A new Cyphalonotus species (Araneae, Araneidae) from Malaysia

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Abstract: A new species of the twig-legged orb-weaver spider from the genus Cyphalonotus Simon 1895, C. selangor sp. nov., is illustrated and described based on a female specimen from Kuala Selangor Nature Park, Malaysia.

Key words: Araneae, spider taxonomy, mangrove forest, orb-weaver spider

The twig-legged orb-weaver spider from the genus Cyphalonotus Simon 1895 (family Araneidae) contains 6 recognized species (Plantnick, 2013): C. assuliformis Simon 1909; C. benoiti Archer 1965; C. columnifer Simon 1903; C. elongatus Yin, Peng & Wang 1994; C. larvatus (syn. Polys larvatus) (Simon 1881); and C. sumatranus Simon 1899. This genus has an extensive distribution in the Afrotropical region and Asian countries. Currently, an unrecognized Cyphalonotus species (Murphy and Murphy, 2000) and 2 other species, C. assuliformis from Vietnam (Simon, 1909) and C. sumatranus from Sumatra, Indonesia (Simon, 1899), have been recorded from neighboring countries in Southeast Asia.

The genus Cyphalonotus is rather similar to the genus Polys, the species of which have high abdomens with variations in shape connected to the cephalothorax, and is often confused with Polys due to their general appearances. Cyphalonotus can be recognized by the position of the eyes, whereby the lateral eyes are distinctively separated and sometimes positioned on the base or tubercle, rather than the posterior lateral eyes being far away from the other eyes as in Polys (Smith, 2006). Based on selected characters, Cyphalonotus is placed close to the genus Araneus (Smith, 2005). The bodies of the male and female Cyphalonotus are almost the same in size. Female Cyphalonotus are recognized by the epigyne, with the presence of a bulbous basal part and an extended scape (Smith, 2006).

During our field survey to document the spider fauna in different locations in peninsular Malaysia (Dzulhelmi et al., 2014), we encountered and collected a single specimen of the genus Cyphalonotus in a mangrove forest of Kuala Selangor Nature Park, in which the spider was observed descending from a tree using a fine silk approximately 5 m in height just after sunset at 1940 hours. Previous studies in mangrove forests (i.e. Koh, 1991; Norma-Rashid et al., 2009) did not record the presence of any species from the genus Cyphalonotus. The only Cyphalonotus sp. previously recorded for this country was from Genting Highland (Murphy and Murphy, 2000), in which the abdomen differed significantly. The twig-legged spider rests quite openly on dead twigs or dead branches during the day and blends in successfully with flakes of bark or lichen (Murphy and Murphy, 2000), making it very difficult to detect, which may be the reason for the very limited records that are available for this genus. The Cyphalonotus species make orb-webs at night (Smith, 2005).

Examination of the specimen showed that the present species does not have the descriptive characters of the other 6 recognized species. The closest description of the scape characteristics is that of C. sumatranus, but no illustration has been provided based on the description of that species. We provide the illustration and description of this new species here.

The collected specimen was stored in 75% ethanol. The specimen was illustrated under a Nikon SMZ-U microscope. The following abbreviations are used throughout the text: anterior lateral eyes (ALE), anterior median eyes (AME), posterior lateral eyes (PLE), posterior median eyes (PME). All measurements are in millimeters. Illustrations for comparison, which are of C. elongatus, Cyphalonotus sp., and C. larvatus, were adapted from Yin et al. (1994), Smith (2005), and Lessert (1930), respectively.
Araneidae Clerck, 1757
Cyphalonotus Simon 1895
Cyphalonotus selangor Dzulhelmi, new species

Type material. Holotype female (DMN00027); from Kuala Selangor Nature Park, Selangor, Malaysia (3°20′16″N, 101°14′56″E), collected by hand on 18 March 2013. The specimen is stored in the Museum of Zoology, University of Malaya, Malaysia.

Etymology. The specific name is a noun, referring to the state in Malaysia of the location where the holotype was collected.

Diagnosis. Eye position. (1) C. selangor has lateral eyes set distinctly apart, in which respect it resembles C. elongatus and C. sumatranus, while C. assuliformis has a closer distance between the lateral eyes. Abdomen. (2) The abdomen of C. selangor resembles C. sumatranus in the long conical shape of the abdomen, with wide breadth of the upper part and gradual tapering. It is distinctly different from C. elongatus, which has a long oval-shaped abdomen; C. larvatus and Cyphalonotus sp., which have right-angle triangle-shaped abdomens; and C. assuliformis, which has a thinner abdomen with a long rod-shaped extension. (3) C. selangor has a distinct pair of sharp-pointed humps with several indistinct short humps on the top part of the abdomen, while C. larvatus has 2 pairs of small protrusions with sharp humps at the upper front part of the abdomen and C. elongatus has cone-like humps. (4) In lateral view, C. selangor has an abdomen with an indented middle part, followed by several vague small round humps at the bottom part of the abdomen. The abdomen of C. larvatus is broad in plane view and covered with round and pointed humps; C. elongatus has 3 to 4 pairs of distinct round humps that decrease in size towards the bottom part of the abdomen. Scape. (5) C. selangor resembles C. benoiti in having a spindle-shaped scape (Archer 1965), C. sumatranus (Simon 1899) in having a straight scape that is long and narrow at the top and gradually becomes thinner, and C. larvatus, which has a consistently elongated scape. C. selangor can be distinguished by the elongated scape, with the top one-third portion larger and the bottom two-thirds gradually tapering. (6) C. selangor resembles C. elongatus in lateral view, but does not have an ‘S’ shape at the bulbous base from the scape initially, as in C. elongatus (Figures 1 and 2; Yin et al., 1994). In lateral view, C. selangor can be distinguished by the evenly broad straight scape, while C. elongatus has a consistently broad straight scape but with a thin and flat hind part, and C. larvatus has a tortuous scape. (7) The small bulbous base of C. selangor resembles that of C. elongatus and is very different from the unrecognized Cyphalonotus sp. (Figures 3 and 4; Smith 2005), which has a large protruding bulge, while C. larvatus has a broad, black, bulbous base (Figures 5 and 6; Lessert 1930). Body coloration. (8) C. selangor has a light brown sternum and femora, and does not fit the description of black sternum and femora color for C. columnifer. There is only a basic description with no illustration or photo available for C. columnifer, most notably for the description of the scape, which is the most important character for species identification.

Description. Male. Unknown. Female. Total length 6.50. Carapace: Carapace 3.65 long, 2.61 wide; carapace light brown in color, with a black color at the tip of the chelicerae. The thoracic area is wider and higher than the cephalic area (Figure 7). The cephalic area where the median eyes are positioned projects forward. Sternum is heart-shaped and almost equal in length and width: 1.70 long, 1.80 wide (Figure 8). Eyes: Both posterior and anterior eye rows recurve strongly, with black markings almost surrounding each eye. The ALE is positioned on the tubercle, and the PLE is positioned near the base of the tubercle. The AME is slightly bigger than the PME. Eye diameters: AME 0.14, ALE 0.12, PME 0.13, PLE 0.14; interdistances: AME–AME 0.28, AME–ALE 0.26, PME–PME 0.16, PME–PLE 0.45, PLE–PLE 0.75, AME–PME 0.12; lateral eyes distinctly set apart, clypeus 0.07 high (Figure 9). Abdomen: Abdomen 6.40 long, 3.60 wide; long conical abdomen with wide breadth of the upper part and gradually tapering, with the presence of 1 distinct pair of sharp-pointed humps with several indistinct short humps on the top part of the abdomen (Figure 10); in lateral view, the middle part of the abdomen indented, followed by several vague small round humps at the bottom part of the abdomen; abdomen light brown in color with several green markings on the dorsal side of the abdomen, dark brown color at the bottom of the ventral side of the abdomen (Figures 11 and 12). Legs: The legs are also light brown in color with dark annulations, leg formula I–II–IV–III; leg measurements (femur/patella/tibia/metatarsus/tarsus/total): leg I (6.25/2.25/5.75/2.63/1.34/18.22), leg II (5.75/2.25/5.25/2.50/1.38/17.13), leg III (3.13/1.34/2.25/1.30/0.80/8.82), and leg IV (5.25/1.34/4.00/1.63/1.75/13.97). Scape: The evenly broad, conical, and elongated straight scape has a small bulbous base, with the top one-third larger, and the longer two-thirds portion at the bottom gradually tapering (Figures 13 and 14). The bottom half of the scape has a darker brown color than the top half. The scape is located at the midsection of the abdomen.

Distribution. Only known from the type locality in the mangrove forest.

Natural history. Nocturnal. The spider was encountered descending from the tree canopy using a fine thin silk. It is possible that the spider rests within the tree canopy more than 5 m from the ground during the day.
Figures 1–6. Female scape: *C. elongatus*, 1- lateral, 2- ventral; *Cyphalonotus* sp., 3- lateral, 4- ventral; *C. larvatus*, 5- lateral (with abdomen), 6- ventral. Figures not drawn to scale.
Figures 7–14. Cyphalonotus selangor sp. nov., 7- dorsal view; 8- sternum; 9- frontal view; 10- lateral view; abdomen: 11- dorsal view, 12- ventral view; scape: 13- dorsal view, 14- lateral view. Scale as shown by scale bars.
Material examined. Only the type specimen. The green markings on the dorsal side of the abdomen fade and turn to a light brown color in 75% ethanol (Figure 15).

Notes. No additional record or other collection despite extensive sampling in many locations throughout Malaysia. Besides the cryptic behavior, another potential explanation is the lack of spider fauna documentation carried out for this country.

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References


