 3 species are presently committed to other projects or programs that we expect to provide species group names in the near future.

Genus *Maratus* Karsch 1878

*Maratus amabilis* Karsch 1878 (type species of *Maratus*)

*Maratus amabilis* Karsch 1878

*Maratus amabilis* : Žabka 1987, 1991

*Maratus amabilis* : Waldock 1995, 2007, 2008

*Maratus amabilis* : Hill 2009, 2010a

*Maratus amabilis* : Otto and Hill 2010

*Maratus amabilis* : Hill and Otto 2011

*Maratus amabilis* : Platnick 2011

*Maratus amabilis* : Prószyński 2011

This little-known spider is known only from the Sydney area. We recently (Otto and Hill 2010) published an extensive series of photographs related to the courtship behaviour of this species. Two different males are shown in Figures 1 and 2.



**Figure 1.** Male *Maratus amabilis* from the Wildflower Garden reserve in the Sydney suburb of St. Ives. 1–2, 'Normal' positions with opisthosoma lowered and flaps retracted. 3–4, Display to a sighted female of a different *Maratus* species. Note the partial retraction of flaps in (4). 5, Detail of dorsal scalation of opisthosoma, with lateral flaps folded, showing posterior tufts of white setae above the anus and spinnerets (grey, at top), a characteristic of most if not all *Maratus*. 6, Detail of extended fan, showing dark lateral spots. 7, Rear view during display, showing the dark underside of the lateral flaps and the uniform colour of the ventral opisthosoma. Note the hyperextension of the femuro-patellar articulation of legs III (arrow).



**Figure 2.** Views of a second male *Maratus amabilis* from Ku-ring-gai Chase National Park near Sydney. **1–3**, Three views of spider with opisthosomal flaps retracted. **4**, Courting a female. **5**, Detail of scale cover on dorsal opisthosoma. **6**, Detail of scale cover on expanded and elevated dorsal opisthosoma (fan) showing pair of dark lateral spots on the flaps. This male had smaller lateral spots than the male shown in Figure 1.

A third male is shown mating with a female in Figure 3. Most female *Maratus* have never been described, and tend to be very similar in their cryptic colouration and general appearance. As in other *Maratus* that have been observed, this male elevated its opisthosoma, but did not extend the flaps, while mating.



**Figure 3.** Three views of a mating *Maratus amabilis* pair from the Wildflower Garden reserve in the Sydney suburb of St. Ives. The branch under which they were mating was rotated to improve visibility in (3).

***Maratus harrisi*** Otto and Hill, new species

The single, holotype specimen (♂) described here will be deposited in the Australian Museum in Sydney.

*Etymology.* This spider is named after its discoverer, Stuart Harris.

*Type locality.* Found at Boroomba Rocks (Namadgi National Park) south of Canberra, Australian Capital Territory, Australia at an altitude of 1248 m (22 OCT 2011, Stuart Harris collector, 35 33' 43.8" S, 148 59' 35.0" E). This species has not been found at any other locations.

*Description of holotype* (♂). A formal description is presented here in text, followed by a series of figures (4–10) that further illustrate the characteristics of this species:

Total *body length* is 4.8 mm. The *ocular quadrangle* (OQ) occupies 1/2 of the length of the carapace in dorsal projection, and is about 1.5 times as wide as it is long. Small posterior medial eyes (PME) are oriented laterally at the lateral margins of the OQ, each equidistant from the ipsilateral anterior (ALE) and posterior lateral eye (PLE). The OQ is bordered at the front and sides by a band of white scales, forming a C-shaped figure open to the rear. Just behind the front of this band is a narrow band of dark red-orange scales. Tufts of dark red-orange scales also encircle the lateral eyes. The *carapace* (2.5 mm long by 1.9 mm wide by 1.5 mm high) has a narrow marginal band of white scales, and a few scattered white and dark red-orange scales on its postero-dorsal surface. Apart from these markings, the carapace is black and glabrous.

The *clypeus* and *chelicerae* are brown and glabrous. The *endites*, *labium*, *sternum*, and *coxae* are brown, with many white setae.

The dorsal *opisthosoma* bears a pair of relatively thin lateral, hemi-circular flaps that can be extended or folded down along the sides of the opisthosoma, each about 1/2 the length of the opisthosoma. When lowered to a normal position, with folded flaps, the opisthosoma is 2.3 mm long and 1.7 mm wide. With fully extended flaps, the opisthosoma is 4.0 mm wide. The opisthosoma, including flaps, is carpeted with a distinctive pattern of dense, colored and iridescent scales (*scalae* after Hill 2010b), with many fine black setae interspersed. Except for the flaps, the background colour is based on the presence of a dense array of light blue to blue-green to purple iridescent scales, the specific colour varying according to the direction of incident light and the relative direction of the observer. Against this background there are three linear figures comprised of dark scales, the median figure consisting of an acute 'Λ' shape pointed forward, and three corresponding large black spots at the rear, there separated by bands of white scales. Each lateral linear figure consists of an acute 'V' shape, with detached center line, pointed to the rear. The three black linear figures are margined with bright red-orange scales at the front. There is a broad antero-dorsal marginal band of white scales and other setae, including many long, white, blunt-tipped setae that appear as bristles projecting from the antero-dorsal opisthosoma. Towards the rear, on either side of the acute 'Λ' shaped median figure, and connecting this figure to each respective lateral figure, is a conspicuous spot or patch of unusually large, blunt-tipped, ivory white setae that project from the surface. Each flap, or extensible lobe, is margined posteriorly (above, when raised) with long white setae, interrupted by one black spot. The postero-dorsal (above, when raised) 2/3 of each flap bears a dense field of light yellow-green to light green or olive drab iridescent scales, the observed colour again dependent on the angle of incident light and the respective angle of the observer. The antero-dorsal (below, when raised) 1/3 of each flap is covered with black scales. Behind the central plate of the dorsal opisthosoma, and ventrally, the opisthosoma is generally brown with many white to brown setae. Above the grey setae of the spinnerets, and just above the anus, are conspicuous tufts of thick white setae, visible from above, a feature found generally in *Maratus*.

The *legs* are generally brown in color with many white setae and macrosetae. Each femur bears, dorsally, 3 large, curved setae (or *macrosetae*). Leg III, which has a major role in both display and in jumping, is the longest, with a dark black-brown anterior femoral surface that contrasts with the other legs when viewed from the front, bright white setae covering the tarsus, and dark black setae covering the metatarsus, thus visually setting off the bright tarsus. Legs I and II are about the same length, shorter than legs IV. There are at least 6 distal-projecting macrosetae on the lateral and ventral surfaces of metatarsi I and II, as well as many distal macrosetae, forming 'spurs', and several proximal macrosetae, on metatarsi III and IV. There are also much longer macrosetae oriented distally on the tibiae.

The *pedipalps* are similar to those described for other *Maratus* (e. g., Waldock 1995, 2008), covered dorsally, and ventrally on the cymbium, with many large white to ivory setae. On the left pedipalp a large, crescentic band of fixed or heavy, dark cuticle (embolus) curves laterally, when viewed from above or from a distal direction, in a counter-clockwise direction to join two smaller processes in supporting the projecting tip of the embolus. Near the retrolateral tibial apophysis (RTA), the margin of the cymbium is dark and sclerotized. The RTA is slightly bent, rounded distally, and flattened laterally.

*Diagnosis.* *M. harrisi* males can be readily distinguished from other known species of *Maratus* by the presence of two ivory scale patches across the dorsal opisthosoma, as well as other elements of the opisthosomal colouration. Many other features, including the white setae on the tarsi of the elongated legs III, and even the detailed structure of the pedipalps, are similar to those seen in some other *Maratus* species and members of related euophryine genera (e. g., *Lycidas* Karsch 1878, *Saitis* Simon 1876). The placement of macrosetae has not been described in other *Maratus*, and thus cannot be used as a diagnostic feature at this time. It is expected that a future reviser of these genera will examine these features in more detail, on a comparative basis.

Available descriptions for the species assigned to these genera vary in the characters that they describe, and drawings tend to be dependent on the style of the author. Fortunately the vivid colour patterns of the males presently included in *Maratus* are distinctive and can be used reliably to identify these spiders in the field. There are two likely 'sister species groups' (*pavonis* + *splendens*, *mungaich* + Darlington's) within the genus *Maratus*. With respect to its relatively broad opisthosoma and the shape of the flaps, *M. harrisi* resembles *M. vespertilio*, but the colouration is quite different.



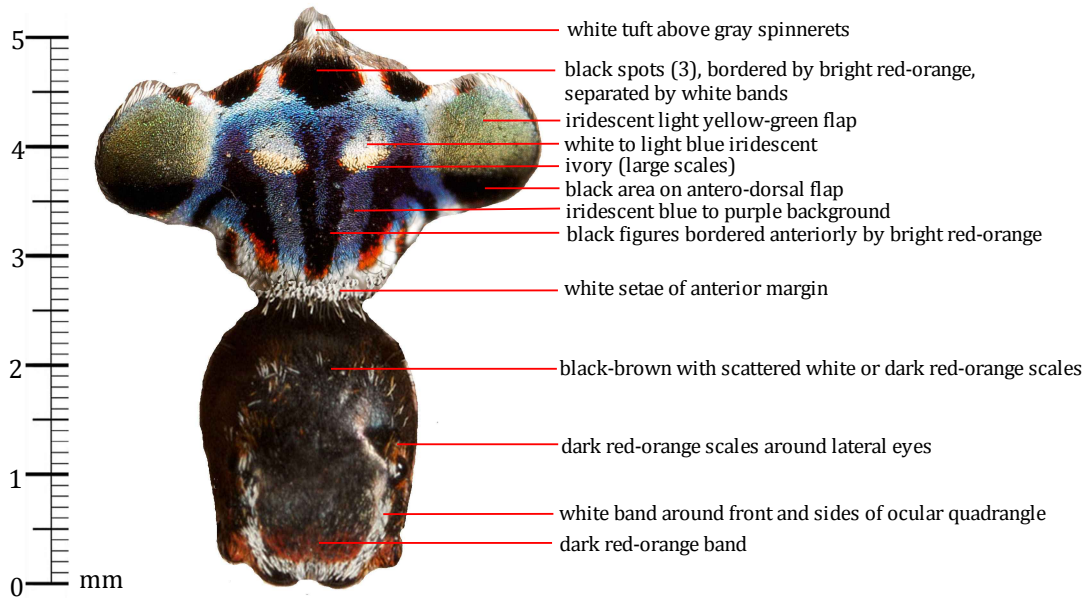
**Figure 4.** Dimensions of male *Maratus harrisi*, as viewed from above. The carapace is 2.5 mm long by 1.9 mm wide. The colourful opisthosoma is 2.3 mm long, with a retracted width of 1.7 mm. Total body length 4.8 mm.



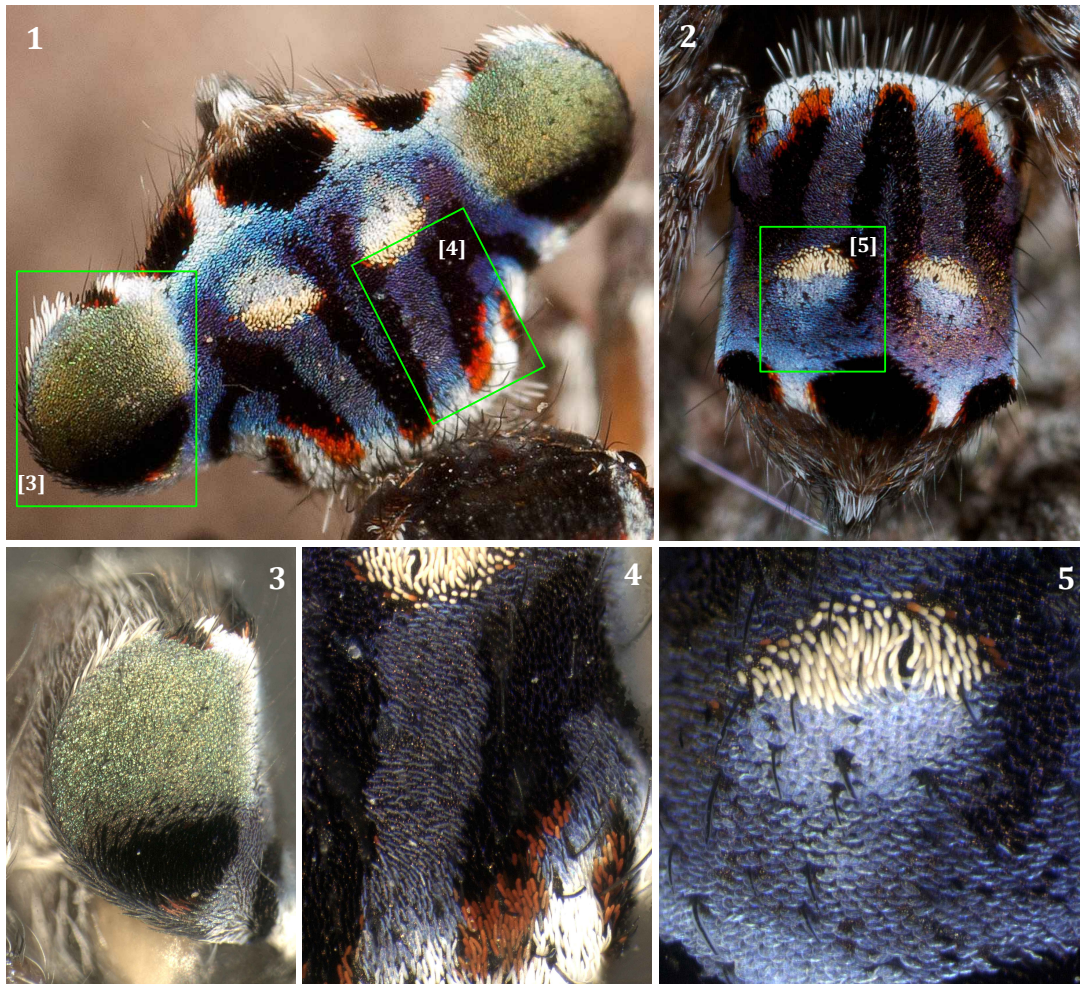
**Figure 5.** *Maratus harrisi* male with folded opisthosomal flaps. 1–3, Oblique and lateral views. Metatarsal macrosetae can be seen on all legs. Patches of red-brown setae are above the ALE, and below the PLE. 4, Frontal view, showing shiny, glabrous clypeus and chelicerae. 5, Postero-dorsal view of carapace, showing scattered white and dark red-orange scales on the shiny black carapace. Thick, white pencil-like setae project anteriorly from the anterior-dorsal margin of the opisthosoma.



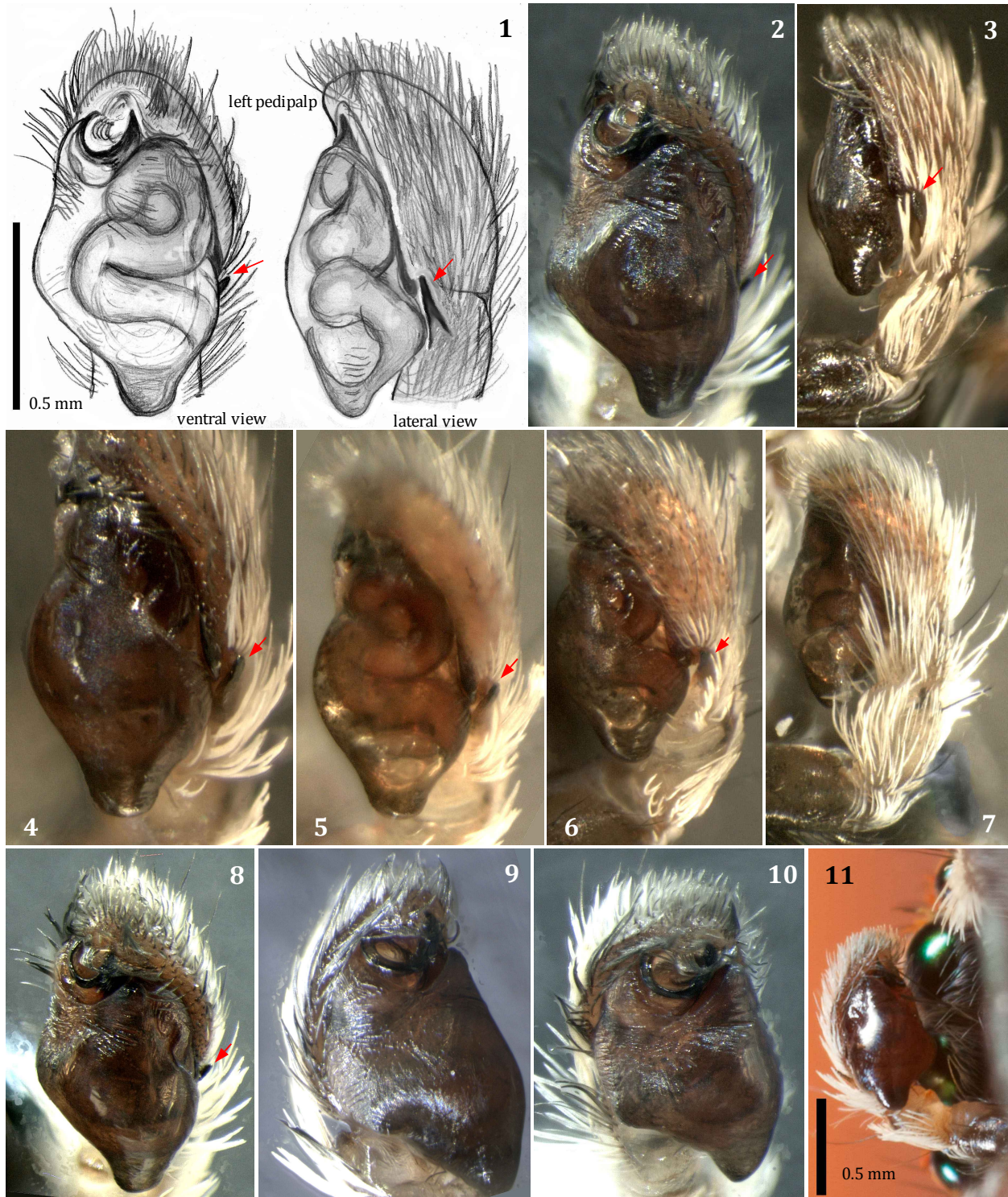
**Figure 6.** Four views of male *Maratus harrisi* displaying to a *Maratus* female of a different species. Note the elevation of the opisthosoma and extension of the lateral opisthosomal flaps to form a fan, as the pedipalps are held in front of the chelicerae. In (2) and (3), the fan was tilted to the side.



**Figure 7.** Colour guide to dorsal patterns of the *Maratus harrisi* holotype, with flaps extended.



**Figure 8.** Detail views of scales associated with the dorsal opisthosoma of *Maratus harrisi*. Numbered inset rectangles in 1–2 correspond to images 3–5. Scales form a dense carpet over all areas. A unique group of long, white to ivory scales rises above the iridescent background (5, at top). Depending on the direction of incident and reflected light, the colour of the iridescent blue background scales varies from light blue to blue-green or purple. Similarly, the dense scales of the lateral flaps (3) vary from light yellow-green to olive-drab. Dark black scale fields form distinct characters and separate the areas of colour.



**Figure 9.** Left (1–10) and right (11) pedipalps of holotype male *Maratus harrisi*. **1**, Reference drawing of ventral and lateral views of the left pedipalp, showing general features of external structure, as well as internal structure visible in the fixed specimen. The RTA (indicated by red arrows in 1–6, 8) is slightly bent, rounded at the tip, and usually concealed under the many ivory-white setae of the pedipalp, appearing thin in the ventral view and wider in the lateral view. **2**, Ventral view. **3**, Lateral view. **4**, Oblique (lateral to ventral) view, showing flattened RTA and dark, sclerotized cuticle of the margin of the cymbium, to the left of the RTA. **5**, Similar oblique (lateral to ventral) view showing internal structures visible in the preserved specimen. **6–7**, Successively more lateral views showing internal internal structure. **8–10**, Ventral view (8), compared with oblique proximal-ventral view (9) and oblique distal ventral view (10), to convey three dimensional structure of embolus. **11**, Living spider brushing its AME with the right pedipalp, to show the natural brown color of the tegulum. Most photographs shown here were composited to increase depth of field. See Edwards (2003) for a discussion of the male pedipalp of euophryine salticids.





**Figure 10.** Other views of the male *Maratus harrisi* holotype. **1**, Lateral view. **2**, Posterior view. When the opisthosoma was raised to a near-vertical position and expanded as shown here, the pedicel was greatly extended, lifting the broad fan above the prosoma of the spider. Note the thin lateral flaps. **3**, Ventral view. The lateral flaps (arrows) were folded against the sides of the opisthosoma when not in use. **4**, Detail of the face of this spider, as viewed from below, as setae associated with the right pedipalp were brushed against the right AME. The segments of the right pedipalp, beginning with the coxa or endite at the bottom, can be clearly seen. Note also the bright green eyes, and the lack of setae on the clypeus and chelicerae.

*General note on observed colours.* Since salticid opsins include sensitivity in the UV range (DeVoe 1975, Blest *et al.* 1981, Li and Lim 2005, Lim and Li 2006, Koyanagi *et al.* 2008), the UV reflectance of these patterns (not indicated) may also be important. Colours of the iridescent (bearing *structural colour*) scales vary with respect to directions of both the incident light and the direction of the observer. Some published descriptions based on the colour of specimens in alcohol (*e. g.*, the *Saitis speciosus* of Pickard-Cambridge 1874) are also quite different from the colours exhibited by living specimens (Hill and Otto 2011, p. 36).

***Maratus linnaei*** Waldock 2008*Maratus linnaei* Waldock 2008*Maratus linnaei* : Hill 2009, 2010a*Maratus linnaei* : Platnick 2011

Waldock (2008) described male and female *M. linnaei* from specimens collected since 1995 at Two Peoples Bay Nature Reserve in Western Australia, where the spiders in Figures 11–12 were found.



**Figure 11.** *Maratus linnaei* from Two Peoples Bay Nature Reserve in Western Australia. **1**, Front of male, showing the visual continuity between the white lateral stripes of the carapace and the extended pedipalps, which contrast with the dark chelicerae of this species. **2–3**, Lateral views of resting male. **4–6**, Males displaying to sighted females with elevated opisthosoma (fan), and legs III outstretched. Note the prominent fringes of dark setae tipped with white on the dorsal femora and tibiae of legs III. **7**, Male with RIII raised and extended in a signalling position. **8**, Male (left) displaying to female at close quarters, with elevated legs III.



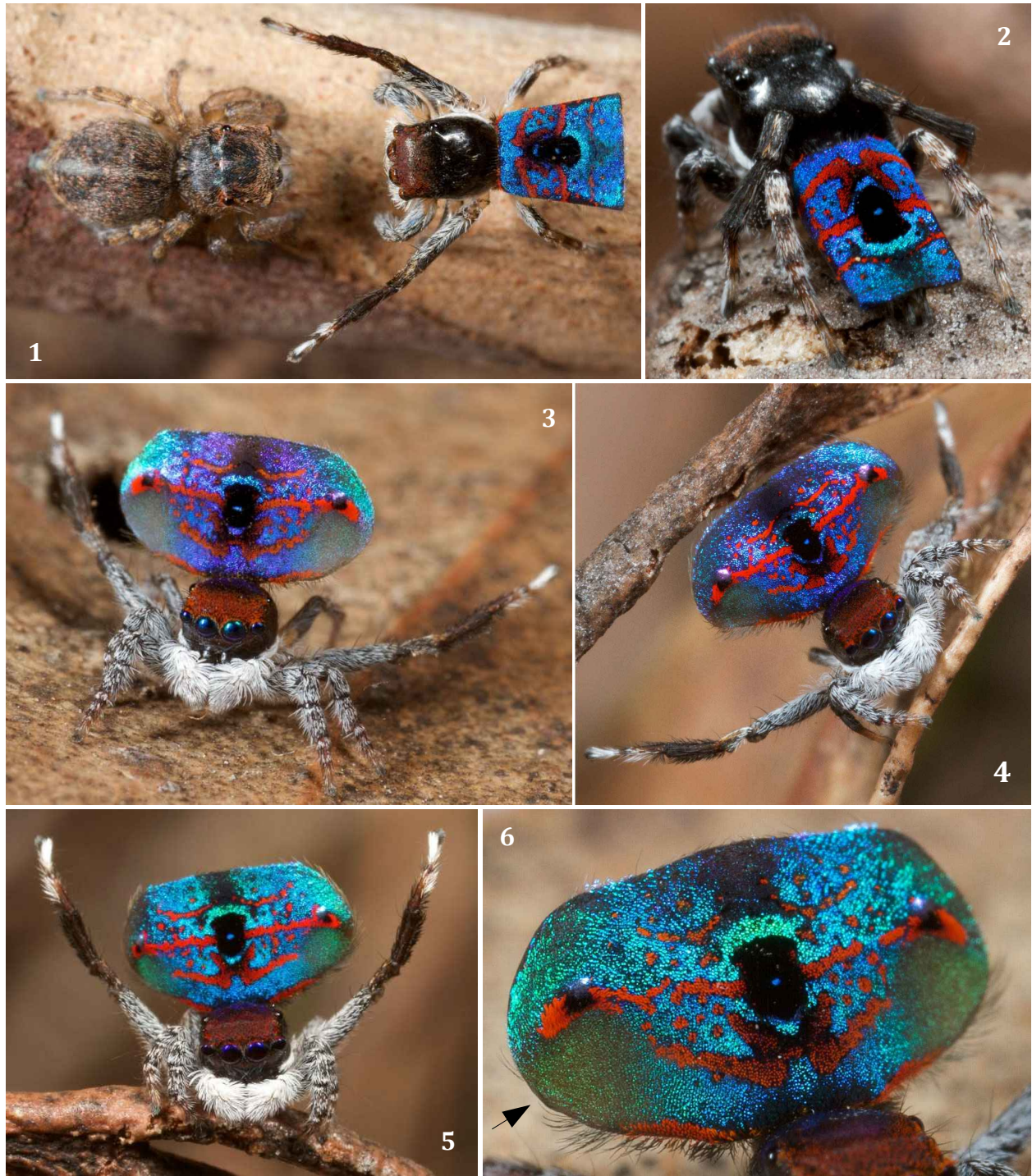
**Figure 12.** *Maratus linnaei* from Two Peoples Bay Nature Reserve in Western Australia. **1**, Detail of posterior opisthosoma. The tufts of white setae above the anus (arrow) are found in all *Maratus*. While there were some darkened patches next to the electric blue crescent at the rear, this was not as dark as described. **2**, Lateral view of opisthosoma. Two antero-lateral tracts of long, tan setae (arrow) appeared to flare out during display, but the 'flaps' of the fan remained firmly attached to the sides of the opisthosoma. **3–8**, Dorsal opisthosoma of 6 different males, to show some of the subtle variation in pattern. Note the distinct anterior 'herringbone' pattern. There is considerable variation in the details of this color pattern. The 'pink-blue' stripes in the original description were blue in our specimens, which also had prominent red-orange stripes not in that description. **9**, Female feeding on an ant, a habit found in other euophryine salticids (e. g., Edwards *et al.* 1974, Li *et al.* 1996).

***Maratus mungaich* Waldock 1995***Maratus mungaich* Waldock 1995 : 2007, 2008*Maratus mungaich* : Hill 2009, 2010a*Maratus mungaich* : Platnick 2011*Maratus mungaich* : Prószyński 2011

This colourful spider with very large flaps is restricted to the extreme southwestern corner of Western Australia (Waldock 1995, ALA 2011). The spiders shown here (Figures 13–14) are from the Mt. Dale area east of Perth.



**Figure 13.** Opisthosoma of male *Maratus mungaich*. **1–3**, Rear views, showing three degrees of expansion of the lateral flaps. When folded under the spider (1), these can meet at the midline. **4**, Detail of dorsal opisthosoma of spider with retracted flaps. **5**, Detail of the same spider with extended flaps. The blue-green to blue to purple color of the iridescent background scales (color varies according to direction of incident light source and observer) contrasts with the dark center markings and the bright, irregular red to red-orange transverse figures. Note the small black patch of scales, partially enclosed by red, at the center of the lateral flap.



**Figure 14.** *Maratus mungaich* from the Mt. Dale area east of Perth, Australia. **1**, Male (right) approaching a female. **2**, Rear view of male with retracted flaps. **3–5**, Males displaying to sighted females. Note the many dark setae on the tibia and proximal metatarsus, contrasting with the white setae of the distal metatarsus and tarsus, of leg III. **6**, Detail of expanded and elevated opisthosomal fan. The shape of the black patch at the center, and dull green to olive green areas (arrow) at the antero-lateral corners of the flap are characteristic of this species.

***Maratus pavonis*** (Dunn 1947)

*Habrocestum opalescens* Hogg 1900, *nomen nudum*  
(see Hill and Otto 2011, p. 35)

*Saitis pavonis* Dunn 1947 : 1957

*Maratus pavonis* : Žabka 1991

*Maratus pavonis* : Waldock 1993, 2007, 2008

*Maratus pavonis* : Hill 2009, 2010a

*Maratus pavonis* : Otto and Hill 2010, 2011b

*Maratus pavonis* : Hill and Otto 2011

*Maratus pavonis* : Platnick 2011

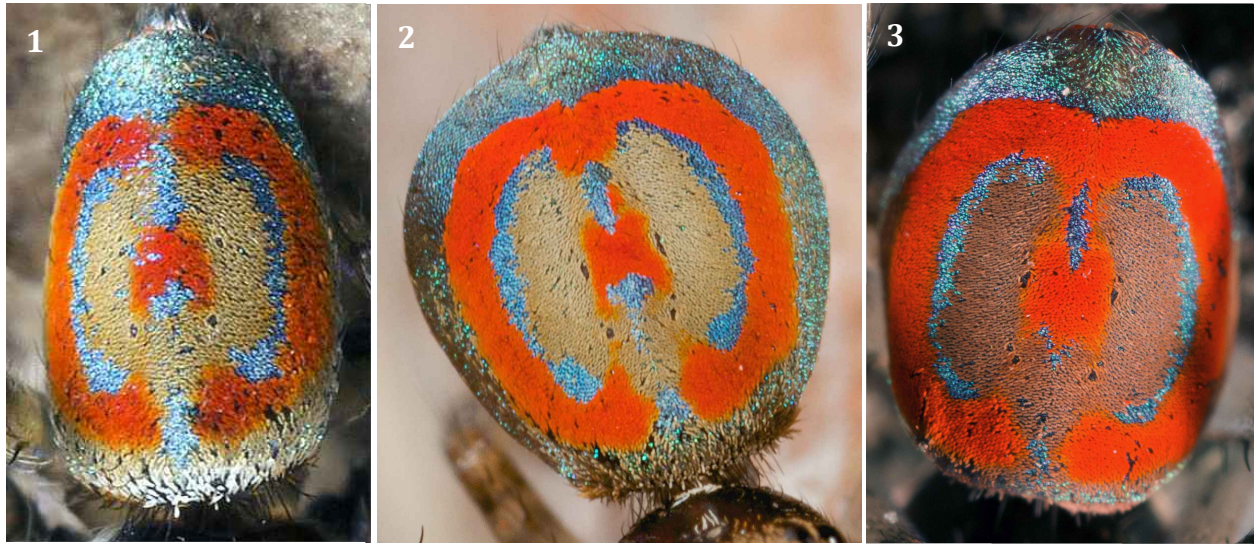
*Maratus pavonis* : Prószyński 2011

*Maratus pavonis* : Girard *et al.* 2011

This species, Dunn's original *pavo* or Peacock Spider, is widely distributed across the southernmost reaches of Australia, from Tasmania and Victoria in the east to the southwestern corner of Western Australia in the west (ALA 2011). Dunn originally (1947) separated this species from *M. splendens* by its lack of the large marginal flaps, although larger flaps are indeed found in some populations of *M. pavonis* (Figures 15–16). We recently (Hill and Otto 2011) published a study of the male courtship display, and a comprehensive discussion of the differences between the two species is presented there.



**Figure 15.** Male *Maratus pavonis*. **1**, Male from Stanley, Tasmania, displaying to a female. This male did not have opisthosomal flaps, and legs were darker than those of western males. Femora, and all of leg III, were also dark-blue iridescent. A similar male from the Canberra area had black stripes on the anterior femora (Harris 2011). **2–3**, Male from Western Australia with extended flaps, displaying to female (**2**), and with flaps folded (**3**). **4–6**, Three views of a different male from Western Australia, with brighter red-brown scales on the carapace, and dull-orange instead of tan scales on the dorsal opisthosoma.



**Figure 16.** Comparison of fan of a Tasmanian male *Maratus pavonis* (1) with two Western Australian males (2–3), showing some of the variation in colour found in this species. The bright red-orange 'parents' surrounding a central 'butterfly' is a constant feature. In (3), the flaps of the fan are retracted.

### *Maratus splendens* (Rainbow 1896)

*Attus splendens* Rainbow 1896

*Saitis splendens* : Simon 1901a

*Saitis splendens* : Dunn 1947

*Saitis rainbowi* : Roewer 1951 (replacement name)

*Maratus splendens* : Žabka 1991

*Maratus rainbowi* : Waldock 2008

*Maratus rainbowi* : Hill 2009, 2010a

*Maratus rainbowi* : Platnick 2011

*Maratus rainbowi* : Prószyński 2011

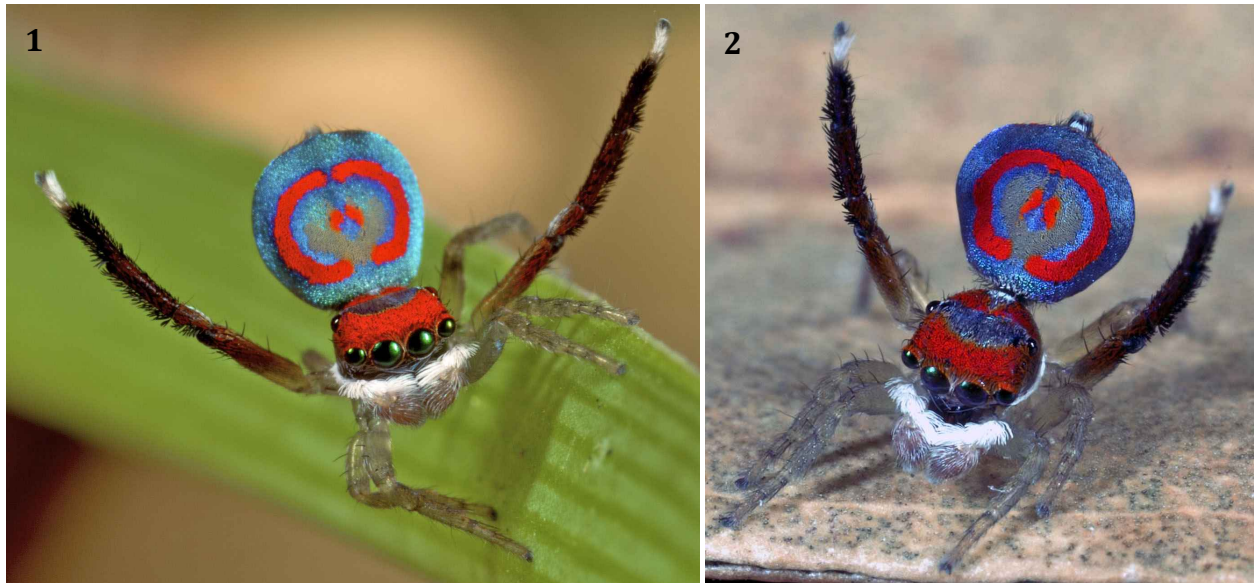
*Maratus splendens* : Hill and Otto 2011

*Maratus splendens* : Girard *et al.* 2011

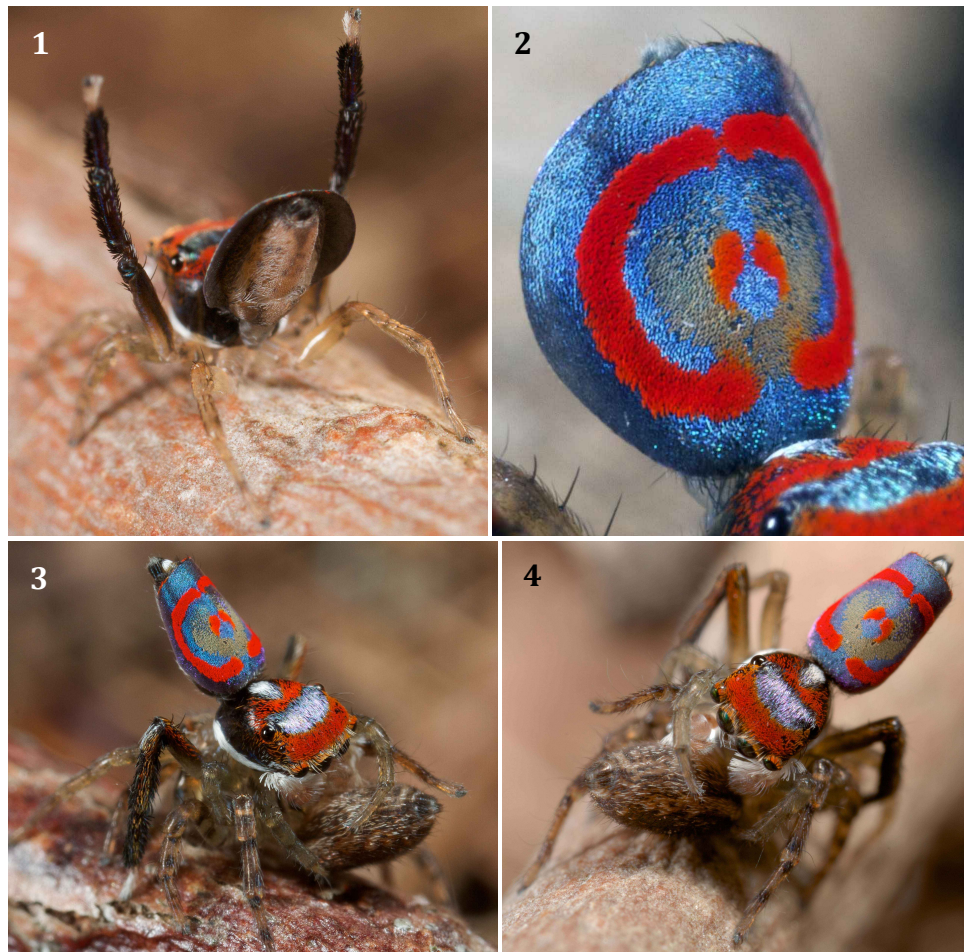
This close relative of the widely-distributed *M. pavonis* has only been found in the vicinity of Sydney (ALA 2011, Hill and Otto 2011). The bright red color on the dorsal carapace and crescentic band of iridescent blue to black scales between the PME serve to identify *M. splendens* (Figures 17–19).



**Figure 17.** Male *Maratus splendens* from the vicinity of Sydney, Australia, with flaps in normal, retracted or folded position. Note the crescent of iridescent scales between the PLE, surrounded by bright red scales.



**Figure 18.** Two male *Maratus splendens* from the vicinity of Sydney, Australia. Each male was displaying to a sighted female with extended fan, outstretched legs III, and the white anterior fringe of the pedipalps aligned in front of the chelicerae. Note the relatively transparent legs I, II and IV.



**Figure 19.** *Maratus splendens* from the Wildflower Garden reserve in the Sydney suburb of St. Ives. **1**, Rear of male displaying to female, with raised legs II and extended fan. **2**, Detail of scales on fan. Note the uniform blue to blue-green iridescent scales around the entire margin. **3–4**, Two views of mating pair, with the flaps retracted and the opisthosoma elevated.



We recently (Hill and Otto 2011) published a comparison of the courtship display of males of this species with *M. pavonis*. *M. splendens* is the smallest *Maratus* that we have found to date (Figure 20). Males that we measured recently (n=11) ranged from 3.8 to 4.0 mm in length, from the front eye row to the posterior tip of the white anal tufts of setae.



**Figure 20.** Male *Maratus splendens* from the Sydney area (at right), facing a larger and more robust male *M. pavonis* from Western Australia.

### ***Maratus vespertilio*** (Simon 1901b)

*Saitis vespertilio* Simon 1901b

*Saitis vespertilis* : Dunn 1947 (misspelled)

*Maratus vespertilio* : Žabka 1991

*Maratus vespertilio* : Waldock 2008

*Maratus vespertilio* : Hill 2009, 2010a

*Maratus vespertilio* : Platnick 2011

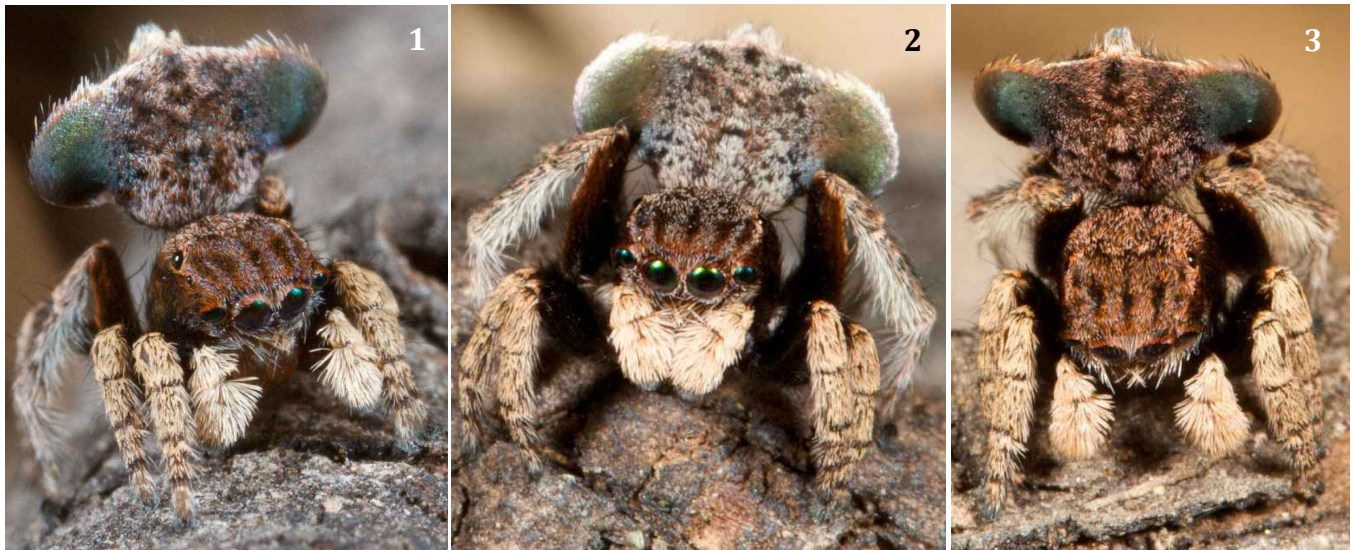
*Maratus vespertilio* : Prószyński 2011

*Maratus vespertilio* : Otto and Hill 2011a, 2011b

This cryptic and little-known species actually has a wide distribution across southern Australia (ALA 2011, Otto and Hill 2011a). We have recently (Otto and Hill 2011b) studied formal male-male contests in this species, contests that also make use of the elevated and extended opisthosoma. Spiders recently observed are shown here (Figures 21–23) to illustrate some of their diversity in colouration.



**Figure 21.** *Maratus vespertilio*. **1**, Male with folded flaps from the Stirling Ranges in Western Australia. **2**, Rear view of male from Whitton, New South Wales, also with folded flaps. **3**, Mating pair from Whitton. Note the broad middorsal band of lighter setae on the opisthosoma of the female, at right.



**Figure 22.** Male *Maratus vespertilio* from Whitton, New South Wales, displaying with elevated and extended opisthosoma. These spiders come in many varied hues, with most iridescent scales occurring on the lateral flaps.

***Maratus volans*** (O. Pickard-Cambridge 1874)

*Salticus volans* O. Pickard-Cambridge 1874

*Maratus amoenus* Karsch 1878 (synonymized by Žabka 1991)

*Saitis volans* : Simon 1901a

*Saitis volans* : Ridewood 1913

*Saitis volans* : Butler 1933

*Saitis volans* : Dunn 1947

*Saitis volans* : Mascord 1970

*Saitis volans* : Prószyński 1984

*Maratus amoenus* : Žabka 1987

*Maratus volans* : Žabka 1991

*Maratus amoenus* : Waldock 1995

*Maratus volans* : Waldock 2007, 2008

*Maratus volans* : Nieuwenhuys 2008

*Maratus volans* : Hill 2009, 2010a

*Maratus volans* : Otto and Hill 2010, 2011a

*Maratus volans* : Platnick 2011

*Maratus volans* : Prószyński 2011

*Maratus volans* : Girard *et al.* 2011

The so-called 'flying spider' is the best-known *Maratus*, found most often near the coast of New South Wales. We have it from Ku-ring-gai Chase National Park near Sydney, Seal Rocks, on the coast about 80 km NE of Newcastle, and Coolah Tops, an inland site about 200 km NW of Newcastle. It has also been photographed recently at Warburton, 70 km east of Melbourne, and near Brisbane. Dated Queensland Museum records (R. Raven, pers. comm.) list *M. volans* from southeastern and central Queensland, as well as from Thornton Peak in tropical North Queensland. A series of photographs that illustrate the vivid display of the male have already been published (Hill 2009); here we add some more recent reference images (Figure 23). Girard *et al.* (2011) have published a preliminary analysis of this display, which includes vibratory movements in addition to visual signals.



**Figure 23.** *Maratus volans* from Ku-ring-gai Chase National Park near Sydney. **1–2,** Males with opisthosomal flaps folded around the sides of the opisthosoma. **3–6,** Males displaying to a sighted female, with large extended and elevated opisthosomal fan, and extended legs III. **7–8,** Mating pairs.

The last three species in this series are presented with the anticipation that they will be given species group names in the near future. Each has distinct characters that make it easy to recognize.

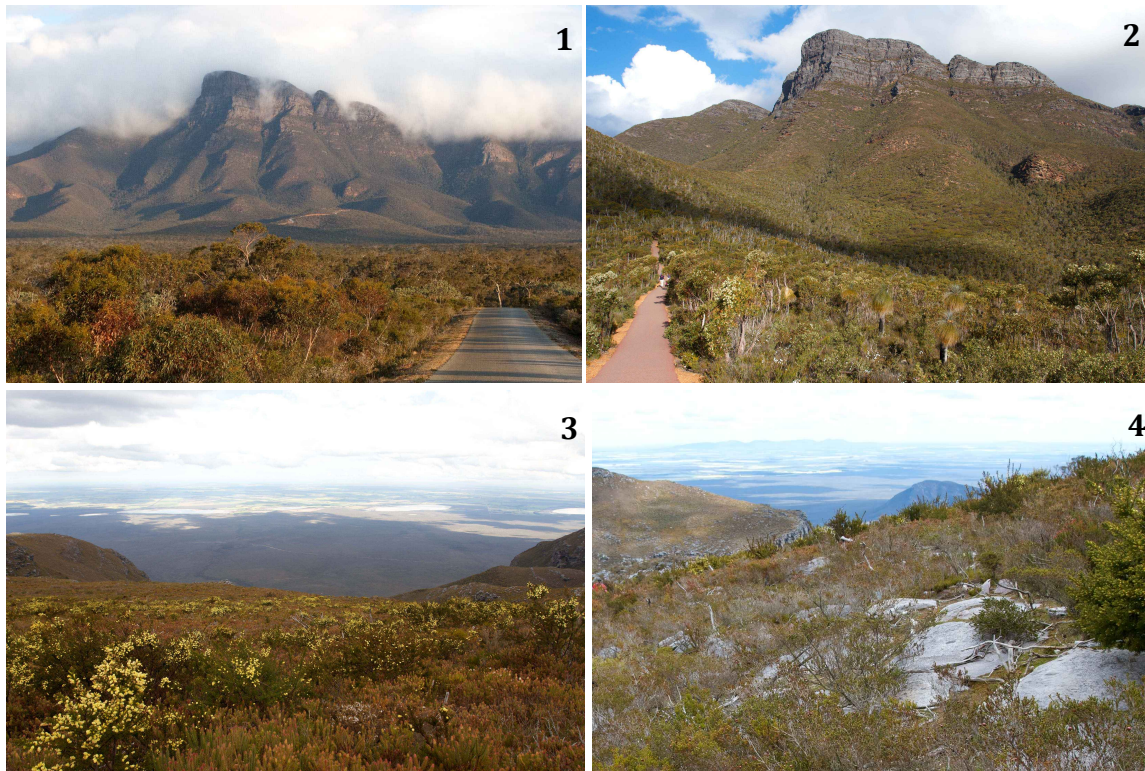
***Maratus species A***

*Maratus* sp. Žabka 1991 (Figure 20, p. 33, not #138, p. 40)

*Maratus* sp. Hill and Otto 2011

This is a species with a restricted range in Western Australia that we have previously called *Darlington's Peacock Spider* (Hill and Otto 2011, p. 39–40, MCZ acquisition numbers 101295 and 101302) in honor of its discovery by the naturalist-explorer Dr. Philip Jackson Darlington Jr., as part of the Harvard Pemberton and Margaret River Expeditions to Western Australia in 1931.

It is similar to *M. mungaich* in many respects, and is clearly related, but can be easily separated from that species by a number of defining characters. For example, the transverse band of red scales associated with the dorsal opisthosoma of *M. mungaich* has an 'H' shape at the center (Figures 13–14), but this band is wide with black scales at the center in *Maratus* sp. *A*. Both have a patch of black scales at the center of each flap, but this is much smaller in *M. mungaich*. Both have a defining patch of black scales, with a small blue center, on the mid-dorsal opisthosoma, but these patches differ in shape. Legs III of *Maratus* sp. *A* are also relatively uniform in colour, while the white distal metatarsus + tarsus of *M. mungaich* contrasts with the dark brown to black patella + tibia + proximal metatarsus. *Maratus* sp. *A* is also the largest *Maratus* that we have measured: 8 males ranged from 5.7 to 6.0 mm in body length. Smaller male *Maratus* that we have measured include *M. amabilis* (4.2 mm, n=2), *M. linnaei* (4.0–4.7 mm, n=8; 3.6 mm according to Waldock 2008), *M. mungaich* (4.6–4.8 mm, n=8; 4.8 mm according to Waldock 1995), *M. volans* (4.5 mm, n=1) and *Maratus* sp. *B* (4.7 mm, n=1). The photographs presented here (Figures 24–27) depict spiders found by one of us (J. Otto) just below the summit of Bluff Knoll in the eastern Stirling Ranges. The only other known location for this species is nearby Ellen Peak where a specimen was collected at comparable altitude and in similar habitat (Framenau 2007; M. Rix, WAM, pers. comm.). The collecting locations for the specimens that Darlington collected on his expeditions are unknown.



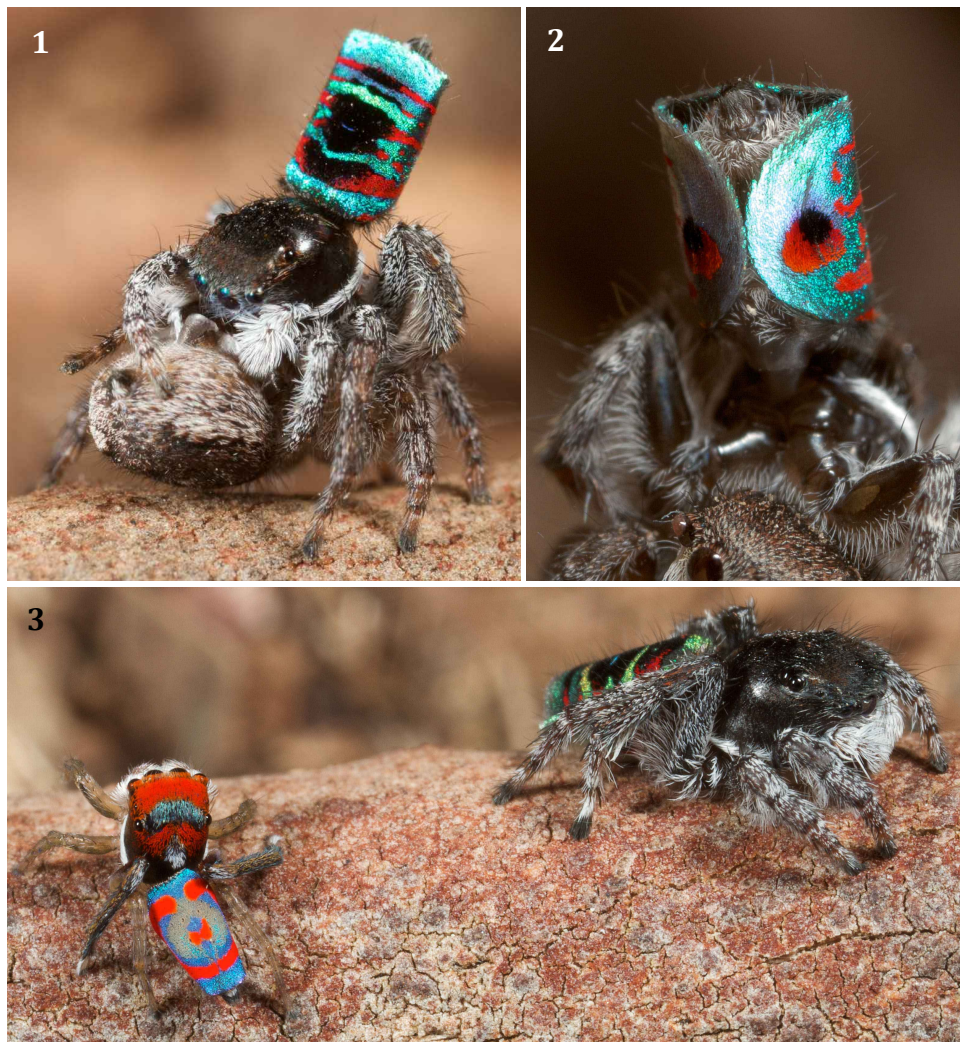
**Figure 24.** Views of the eastern Stirling Ranges of Western Australia, home to *Maratus species A* (Darlington's Peacock Spider). **1–2**, Approach to Bluff Knoll (at center), the highest peak in southwestern Australia, by road and trail. The spiders shown here were found just below the summit. **3–4**, Two views of the *montane heath* habitat of this spider.



**Figure 25.** Male *Maratus* species A from the Stirling Ranges, showing some of the observed variation in the appearance of this species. 1–3, Spiders with folded or retracted flaps. 4, Detail of fully expanded opisthosomal fan. 5–6, Two spiders displaying to sighted females with fan extended. Variation in the structural colour of the iridescent background scales (from purple to blue to blue-green to green to yellow-green), as in other *Maratus*, is based in part on individual variation, and in part on respective directions of both incident light and the observer.



**Figure 26.** Detailed view of the elevated and expanded dorsal opisthosoma of two different male *Maratus species A*. Transverse lines or figures are comprised of dark red-orange to red-orange or bright red scales, with patches of black scales.



**Figure 27.** 1–2, Two views of mating *Maratus species A*. Note the elevated opisthosoma and (2) how the opisthosomal flaps are folded to meet at the ventral midline. 3, Comparison of a large (~6 mm) male *M. species A* from Western Australia to a typical (~4 mm) male *M. splendens* from New South Wales, representing a four-fold ratio in relative body mass.

***Maratus species B****Maratus* sp. Hill 2009 (Figures 26–27)*Maratus species B* Otto and Hill 2010

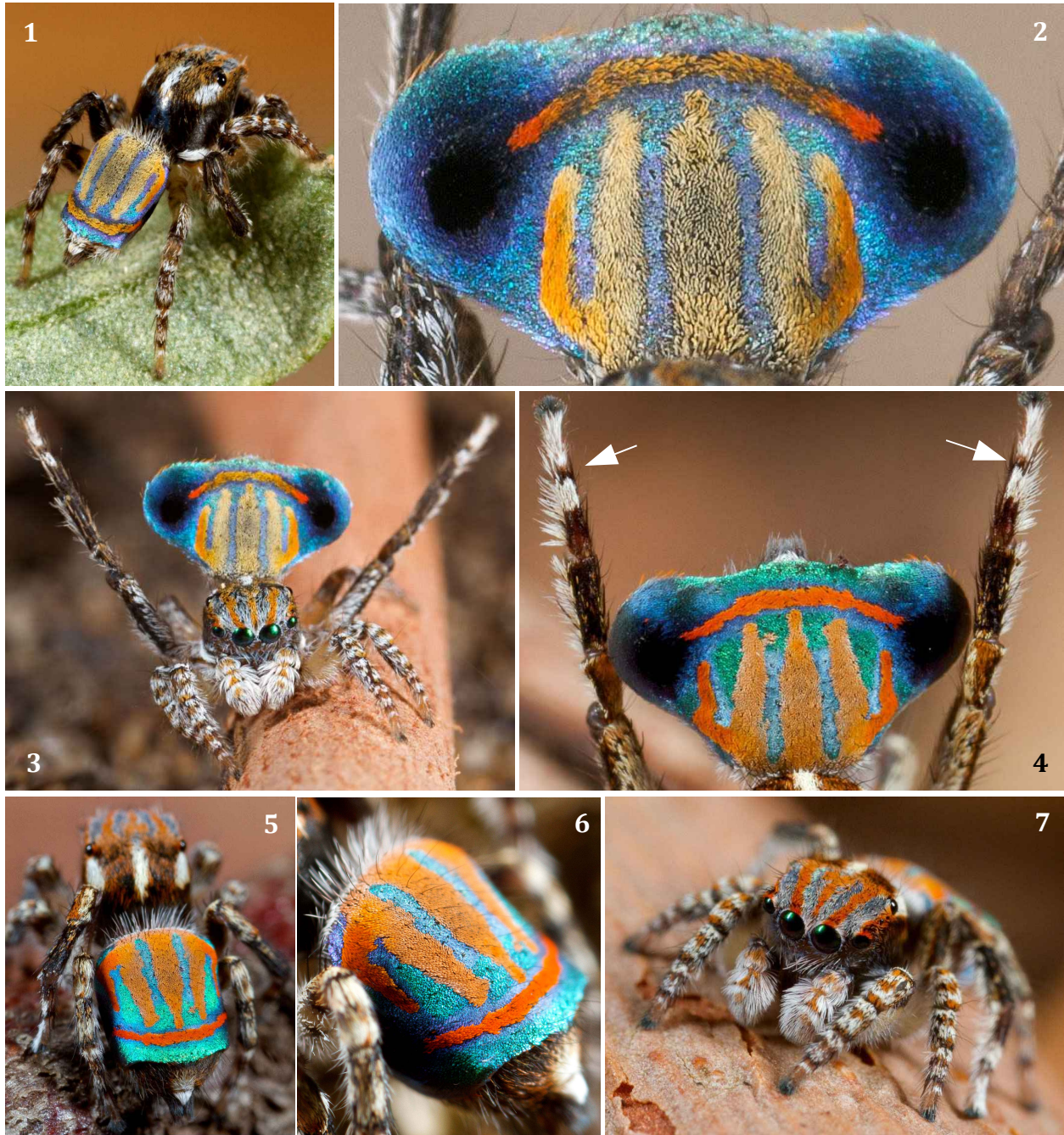
This distinctive spider was discovered in 2009 by one of the authors (J. Otto), and many illustrations were published at that time (Hill 2009). It is known only from the vicinity of Sydney, Australia. This is a very atypical *Maratus* in many respects. Like *M. linnaei*, it holds its pedipalps to the front during displays, and has a 'herringbone' pattern on the antero-dorsal opisthosoma. It is, however, quite different from that species. Here we present photographs taken during a recent study of these spiders in Sydney (Figure 28).



**Figure 28.** Male *Maratus species B* from Sydney. **1**, Lateral flaps lowered. **2**, Displaying to a male with legs III, showing iridescent blue femora of legs III. This brilliant structural color is very directional. **3–4**, Spiders in typical courtship display, with one leg III and lateral flaps raised unilaterally. In this position the elevated leg III is rapidly waved as the spider steps laterally, extending the distinctive bicoloured pedipalps out to the front. **5**, Detail of folded flaps as seen from the rear. **6**, Display with bilaterally elevated dorsal opisthosoma showing complex structure of lateral flaps, each with an irregularly-edged black anterior component and a rounded, iridescent olive green and black posterior component (or lobe). Note also the distinctive pair of plumes on each side (arrows). This bilateral display is not often observed.

*Maratus species C*

One of the authors (J. Otto) recently found this undescribed species in Stanley near the northwestern corner of Tasmania (Figures 29–30). It may also occur in other areas of Australia (J. Waldock, pers. comm.).



**Figure 29.** Male *Maratus species C* from Stanley, Tasmania. **1**, Rear view of spider with folded flaps. **2**, Detail view of elevated and expanded opisthosomal fan during display. Note the presence of dark lateral spots, a feature also seen in several other *Maratus* species. **3**, Male displaying with legs III and the elevated, extended fan to a sighted female. **4**, Detail of another male during display. Note the small, dark 'cuffs' near the ends of legs III (arrows). **5–6**, Two posterior views of the male shown in (4), with folded flaps, showing the dense array of orange to red-orange pigmented scales against a background of iridescent green to blue-green to blue scales. **7**, Frontal view showing the distinctive striped patterns of carapace, pedipalps, and legs I–II.





**Figure 30.** Mating male and female *Maratus species C* from Stanley, Tasmania. **1**, The male (left) approached the female with laterally extended legs III, touched her carapace with legs I. **2–5**, Views of this mating pair. The inset in (**3**) shows the inflated bulb of the inserted pedipalp. Note the elevation of the mating male's opisthosoma.

### Other unnamed *Maratus*

Davies and Žabka (1989, p. 237) described, but did not name, a male and female *Maratus* species from Brisbane, and published a series of diagnostic drawings. Waldock has also previously reported the finding of about 15 new species of *Maratus* as part of an on-going revision of the genus (Waldock 2008), and she has produced photographs of two unnamed *Maratus* from, respectively, Neerabup National Park and the vicinity of Revensthorpe, Western Australia (Waldock 2007).

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