

Two new peacock spiders from southeastern Australia (Araneae: Salticidae: Euophryini: *Maratus* Karsch 1878)

Jürgen C. Otto¹ and David E. Hill²

¹19 Grevillea Avenue, St. Ives, New South Wales 2075, Australia, *email* jurgenotto@optusnet.com.au

²213 Wild Horse Creek Drive, Simpsonville, SC 29680-6513, USA, *email* platycryptus@yahoo.com

Abstract: Two new species of the genus *Maratus* are described from southeastern Australia: *M. nimbus* and *M. sapphirus*. Courtship display of both species, and *M. vespertilio* (a close relative of *M. sapphirus*), is also documented.

Key words: jumping spider, *Maratus nimbus*, *Maratus sapphirus*, *Maratus spicatus*, *Maratus vespertilio*, *spicatus* group, *vespertilio* group

Introduction

The genus *Maratus* was erected in 1878 but by 2008 a total of only 7 species had been assigned to it, namely *M. amabilis*, *M. linnaei*, *M. mungaich*, *M. pavonis*, *M. splendens*, *M. vespertilio* and *M. volans*. The last 9 years have seen a large increase in that number, with many descriptions resulting from discoveries by citizen scientists, photographers or other members of the public. There are presently 63 species that we can confidently assign to this genus (Otto & Hill 2017a, 2017b), and 14 additional species (WSC 2017) that have been formally added to *Maratus* through synonymy with *Lycidas*, but either lack the characters that we associate with *Maratus* or are insufficiently known to determine their status. Here we add two new species from southeastern Australia (Figure 1).

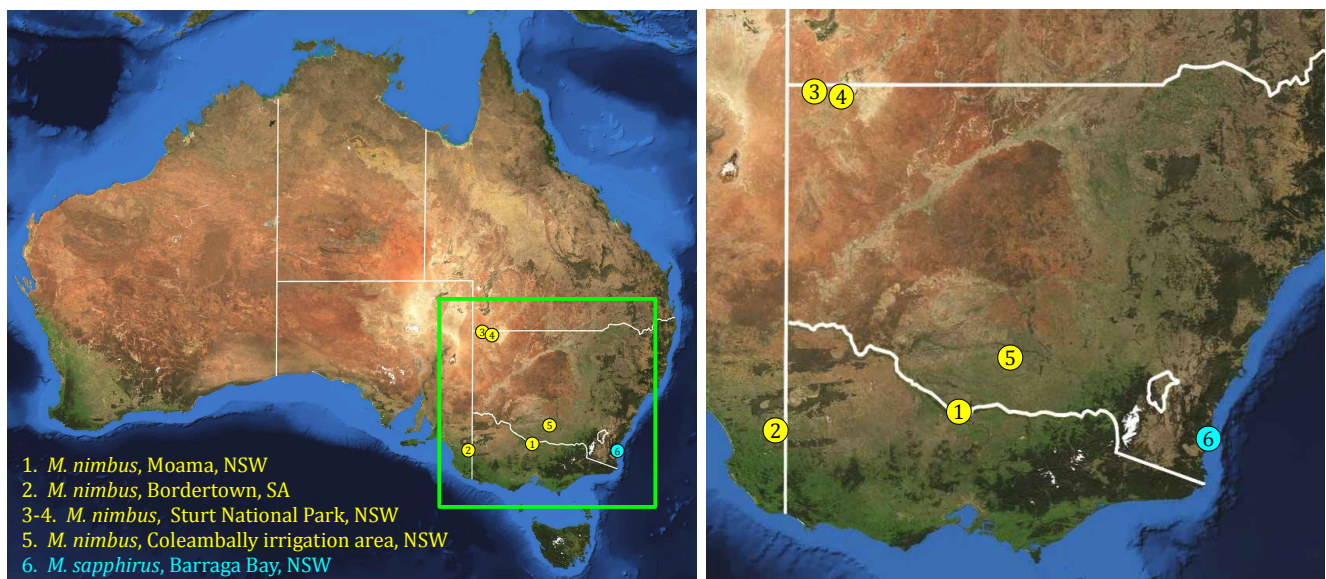


Figure 1. Localities associated with two new *Maratus* species from southeastern Australia. *M. nimbus* was found near standing or intermittent water at three locations in the south (1-2, 5), but also at Sturt National Park in the arid interior (3-4). Only a single location is known for *M. sapphirus*. Background courtesy of NASA Visible Earth.

One of these, *M. nimbus* sp. nov., is a member of a clade of small (~2-4 mm) peacock spiders (the *spicatus* group), all recently discovered. The second, *M. sapphirus* sp. nov., resembles the widely distributed *M. vespertilio* (Simon 1901), but the male has a distinct pattern of decoration and courtship behaviour that supports its separation from that species.

***Maratus nimbus*, new species**

Type specimens. The holotype male (♂ #1) and one paratype male (♂ #2), were collected on sedges in a garden near an artificial body of water at Moama, New South Wales (36.075846°S, 144.722619°E, 23 APR 2015, coll. J. Otto). Two paratype males (♂ #3-4) and one paratype female (♀ #1) were collected in a garden near Tatiara Creek at Bordertown, South Australia (36.317417°S, 140.772611°E, coll. A. Lance), ♂ #3 on 20 DEC 2014, and ♂ #4 and ♀ #1 on 8 FEB 2015. All types will be deposited in the Australian Museum, Sydney. We also identified four males, from Sturt National Park, New South Wales (KS85477, estimated location 29.13°S, 141.50°E, 29 SEP 1997, coll. M. Gillings, pitfall trap; KS79525, 29.282222°S, 142.155278°E, 25 SEP 1997, coll. M. Streulens, pitfall trap) and Coleambally irrigation area (KS109818 and KS109865, 34.873889°S, 145.942778°E, 2-16 MAY 2004, coll. L. Wilkie and M. Elliot, pitfall trap), in the collection of the Australian Museum, Sydney.

Etymology. The species group name (*nimbus*, Latin, m., noun in apposition, English translation *cloud*) is a reference to the image on the male fan that looks much like a group of clouds across the sky at dusk.

Diagnosis. The apex of the embolus of the male pedipalp of *M. nimbus* (Figure 9) supports placement in the *Maratus spicatus* group (Otto & Hill 2017a). As in *M. spicatus* Otto & Hill 2012 (Otto & Hill 2012b, 2012c) legs III are not ornamented and resemble the other legs in colouration. Both species have banded legs and pedipalps, and long bristles fringing the fan with no lateral flaps. However a distinctive pastel picture of "cirrus clouds in the sky at dusk" drawn on the front of a wider fan (dorsal opisthosoma) and the larger number of bristles in the surrounding fringe distinguishes the male *M. nimbus* (Figure 2).

Description of male (Figures 2-9). Males are 2.9-3.1 mm in length (n=8).

The clypeus and chelicerae are dark brown to black and mostly glabrous, with a thin covering of scattered setae (Figure 4:11). The eye region is covered with uniform brown setae, and a band of off-white setae runs beneath the PME and PLE, extending on either side half-way to the rear of the carapace behind the eye region. Unless worn, a middorsal tract of off-white scales also extends to the rear behind the eye region. The sides of the carapace are black with a thin covering of off-white setae, and there is a thin white marginal band of white or off-white setae on either side. The PME are closer to the PLE than to the ALE.

The opisthosoma is rounded and surrounded by a prominent fringe of mostly black bristles (stout setae) that are extended when the fan is elevated and flattened during courtship display. There are no lateral flaps. To the front a tuft of stout white setae extends over the pedicel toward the carapace. The pattern of scales on the dorsal opisthosomal plate (fan) is distinctive, with off-white to light orange patches of pigmented scales that resemble cirrus clouds on a background of light-blue iridescent scales (Figures 2:6, 5:9, 7:5). Below, the opisthosoma is brown, covered with white to off-white setae, surrounded by wide black margins. The coxae, trochanters, and sternum are brown with scattered white setae. The labium and endites are brown and glabrous.

All legs and the pedipalps are brown with scattered setae below, and brown interrupted by prominent segmental bands of off-white setae above. Legs I and II are shorter, legs III and IV longer, and legs III the longest. The pedipalps (Figures 8:5-6, 9) have a relatively large, circular embolus. The apex of the embolus is pointed, with dark inner and outer margins converging at the tip. From above, each cymbium is banded, covered with long off-white setae proximally, and dark brown distally.



Figure 2. Comparison of a displaying male *M. spicatus* (1-3) with male *M. nimbus* sp. nov. (4-6).



Figure 3. Ventral view of two living male *Maratus nimbus*. Note the wide black margin and fringe of black bristles on the underside of the opisthosoma.



Figure 4. Two male *Maratus nimbus*. 3, 6, 10, Elevation and expansion of fan during courtship display.



Figure 5. Three male *Maratus nimbus*. 4-5, Expansion of fan and extension of fringing bristles during courtship display.

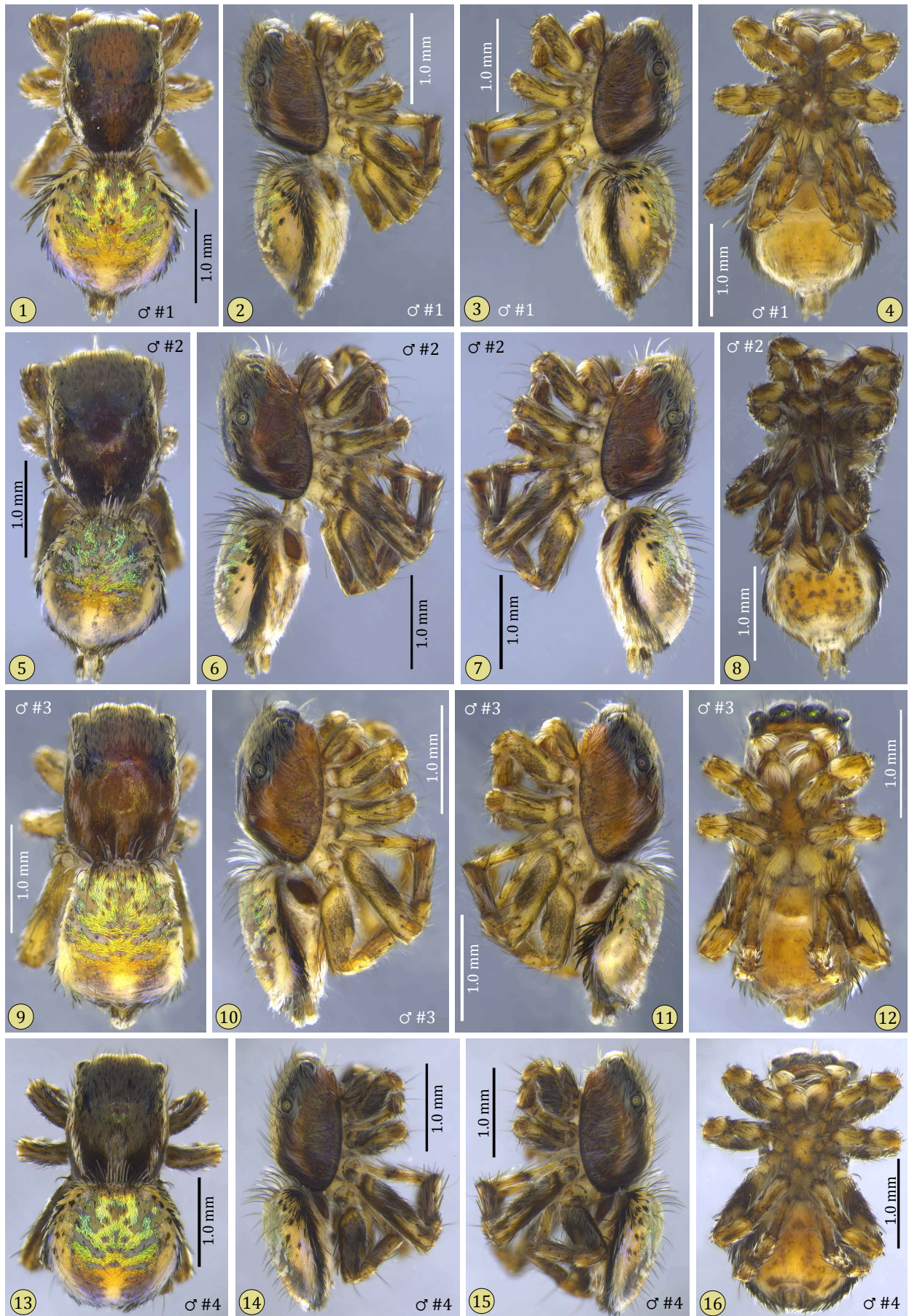


Figure 6. Four male *Maratus nimbus* in alcohol. In alcohol the light blue scales are iridescent yellow-green.

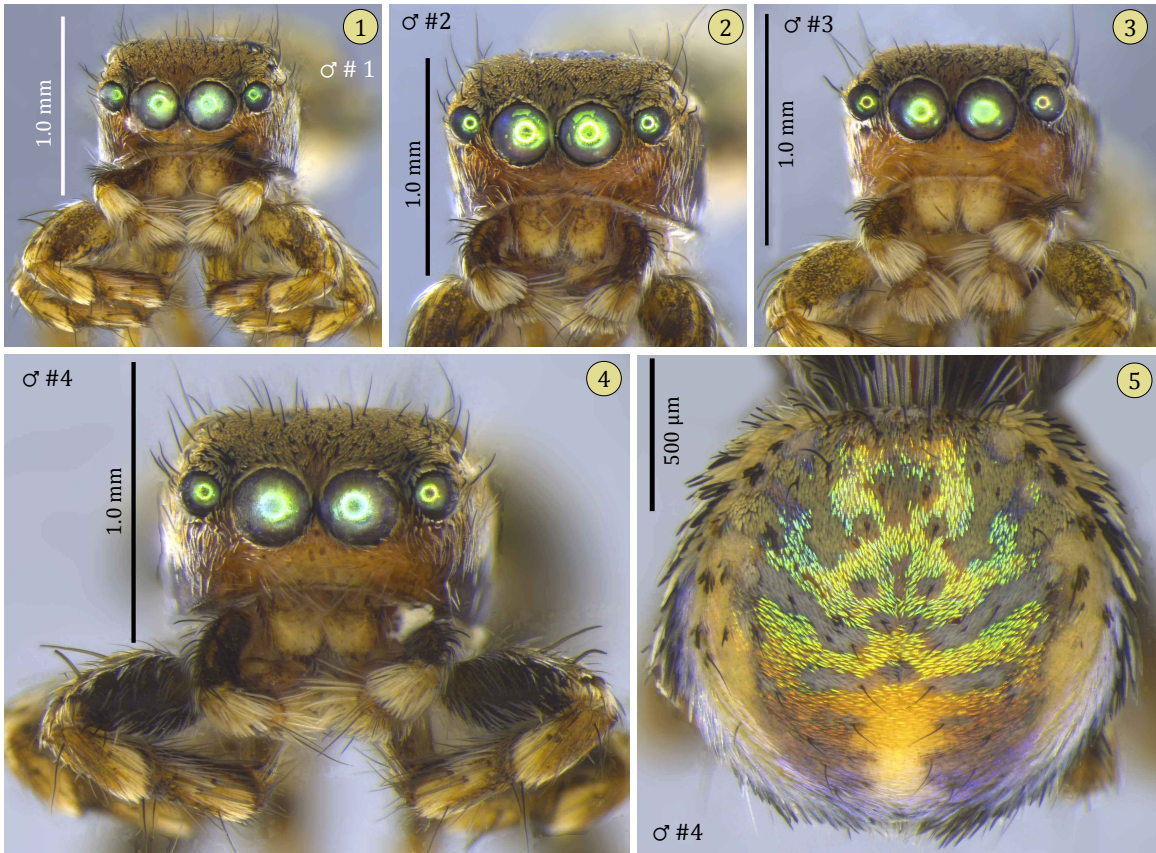


Figure 7. Four male *Maratus nimbus* in alcohol.

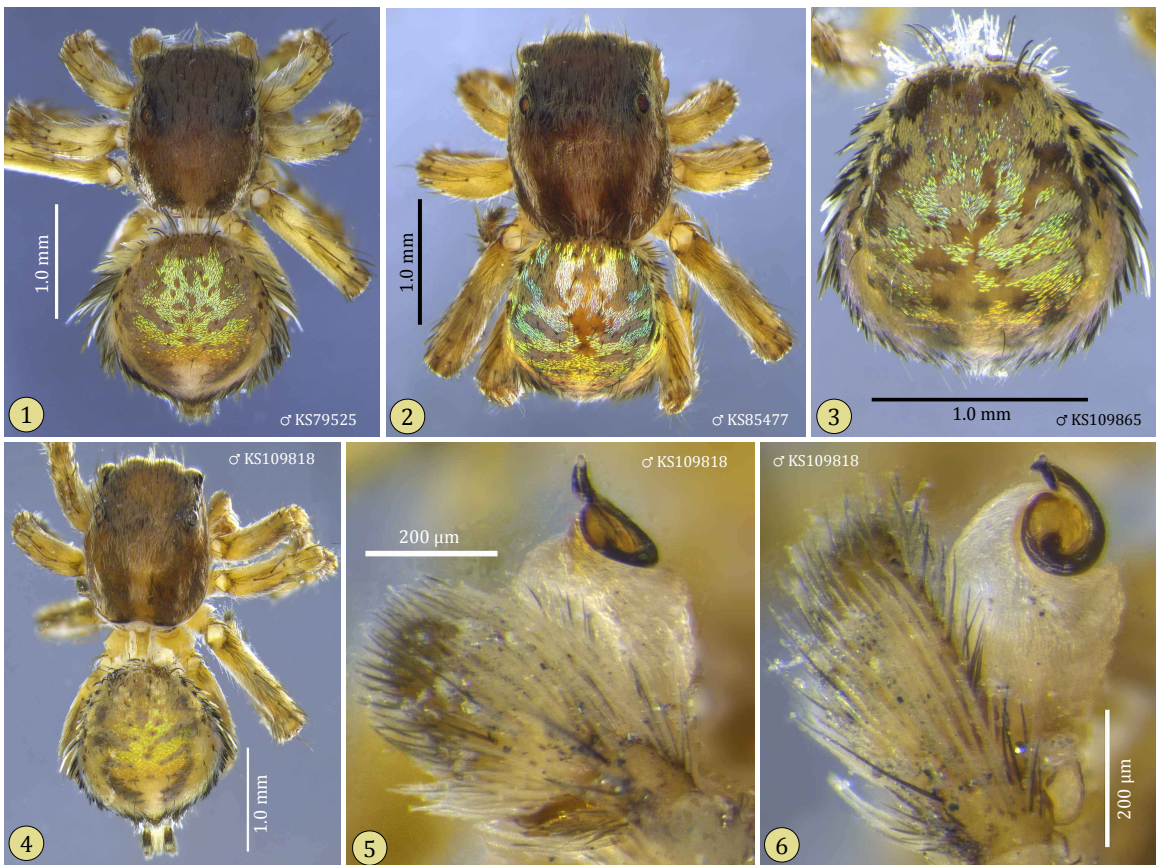


Figure 8. Four male *M. nimbus* from the Australian Museum. 5-6, Expanded left pedipalp.

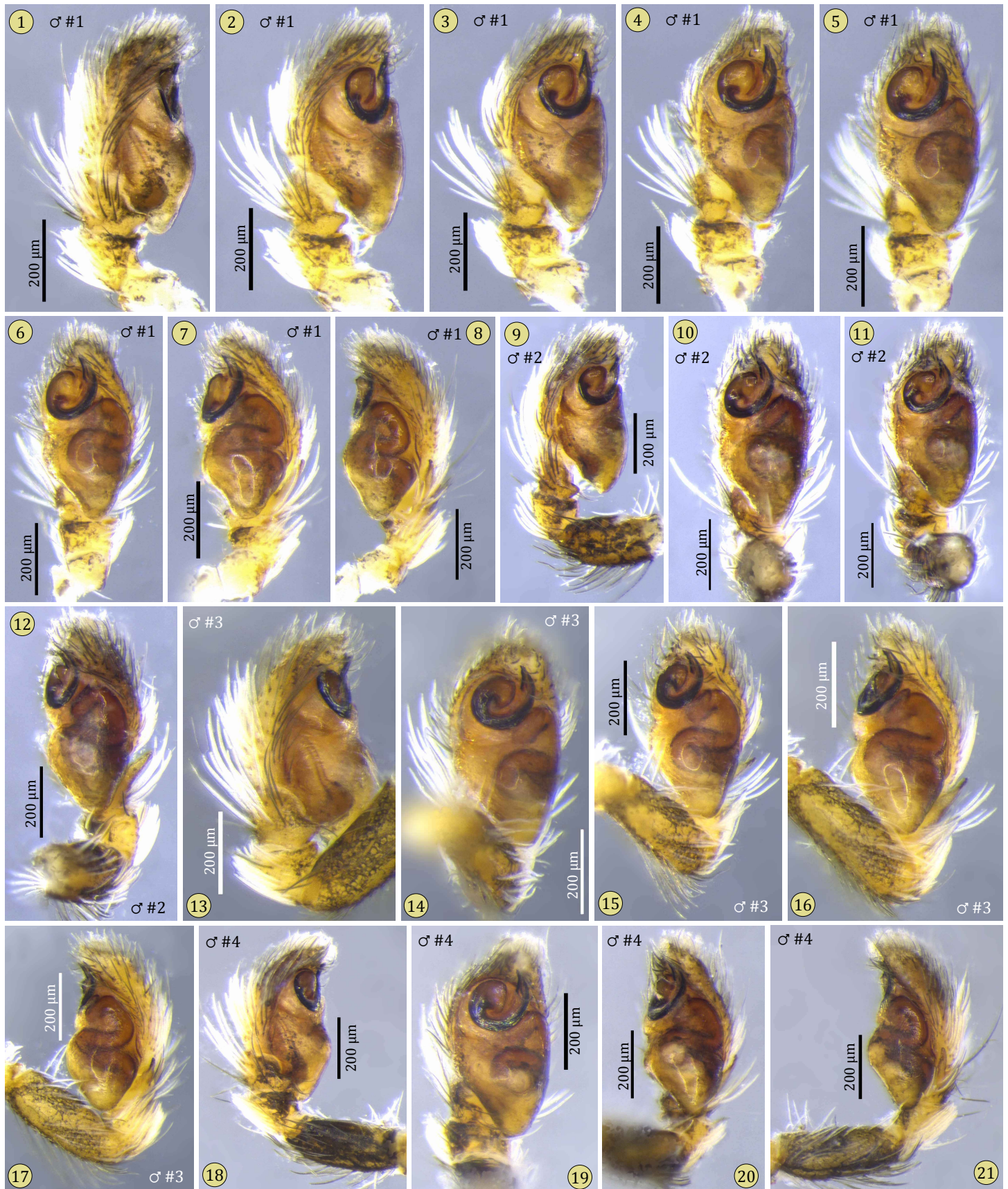


Figure 9. Medial to lateral views of the left pedipalp of four male *Maratus nimbus* in alcohol.

Description of female (Figures 10-11). The paratype female (♀ #1) is 4.0 mm in length.



Figure 10. Paratype female *Maratus nimbus* (♀ #1) from Bordertown, South Australia. **11,** Note the pair of spines between the AME. These are present in many *Maratus* species. **12,** Ventral view of opisthosoma.



Figure 11. Paratype female *Maratus nimbus* (♀ #1) in alcohol. 5, Ventral view of epigynum.

The lower clypeus and chelicerae are mostly glabrous, light brown and translucent. White setae below the anterior eye row extend to the level of the chelicerae at the midline, and a few smaller, scattered white setae are also present on the anterior face of each paturon. Two larger, off-white spines project upwards at the midline between the AME. The eye region is covered with mixed off-white and light brown scales and many small black or dark brown projecting setae. The sides of the carapace are covered with longer off-white setae. There are only a few off-white setae along each lateral margin, but above this margin there is a regular row of short off-white setae oriented vertically. Each dark lateral margin is accompanied by a second line of dark pigment just below it, associated with the coxae. A dark band of exposed cuticle extends toward the rear of each PLE, bordering a middorsal tract of off-white setae. The PME are closer to the PLE than to the ALE.

The dorsal opisthosoma has a symmetrical pattern of dark brown areas with indistinct chevrons toward the midline, on an off-white background. Less distinct dark markings, including a pair of lateral lines, are visible on the venter (Figure 10:12). Above and below the opisthosoma is uniformly covered with short, off-white setae. Pedipalps and legs are fairly uniform in colour with a cover of off-white setae, banded with a dark ring of pigment around each joint. Legs I and II are shorter, legs III and IV longer, and legs III are the longest.

The epigynum (Figure 11:5) has a large pair of fossae and an even larger pair of posterior spermathecae typical of *Maratus*. In the single specimen that was examined heavily sclerotized ducts extend from each spermatheca to the posterior third of the corresponding fossa.

Immatures. Immature *Maratus nimbus* resemble the adult females, but have a darker and more distinct band on either side of the dorsal opisthosoma (Figure 12).



Figure 12. Emergent or second instar (1-2) and older (3-6) juvenile *Maratus nimbus*.

Courtship display (Figures 13-16). When facing a female, the male *Maratus nimbus* may wave the elevated and expanded fan almost continuously through an amplitude of $\sim 20^\circ$ at a rate of 2-5 cycles/s, with frequent and assymetrical raising and lowering of the pedipalps. This display may not include movement of legs III (Figure 15), or it may include almost continuous and mostly symmetrical waving of the extended legs III at a rate of $\sim 2/s$ (Figure 16).

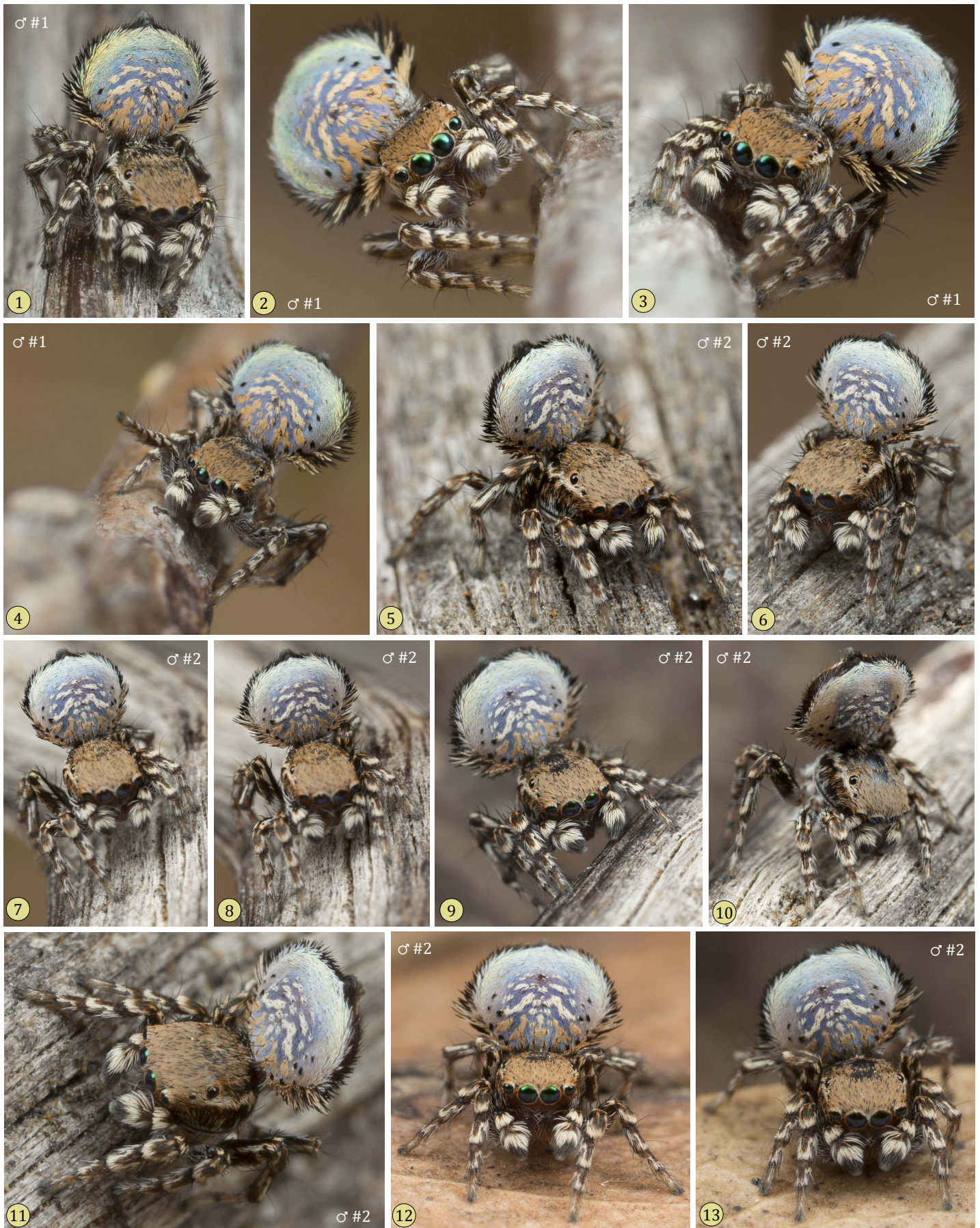


Figure 13. Courtship display by two male *Maratus nimbus*.

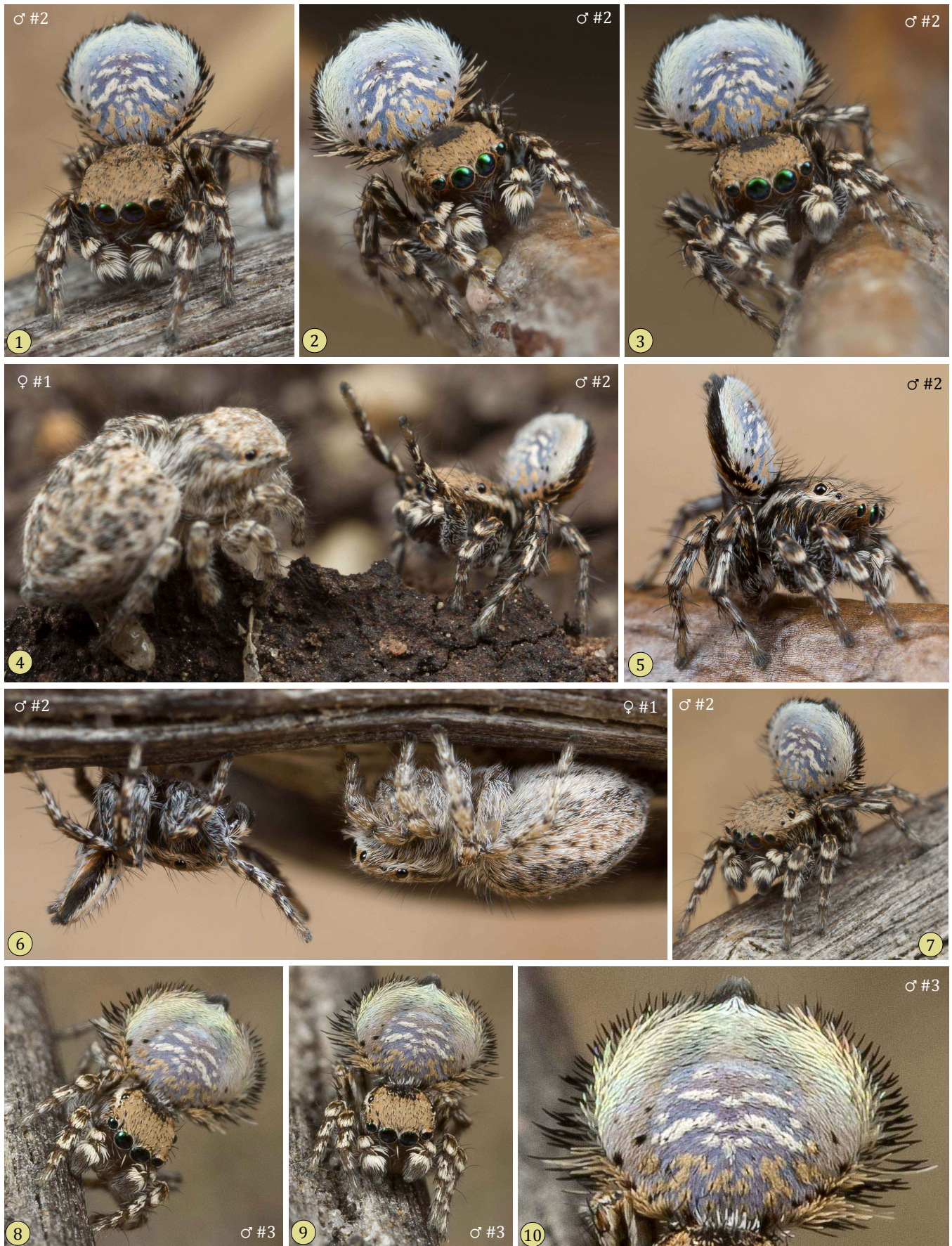


Figure 14. Courtship display by two male *Maratus nimbus*. 4, 6, This male raised legs I to touch the dorsal carapace of the female before mounting. 10, Detail of elevated and expanded fan.

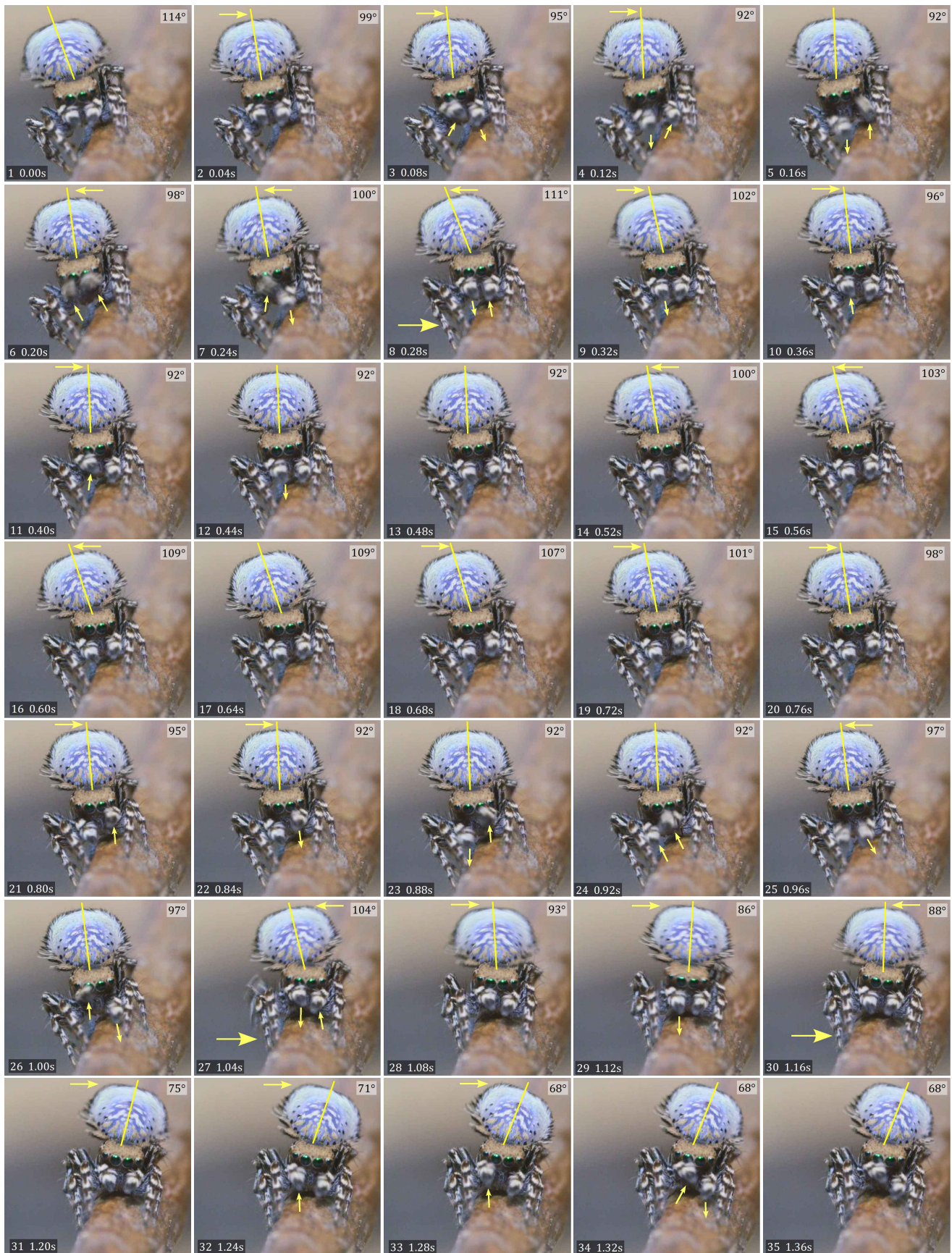


Figure 15. Sequential video frames (25 FPS) showing display by a male *Maratus nimbus* without extension of legs III. Arrows indicate rotation of the fan (~3.5 cycles/s) or movement of the pedipalps relative to each preceding frame. Elevation of the fan axis (yellow line) is shown in degrees at the upper right corner of each frame.



Figure 16 (continued on next page). Sequential video frames (25 FPS) showing display by a male *Maratus nimbus* accompanied by extension and waving of legs III. Arrows indicate rotation of the fan (2-5 cycles/s), movement of legs III (~2 cycles/s), or movement of the pedipalps relative to each preceding frame. Elevation of the fan axis (yellow line) is shown in degrees at the upper right corner of each frame.

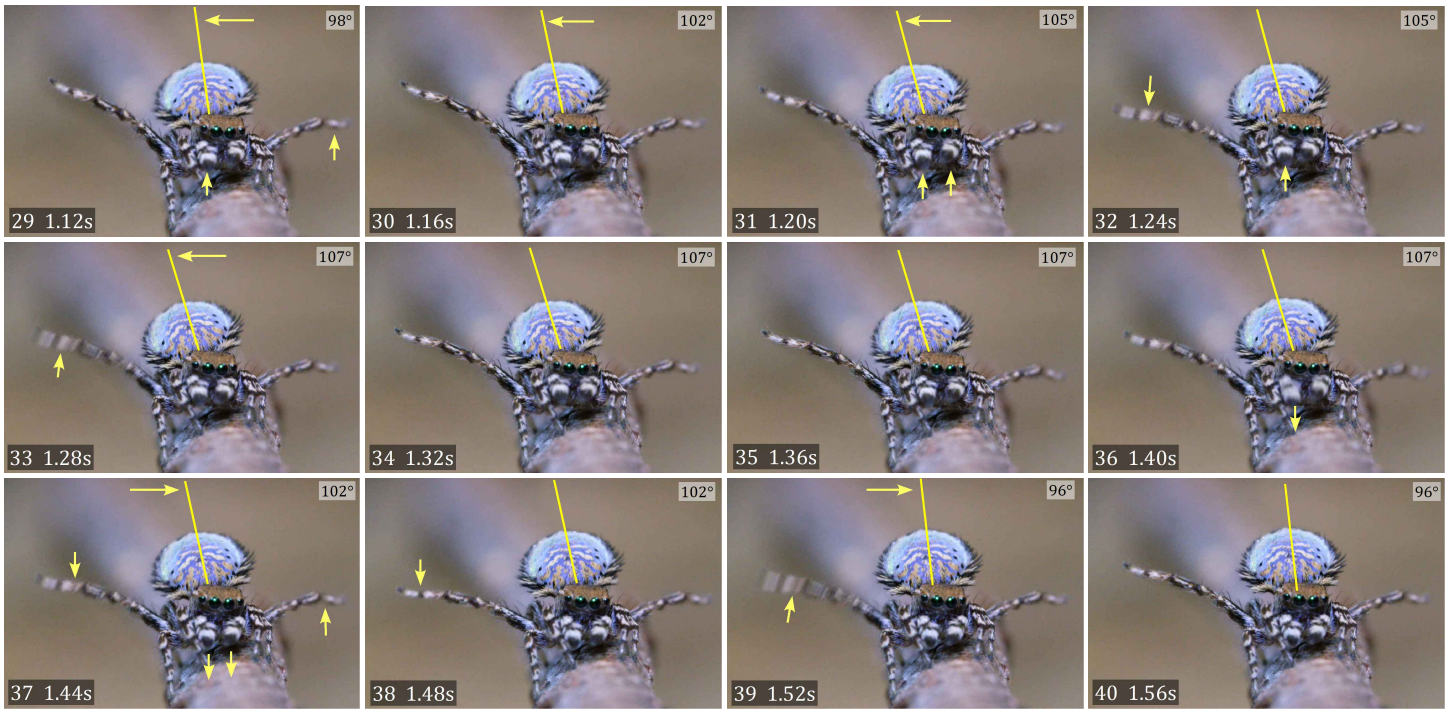


Figure 16 (continued from previous page).

Mating. Mating positions of a male and female *Maratus nimbus* are shown in Figure 17.



Figure 17. Mating male and female *Maratus nimbus*. This male was from Moama and the female from Bordertown.

Habitat (Figure 18). At Moama (New South Wales) *Maratus nimbus* was found on planted sedges in the garden of a residential area near an artificial body of water. At Bordertown (South Australia) *M. nimbus* hunt on densely tangled dry vegetation and are thought to use the base of these plants or broken earth on the ground for shelter (A. Lance, pers. comm.). Sturt National Park lies in the arid interior of New South Wales and represents a very different habitat from the well-watered gardens of Bordertown and Moama.



Figure 18. Habitat of *Maratus nimbus*. **1**, At Moama *M. nimbus* was found on dried blades at the base of sedges near an artificial body of water. **2-3**, At Bordertown *M. nimbus* was found in a tangle of dry vegetation at the base of irises in this garden. They were also found in the dry creekbed of nearby Tatiara Creek (courtesy Alan Lance). **4**, Habitat of *M. nimbus* in the Coleambally irrigation area, New South Wales.

Maratus sapphirus, new species

Type specimens. The holotype male (♂ #1), 2 paratype males (♂ #2-3), and 1 paratype female (♀ #1) were collected near Bermagui, New South Wales at the edge of Murrah Flora Reserves and the Four Winds Music Centre at Barraga Bay (36.502472°S, 150.041944°E, 11:00, 12 NOV 2016, coll. H. Ransom, S. Harris, J. Morgan and D. Deans). All types will be deposited in the Australian Museum, Sydney.

Etymology. The species group name (*sapphirus*, m., noun in apposition, English translation *sapphire*) refers to the sapphire-like appearance of the scale tract that decorates each lateral flap of the male fan, as well as the type locality on what is known as the *Sapphire Coast* of New South Wales.

Diagnosis. Male *Maratus sapphirus* most closely resemble *M. vespertilio* (Simon 1901; see also Otto & Hill 2011a, 2011b), and we place both species in a clade that we call the *vespertilio* group. However, there are distinct differences between the two species including the more distinct pattern of lines across the fan of *M. sapphirus* and the ornamentation of legs III in *M. vespertilio* (Figure 19). The female of *M. vespertilio* has not been described, but like the female *M. sapphirus* has adjacent dark and off-white bands at the posterior opisthosoma.

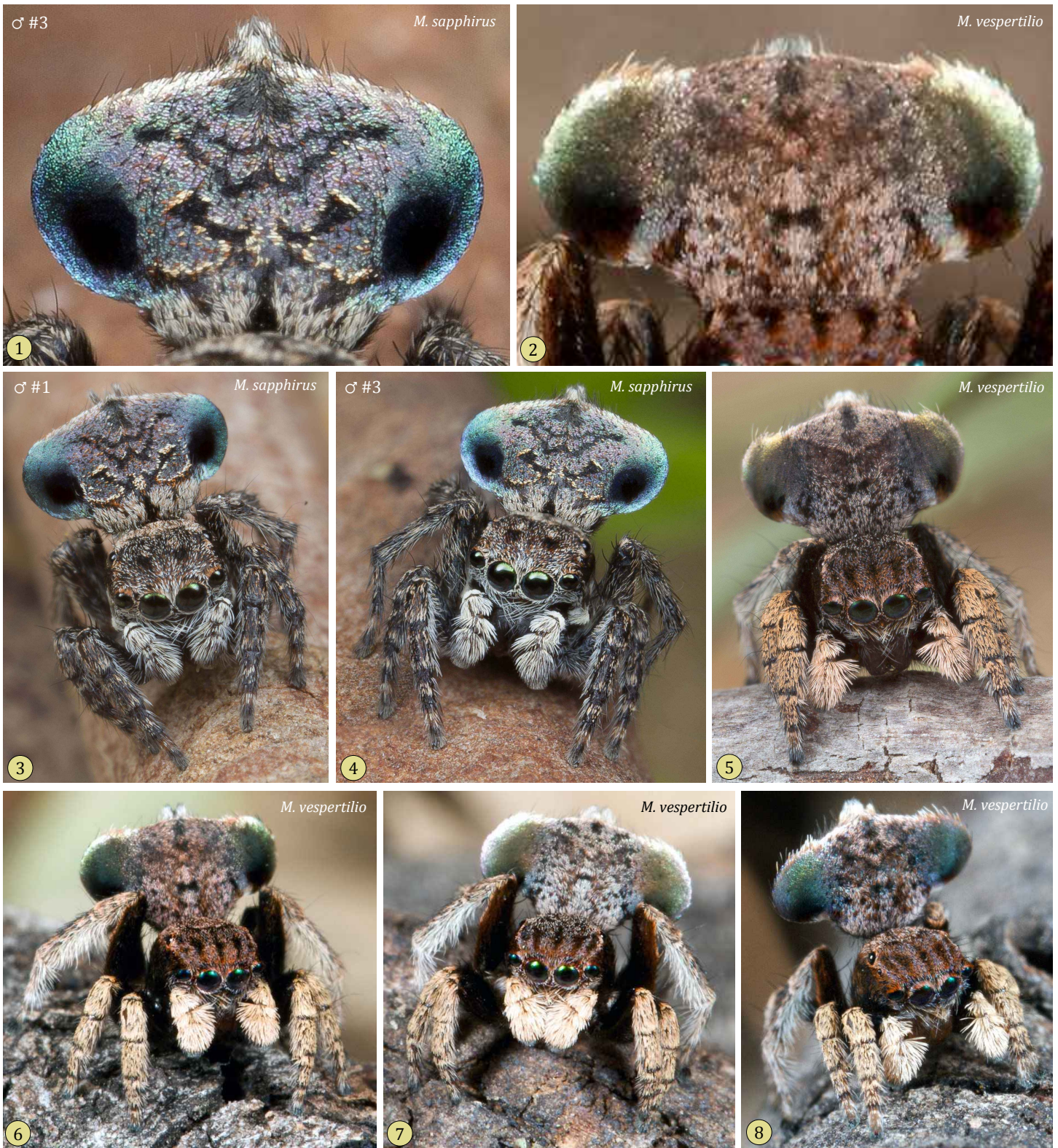


Figure 19. Comparison of male *Maratus sapphirus* (1, 3, 4) with *M. vespertilio* (2, 5-8). The fan of *M. sapphirus* is decorated with more distinct transverse lines and the legs are uniform in colour. Legs III of *M. vespertilio* have dark brown femora that contrast with the off-white or light yellow distal segments that bear a heavy fringe of long white setae, a wider and more lobate fan, and distinct dark brown stripes across the eye region.

Description of male (Figures 20-24). Males are 4.7-5.0 mm in length (n=3).

The carapace including clypeus, and the chelicerae, are generally black. Long white setae extend below the anterior eye row in a ventromedial direction. The eye region is partly covered with scattered off-white to light brown scales, interrupted by an indistinct black figure where these scales are absent (Figure 22:2). Behind the eye region is a broad band comprised of off-white to light brown scales, projecting rearward to a point at the midline. Behind this and on the sides the carapace is mostly black and glabrous, except for scattered white to off-white setae and a well-defined but narrow off-white to white marginal band on either side. The PME are closer to the PLE than to the ALE.

The dorsal opisthosomal plate (fan) has well-defined lobate flaps that are usually wrapped around the sides of the opisthosoma, but can be extended during display (Figure 21:6,11-12). When these flaps are extended the fan is much wider than long. A wide marginal band of off-white or light brown scales is present at the front of the fan, interrupted by a black line at the midline. Behind this the central part of the fan is traversed by three black chevrons and a wide black area behind these, on a background of mostly iridescent blue-grey scales mixed with scattered off-white or red-brown pigmented scales. The anterior chevron is outlined by off-white scales. A narrow band of off-white setae occupies the rear margin of the fan. Each lateral flap is covered with a tightly-packed and very regular array of iridescent blue scales, and a large black spot occupies the front half of each flap. A small colular tuft of white setae is present above the grey spinnerets. The underside of the opisthosoma is generally brown with a cover of off-white setae. From below the legs and sternum are generally dark brown or black with scattered off-white setae, and the labium, endites and pedipalps are brown (Figure 20).

From above the legs are dark brown or black and indistinctly banded with a cover of off-white to brown setae interrupted by segmental rings of exposed black cuticle. Legs I and II are shorter, legs III and IV longer, and legs III are the longest.

The pedipalps are brown but covered dorsally (in front) with long off-white to white setae (Figure 22:5). Unlike most *Maratus* species where these are contiguous, the larger and longer outer apex is distinctly separated from the smaller and shorter inner apex of the embolus (Figure 24).



Figure 20. Ventral view of three living adult male *Maratus sapphirus*.



Figure 21. Two adult male *Maratus sapphirus*. **6**, Elevated and expanded fan during courtship display. **11-12**, Posterolateral views of the opisthosoma showing the folded right flap of the fan (dorsal opisthosomal plate) in front of the exposed brown, soft cuticle of the opisthosoma.



Figure 22. Two adult male *Maratus sapphirus*.



Figure 23. Three adult male *Maratus sapphirus* in alcohol.

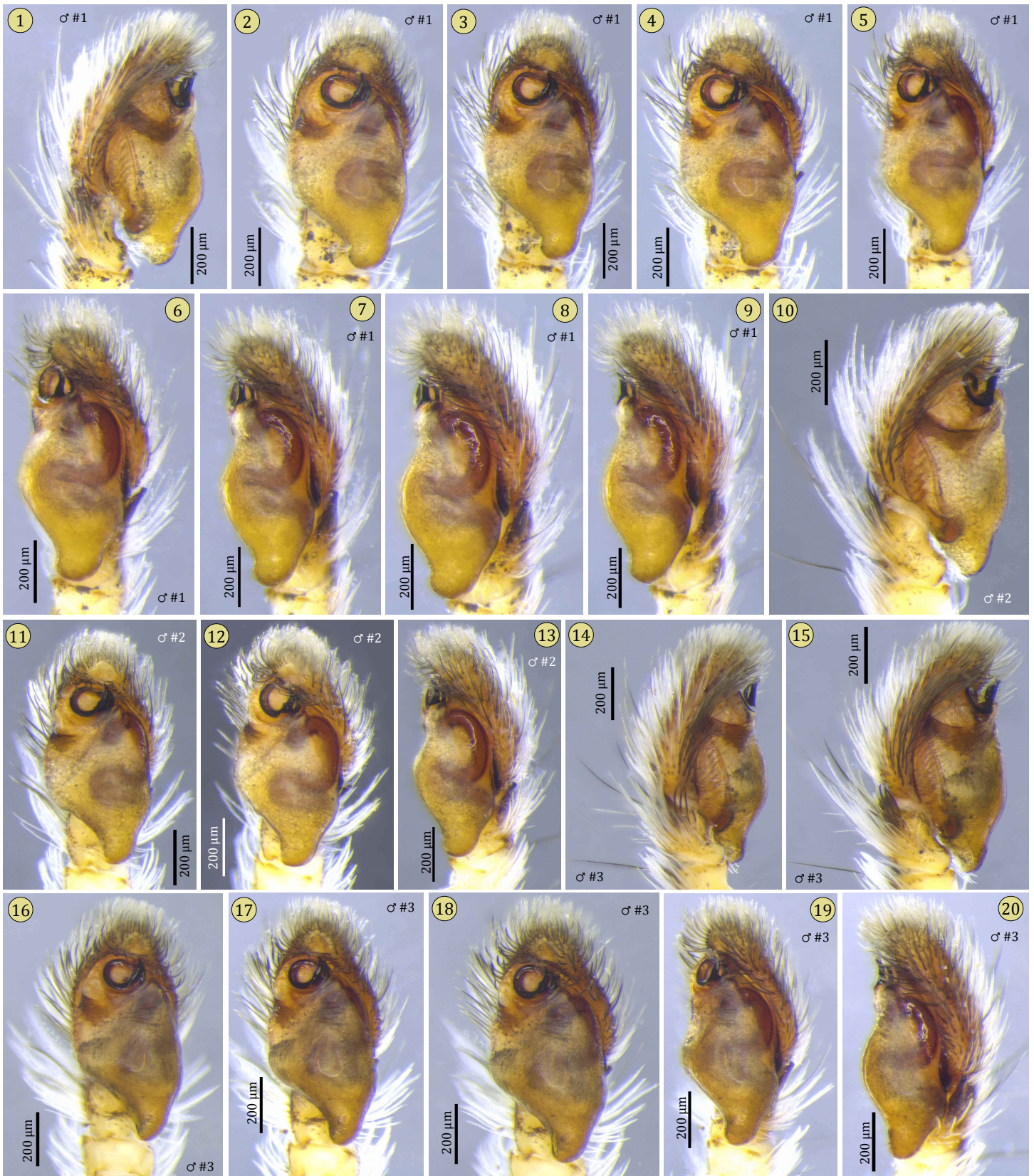


Figure 24. Medial to lateral views of the left pedipalp of three adult male *Maratus sapphirus* in alcohol. **6-9,** The distinct separation of the two apices of the embolus can be seen in these lateral views

Description of female (Figures 25-26). The paratype female is 5.7 mm in length.

The clypeus and chelicerae are mostly black and glabrous, except for long off-white setae extending ventromedially below the anterior eyes and scattered white setae on the medial side of each paturon (Figure 25:2). As in the male, the cuticle of the carapace is black. The eye region is covered with off-white or light brown scales or setae and this cover extends behind the PLE. Behind this there is a short median tract of light brown scales, but the posterior declivity of the carapace is black and glabrous.



Figure 25. Paratype adult female (♀ #1) *Maratus sapphirus*.

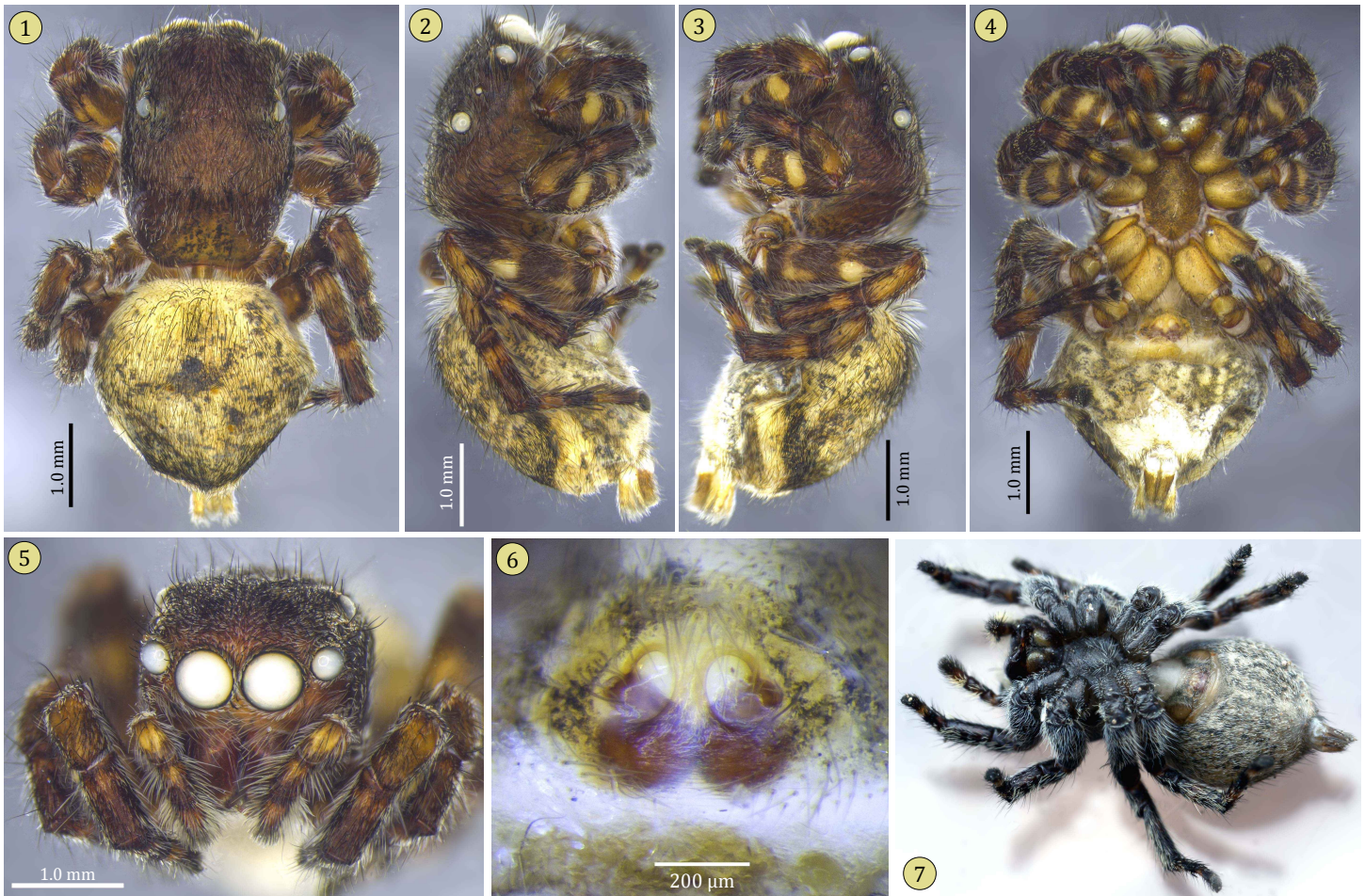


Figure 26. Paratype adult female (♀ #1) *Maratus sapphirus*. **1-5**, In alcohol showing loss of much of the pigment of the living animal. **6**, Ventral view of epigynum. **7**, Ventral view before preservation in alcohol.

The sides of the carapace are covered with scattered off-white to light brown scales. Unlike most female *Maratus*, a distinct marginal band comprised of off-white scales is present. The PME are closer to the PLE than to the ALE.

The dorsal opisthosoma has many long off-white or light brown setae extending forward from the anterior margin, but as in the male this is interrupted by a black median line, narrowing toward the rear. The front 2/3 of the opisthosoma is black but uniformly covered with off-white to light brown scales or setae. Behind this is a wide black transverse band, and behind this is a wide band comprised of more densely packed, uniform off-white to light brown setae that is relatively light in colour (Figure 25:3). At the rear is a small tuft of off-white colular setae. The ventral opisthosoma is light brown interrupted by a series of parallel, indistinct grey or black lines where the cuticle is exposed (Figure 26:7). The underside of the legs and sternum is black with scattered white or off-white setae, and the labium and endites are dark brown.

The legs and pedipalps are dark brown with a cover of off-white or light brown setae, interrupted and indistinctly banded by segmental rings of dark, exposed cuticle. Legs I and II are shorter, legs III and IV are longer, and legs III are the longest. The fossae of the epigynum are large and kidney-shaped, in front of the much larger posterior spermathecae. Prominent sclerotized (darker) ducts extend anterolaterally from each spermatheca to occupy the posterior half of each fossa in a ventral view (Figure 26:6).

Immatures. Immature *Maratus sapphirus* resemble the adult female (Figure 27).



Figure 27. Four immature *Maratus sapphirus*. Except for size, these closely resemble the adult female and have the same characteristic black and off-white bands at the rear of the opisthosoma.

Courtship display (Figures 28-30). Males made rapid but low amplitude ($\sim 1\text{-}8^\circ/\text{cycle}$) rotations of the elevated and expanded fan at variable intervals (from <0.5 to ~ 6 cycles/s) as they side-stepped in front of the female. Legs III were not elevated or waved during this display, and the pedipalps were not moved but held in place to the side of each exposed paturon.



Figure 28. Courtship display by two adult male *Maratus sapphirus*.

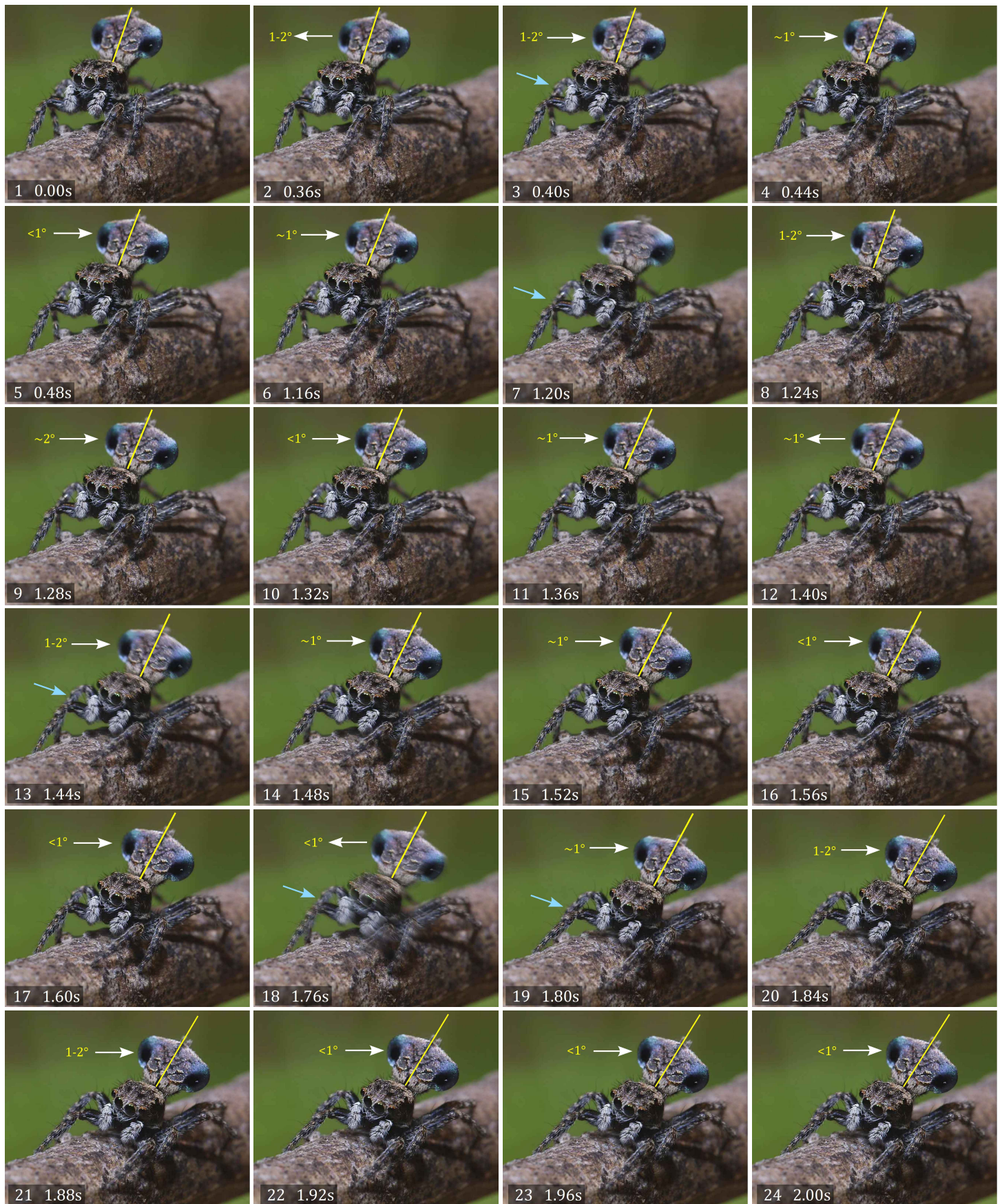


Figure 29. Sequential but not consecutive video frames (25 FPS) showing courtship display by a male *Maratus sapphirus*. Only frames that show movement relative to the preceding frame are included in this sequence. Arrows indicate low amplitude ($\sim 1-2^\circ$), rotation of the fan and side-stepping relative to each preceding frame.



Figure 30. Sequential but not consecutive video frames (25 FPS) showing courtship display by a male *Maratus sapphirus*. Only frames that show movement relative to the preceding frame are included in this sequence. Arrows indicate relatively low amplitude (~ 1 - 6°) rotation of the fan and side-stepping relative to each preceding frame. **19-22**, These consecutive frames show rapid rotation of the fan to the left by 3 - 4° (19), followed by rotation to the right by $\sim 8^\circ$ (20-22), corresponding to a rate of ~ 6 cycles/s. However this movement was not regular and the interval between successive movements of the fan could exceed 1s (e.g., 1.4s elapsed between frames 11 and 12). As in the sequence shown in Figure 29, elevation of legs III and movement of the pedipalps were not observed in this display.

Habitat (Figure 31). *Maratus sapphirus* was found on or near the ground at a density of 1-2/m², in a Spotted Gum (*Corymbia maculata*) woodland with coastal understory at the edge of the Murrumbidgee Flora Reserves near the Four Winds Music Centre at Barragga Bay, New South Wales. This is an area of thick leaf litter that was last burned more than 10 years previously and shows minimal human impact, with abundant dappled light below ~60-70% canopy cover (S. Harris, pers. comm.).



Figure 31. Understory habitat of *Maratus sapphirus* at the Murrumbidgee Flora Reserves at Barragga Bay, New South Wales (courtesy Stuart Harris).

***Maratus vespertilio* (Simon 1901)**

Several examples of the courtship display of the related *Maratus vespertilio* have been taken from a video production (Otto 2012) for purposes of comparison with *M. sapphirus* (Figures 32-36). Corresponding to the decoration of legs III of male *M. vespertilio* (black anterior femora and long off-white fringes below the distal segments), these legs can figure prominently in the display of this species, something not observed in *M. sapphirus*. Two modes of leg III display are shown here, the first with the legs held in a vertical position and moved apart then suddenly brought together at ~4-8 cycles/s (Figure 32), and the second with legs III raised but flexed in a near vertical position then bilaterally lowered to a more horizontal position at a rate of ~2.5 cycles/s (Figure 33). A third mode of display (Figures 34-36) involved only the bobbing (lowering and then raising) of the expanded fan at a rate of about 4-12 cycles/s, movement that may be intended to change the intensity or brightness of light reflected toward the front. In all of their courtship displays, *Maratus vespertilio* males hold the pedipalps apart to expose their black chelicerae.

M. vespertilio is also the only member of the genus *Maratus* known to engage in ritual male-male contests or agonistic displays (Otto & Hill 2012a). This display employs the same features as courtship display (elevated fan, extended legs III) but is quite different. For example, the pedipalps are held together. At a distance males assume a crouching position and threaten each other with the sudden extension of legs III as the fan is held in an elevated position. At close quarters, male *M. vespertilio* take turns as they spar with their legs I.

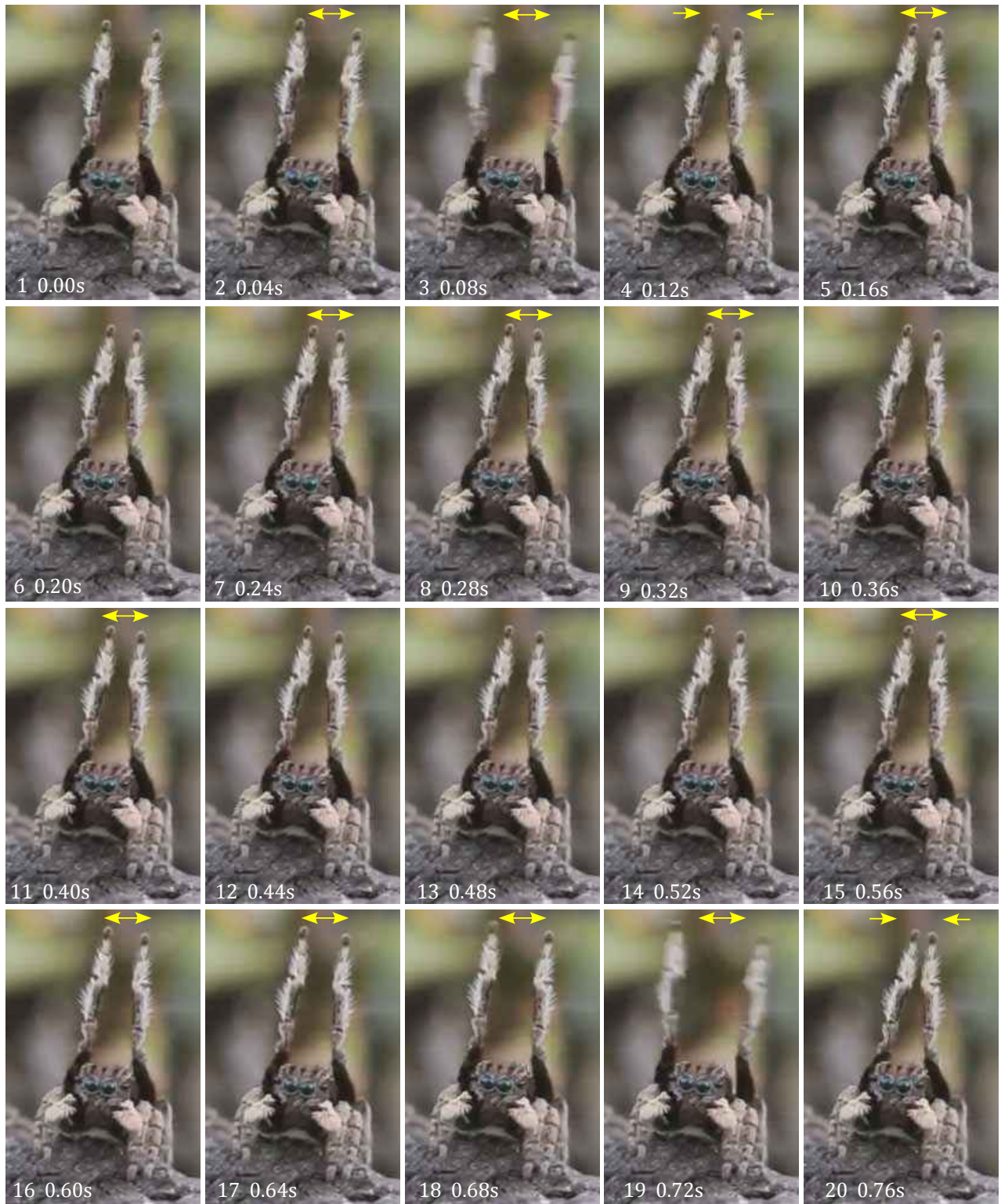


Figure 32. Consecutive video frames (25 FPS) showing caliper-like or pinchers movement (arrows, ~4-8 cycles/s) of vertical, extended legs III during display by a male *M. vespertilio*.

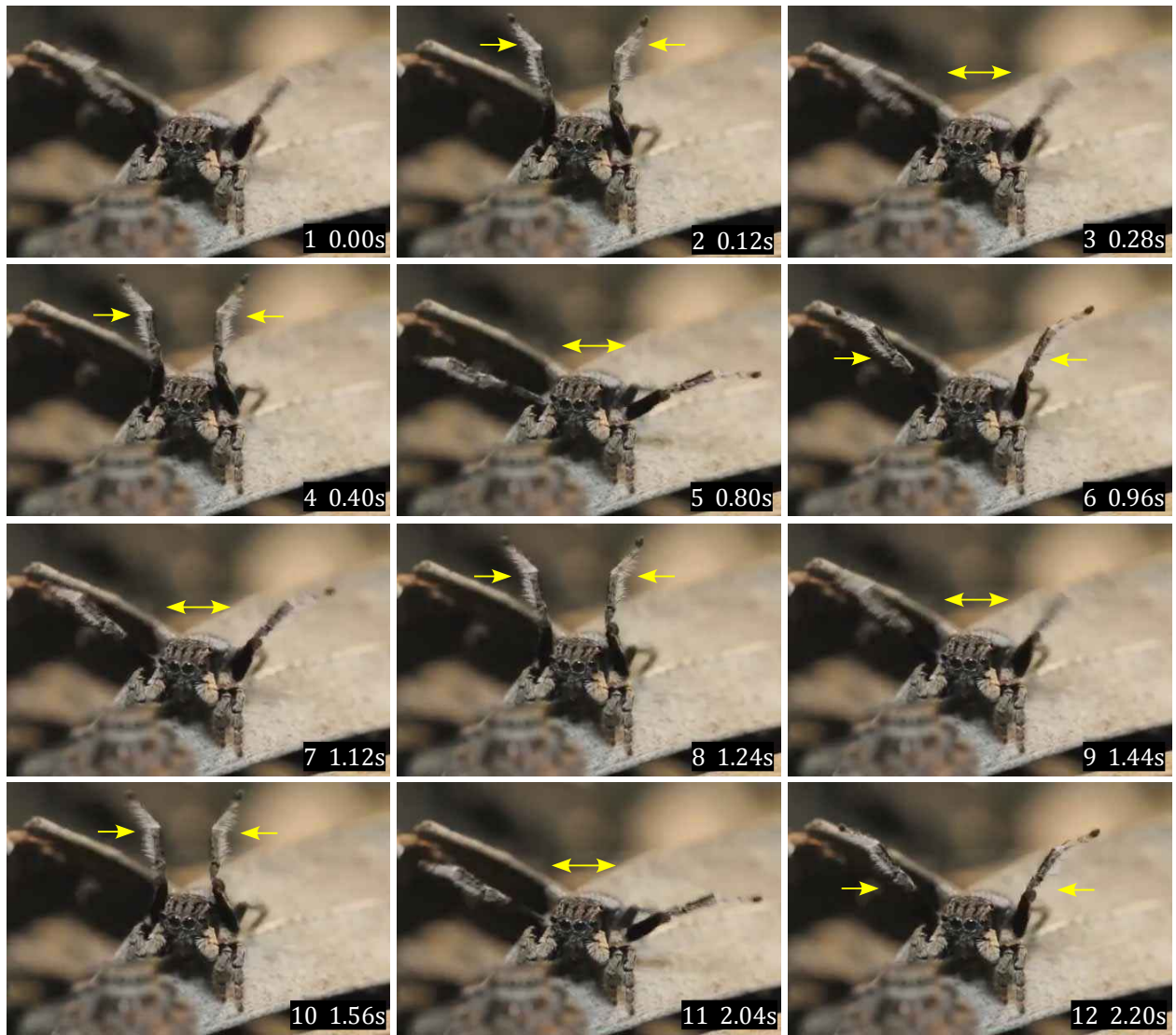


Figure 33. Sequential but not consecutive video frames (25 FPS) showing bilateral movement (arrows, ~2.5 cycles/s) of extended legs III during display by a male *M. vespertilio*.

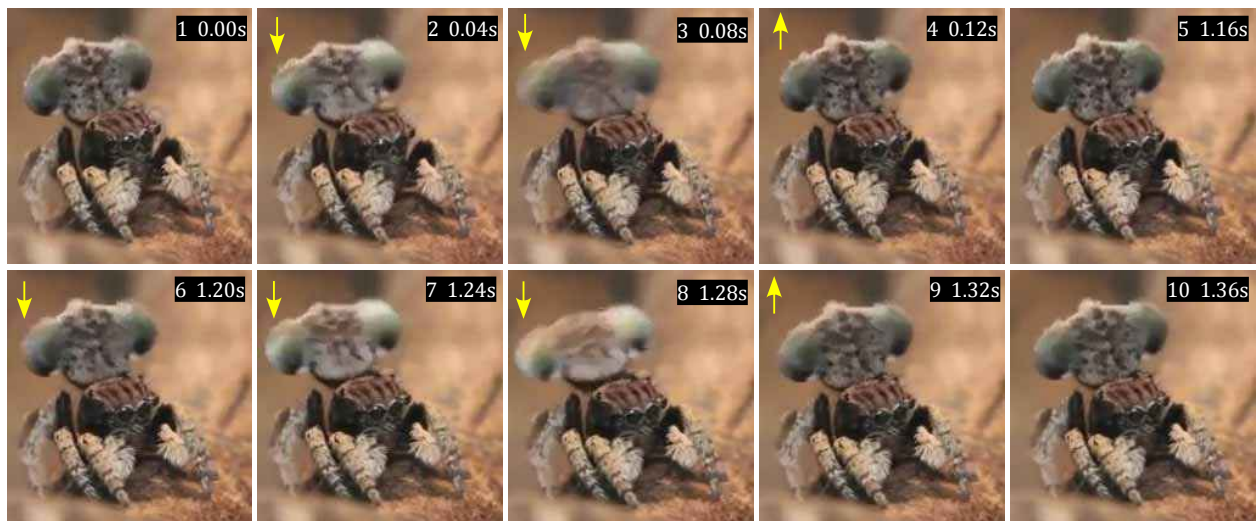


Figure 34. Sequential but not consecutive video frames (25 FPS) showing depression and elevation of the expanded fan (arrows, ~6-8 cycles/s or 0.12-0.16s/cycle but not continuous) during display by a male *M. vespertilio*.

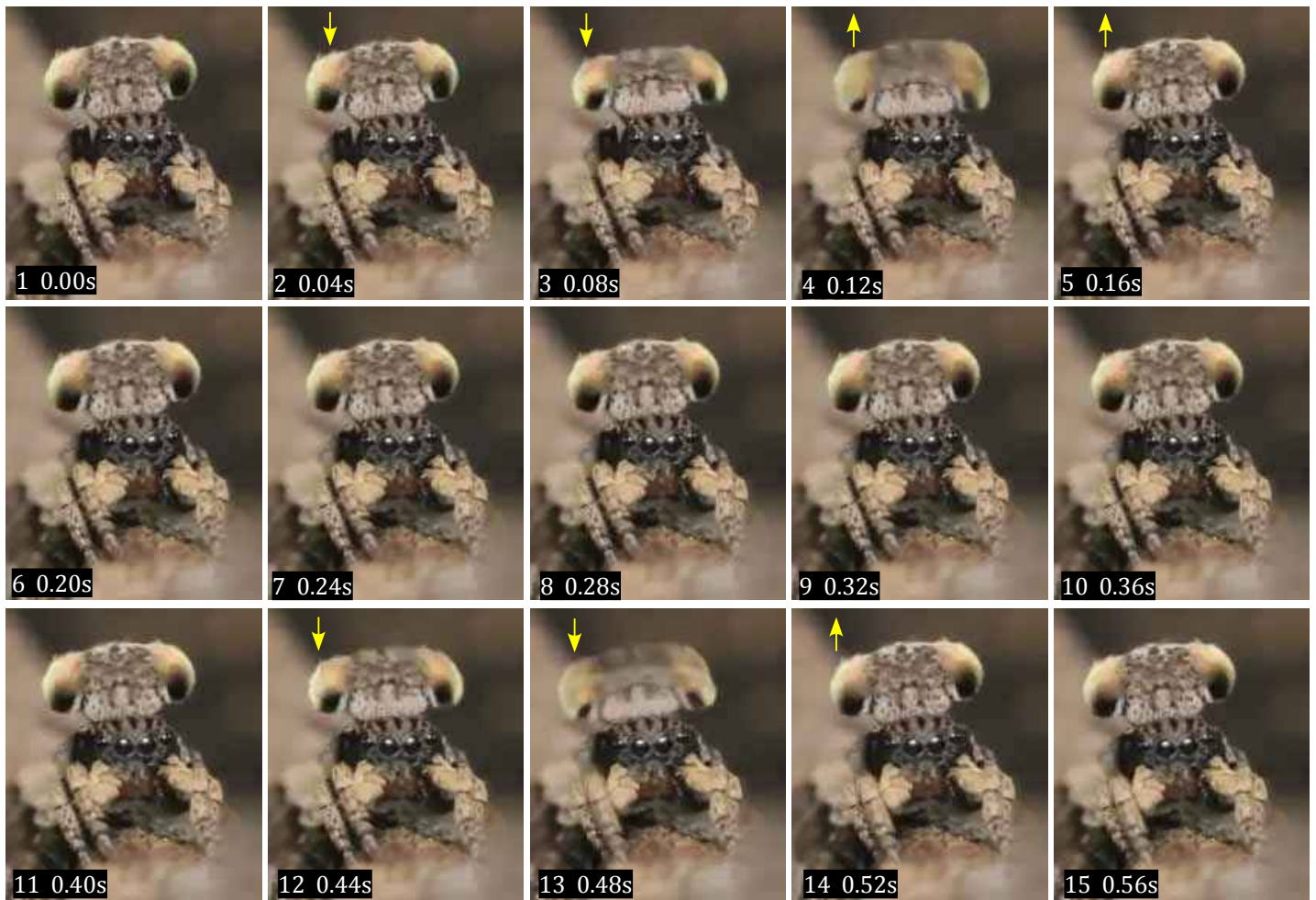


Figure 35. Consecutive video frames (25 FPS) showing depression and elevation of the expanded fan (arrows, ~6-8 cycles/s or 0.12-0.16s/cycle but not continuous) during display by a male *M. vespertilio*.

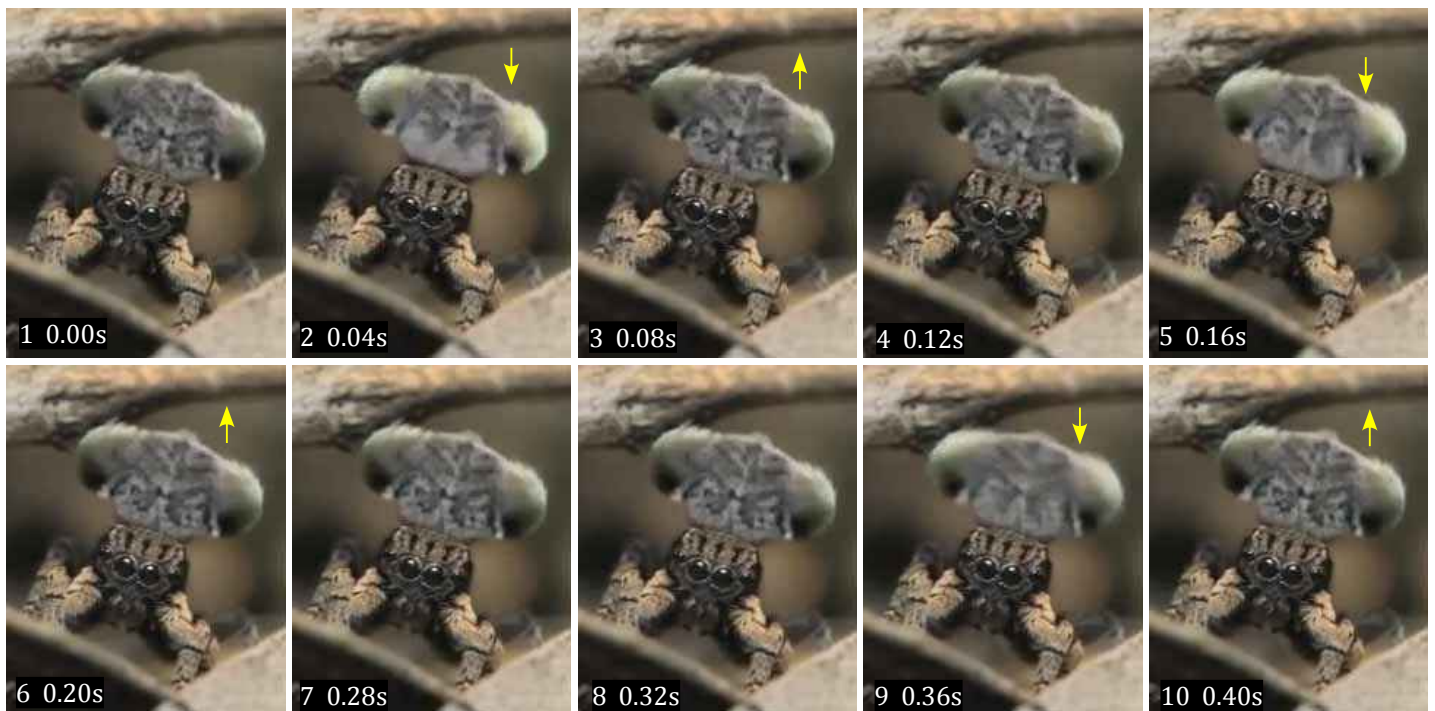


Figure 36. Consecutive video frames (25 FPS) showing three cycles of depression and elevation of the expanded fan (arrows, ~6-8 cycles/s or 0.12-0.16s/cycle but not continuous) during display by a male *M. vespertilio*.

Acknowledgments

We thank Dianne Deans, Stuart Harris, Allan Lance, Julie Morgan, and Helen Ransom for sharing their discovery of these new species with us or supplying specimens, habitat photographs and other information. Photographs not otherwise credited are copyright © Jürgen C. Otto.

References

- Karsch, F. 1878.** Diagnoses Attoidarum aliquot novarum Novae Hollandiae collectionis Musei zoologici Berolinensis [Descriptions of several new salticids from Australia in the collection of the Berlin Museum]. Mittheilungen des Münchener Entomologischen Vereins 2 (1): 22-32.
- Otto, J. C. 2012.** Peacock spider 3 (*Maratus vespertilio*). online at: <https://www.youtube.com/watch?v=MVDolRfgseY&t=90s>
- Otto, J. C. and D. E. Hill. 2011a.** *Maratus vespertilio* (Simon 1901) (Araneae: Salticidae) from southern Australia. Peckhamia 92.1: 1-6.
- Otto, J. C. and D. E. Hill. 2011b.** An illustrated review of the known peacock spiders of the genus *Maratus* from Australia, with description of a new species (Araneae: Salticidae: Euophryinae). Peckhamia 96.1: 1-27.
- Otto, J. C. and D. E. Hill. 2012a.** Contests between male *Maratus vespertilio* (Simon 1901) (Araneae: Salticidae). Peckhamia 98.1: 1-17.
- Otto, J. C. and D. E. Hill. 2012b.** Notes on *Maratus* Karsch 1878 and related jumping spiders from Australia, with five new species (Araneae: Salticidae: Euophryinae). Peckhamia 103.1: 1-81.
- Otto, J. C. and D. E. Hill. 2012c.** Notes on *Maratus* Karsch 1878 and related jumping spiders from Australia, with five new species (Araneae: Salticidae: Euophryinae), version 2. Peckhamia 103.2: 1-82.
- Otto, J. C. and D. E. Hill. 2017a.** Catalogue of the Australian peacock spiders (Araneae: Salticidae: Euophryini: *Maratus*, *Saratus*). Peckhamia 148.1: 1-21.
- Otto, J. C. and D. E. Hill. 2017b.** Five new peacock spiders from Western Australia. (Araneae: Salticidae: Euophryini: *Maratus* Karsch 1878). Peckhamia 152.1: 1-97.
- Simon, E. 1901.** Etudes arachnologiques. 31e Mémoire. L. Descriptions d'espèces nouvelles de la famille des Salticidae (suite). Annales de la Société Entomologique de France 70: 66-76.
- WSC. 2017.** World Spider Catalog. Natural History Museum Bern. online at <http://wsc.nmbe.ch>, version 18.5, accessed on 9 SEP 2017. doi: 10.24436/2