Maratus banyowla, a new peacock spider in the *personatus* group from Western Australia (Araneae: Salticidae: Euophryini)

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Abstract: A new peacock spider, *Maratus banyowla*, is described from Western Australia. This spider is closely related to *M. personatus* and both species are placed in the *personatus* group within the genus *Maratus*. An acrocerid fly that is an endoparasitoid of *M. banyowla* is also documented.

Here we describe one new species in the genus *Maratus* Karsch 1878 from Western Australia (Figure 1), closely related to *M. personatus* Otto & Hill 2015. This brings the total number of confirmed species in the genus to 78 (Otto & Hill 2019).



Figure 1. Type localities for the two members of the *personatus* group in Western Australia. **1**, *Maratus banyowla* was found at Banyowla Regional Park, just east of Perth. The related *M. personatus* has only been found to the southeast, at Cape Riche on the southern coast of Western Australia (NASA Blue Marble image). **2**, Detail from inset rectangle in (1), showing the type locality for *M. banyowla* on the outskirts of Perth (NASA Landsat image).

Maratus banyowla, new species

Type specimens. The holotype male (\circ #4), six paratype males (\circ #1-3, 5-7), and four paratype females (\circ #1-4) were collected at Ellis Brook Valley, Banyowla Regional Park, Rushton Road, Martin, Perth, Western Australia (~S 32.062858°, E 116.033074°, 6 or 11 SEP 2019, coll. David Knowles and Kerry Stuart). All types will be deposited in the Western Australian Museum, Perth.

Etymology. The species group name (*banyowla*, noun in apposition, pronounced "ban-yow-la") is a reference to the discovery of this species in Banyowla Regional Park. Before 2008 this was known as Kelmscott-Martin Regional Park. Banyowla was a Nyoongar (Aboriginal) elder at the time of European settlement.

Diagnosis. Maratus banyowla are closely related to *M. personatus* Otto & Hill 2015, found to the southeast at Cape Riche. The detailed structures of the male pedipalps (tegulum, embolus, and RTA) of *M. banyowla* and *M. personatus* are virtually the same, very much like those of *Maratus* in the *linnaei, mungaich* and *vespa* groups from Western Australia. Males of both species have a blue "mask" (lighter blue in *M. banyowla*) but the males of *M. banyowla* can readily be identified by the presence of bright yellow setae on legs I-II, femora of legs III, and pedipalps, and a distinctive zig-zag scale pattern across the carapace (Figure 2). Some female *M. banyowla* also exhibit a less distinct zig-zag pattern across the carapace. We place both species in a new clade, the *personatus* group.

Description of male (Figures 2:1-3, 3-5). Males (n=7) ranged from 3.8 to 4.1 mm in length. The chelicerae are short, black and glabrous. Long white setae extend anteromedially from the clypeus over the proximal part of each paturon. Light blue scales surround the anterior eyes and extend to the rear over the eye region, separated from dark cuticle at the rear by a distinctive zig-zag line. The PME are closer to the PLE than to the ALE. A middorsal thoracic tract of white setae is present. There is a tract of white setae below the lateral eyes, extending to the rear along the top of the carapace. A distinct band of white marginal setae is also present on either side of the carapace. Otherwise the sides of the carapace, and the dorsal carapace behind the eye region, are dark brown to black and glabrous.

The opisthosoma has a dorsal plate but no lateral flaps. The dorsal plate of the opisthosoma is dark brown and shiny, with white setae around the lateral margins, and a wide but short anterodorsal tract of white setae. The ventral opisthosoma, coxae, sternum, labium and endites are brown and mostly glabrous.

Legs I and II are shorter, legs III and IV longer, and legs III by far the longest. Legs I and II, and the anterior femora of legs IV, are covered with bright yellow setae. The patellae and tibiae of legs III bear black stripes on a background of white setae. The metatarsi of legs III are black, and the tarsi of legs III are white. Legs IV are ringed with alternating bands of black cuticle and white setae. The patella, tibia and proximal cymbium of each pedipalp are covered dorsally with bright yellow setae. Each distal cymbium is covered with long white setae. The distally serrated RTA, tegulum and apophysis of each pedipalp are typical of those seen in many western *Maratus* species (Figure 5). The heavier outer apex of the apophysis bears a single serration, and below this is a smaller, sharply pointed inner apophysis.



Figure 2. Comparison of adult male *Maratus banyowla* (1-3) with adult male *M. personatus* (4-6). Note the bright yellow setae on the pedipalps, legs I-II, femora of legs III, and pedipalps, and the distinctive zig-zag line across the eye region of *M. banyowla*.



Figure 3 (continued on next page). Male types for *Maratus banyowla*.



Figure 3 (continued from previous page, continued on next page). Male types for *Maratus banyowla*.



Figure 3 (continued from previous page, continued on next page). Male types for Maratus banyowla.



Figure 3 (continued from previous page). Male types for *Maratus banyowla*.



Figure 4 (continued on next page). Male types for *Maratus banyowla* in ethanol.



Figure 4 (continued from previous page, continued on next page). Male types for *Maratus banyowla* in ethanol.



Figure 4 (continued from previous page, continued on next page). Male types for *Maratus banyowla* in ethanol.



Figure 4 (continued from previous page). Male types for *Maratus banyowla* in ethanol.



Figure 5 (continued on next page). Medial to lateral views of the left pedipalp of male types for Maratus banyowla.



Figure 5 (continued from previous page). Medial to lateral views of the left pedipalp of male types for Maratus banyowla.

Description of female (Figures 6-8). Females (n=4) ranged from 5.6 to 6.1 mm in length. The chelicerae are light brown and glabrous. Long off-white setae cover the clypeus. The anterior part of the eye region is covered with a tract of light brown to red-brown setae. At the rear this tract is separated from the dark brown cuticle of the dorsal carapace by a jagged transverse line, less distinct than that of the male. The PME are equidistant from the ALE and PLE. Light brown to red-brown setae also comprise a middorsal thoracic tract, and partly cover the sides of the carapace. The carapace lacks a distinct marginal band of scales.

The cuticle of the dorsal opisthosoma is dark brown with a variable cover of light brown setae, bounded on either side by a broad marginal band of off-white to light brown setae. A very small, triangular tuft of off-white anal setae is present above the spinnerets. Below the opisthosoma is off-white to light brown with a uniform cover of short off-white setae; several irregular lines of small brown spots may be present. From below the coxae, sternum, labium and endites are mostly glabrous, light brown and translucent, with some off-white setae projecting from the rear of the sternum.

The legs and pedipalps are uniform light-brown in colour, mostly translucent with indistinct bands of offwhite setae. Legs I and II are shorter and of similar length, legs III and IV longer and of similar length. The pedipalps have a cover of off-white setae.

The epigynum (Figure 8) is typical for *Maratus*, with a pair of rounded anterior fossae separated by a septum of variable width. Behind each fossa is a larger, rounded posterior spermatheca. Variably sclerotized ducts are visible through the posterior part of each fossa.



Figure 6 (continued on next page). Female types for Maratus banyowla.



Figure 6 (continued from previous page, continued on next page). Female types for *Maratus banyowla*.



Figure 6 (continued from previous page). Female types for Maratus banyowla.



Figure 7 (continued on next page). Female types for *Maratus banyowla* in ethanol.



Figure 7 (continued from previous page). Female types for *Maratus banyowla* in ethanol.



Figure 8. Ventral view of the epigynum of the female types for *Maratus banyowla* in ethanol. The anterior direction is toward the top of this page.

Habitat. Maratus banyowla were collected on or near the ground in the Banyowla Regional Park, an area with many quartzite dykes exposed at the surface and a complex plant community (*Wandoo woodland*; Figure 9; Ecoscape 2016). Two large quarries are situated near the western boundary of this park. Figure 10 shows live individuals in their natural surroundings and illustrates some of the complexity of their microhabitat.



Figure 9. Habitat of *Maratus banyowla* at Banyowla Regional Park near Perth. **1**, Exposed quartize dyke in Wandoo woodland. **2**, Note the many broken rock fragments littering the ground at this site. Photographs © by David Knowles, used with permission.



Figure 10 (continued on next page). *Maratus banyowla* in their complex microhabitat at Banyowla Regional Park. **1-5,** Adult males. Photographs © by Kerry Stuart, used with permission.



Figure 10 (continued from previous page, continued on next page). *Maratus banyowla* in their complex microhabitat at Banyowla Regional Park. **6-7, 16,** Adult males. **8-10, 15,** Males advertising or displaying with extended legs III. **11-14,** Two composite images (11-12, 13-14) showing a male (at left) displaying to a nearby female. Like *M. personatus*, we suspect that *M. banyowla* do not raise their opisthosoma during courtship. Photographs © by Kerry Stuart, used with permission.



Figure 10 (continued from previous page). *Maratus banyowla* in their complex microhabitat at Banyowla Regional Park. **17-19,** Adult males. **20-22,** Females. Photographs © by Kerry Stuart, used with permission.

Host to endoparasitoid flies. One female *Maratus banyowla* (Q #5) was collected as a penultimate at the type locality and reared in the laboratory. This spider was photographed on 26 SEP 2019 (Figure 11:1-2), and was enclosed in what appeared to be a moulting sac several days later. On 8 OCT 2019 this sac was opened to reveal the remains of this female (Figure 11: 3-4) and the pupa of an acrocerid fly (Figure 11: 5-6). By 15 OCT 2019 the mature acrocerid fly (Diptera: Acroceridae) had emerged (Figure 11:7-8).

Acrocerids are commonly known as spider flies, small-headed flies, or hunch-backed flies. Almost all known acrocerid larvae are endoparasitoids of spiders (Schlinger 1987; Winterton 2012; Winterton & Barraclough 2017). Adult acrocerids deposit numbers of minute eggs on plants and the emergent larvae burrow into spiders where they grow and moult but do not kill their host until late in their development. Prior to this time they may not be detectable. Several North American species are endoparasitoids of the salticids *Eris militaris* and *Pelegrina proterva* (Larrivée & Borkent 2009).



Figure 11 (continued on next page). 1-2, Penultimate female *Maratus banyowla* collected at the type locality. **3,** Remains of this spider after it was devoured by a larval acrocerid.



Figure 11 (continued from previous page). 4, Remains of this spider in part of her opened sac. Note the soil debris attached to the outside of this sac. **5-6,** Two views of the acrocerid pupa inside of the opened sac. **7-9,** Three views of the emergent acrocerid fly.

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