

SHORT COMMUNICATION

New Records of the Spider Fauna from Sarawak, Malaysia

(Catatan Baru Fauna Laba-Laba dari Sarawak, Malaysia)

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Spiders are one of the most diverse orders worldwide and rank seventh in total species diversity among all other group of organisms (Cardoso & Morano 2010). They are highly adaptable, widespread in almost all terrestrial ecosystems, and constitute one of the most important components of global biodiversity (McDonald 2007; Archana 2011). These predators are good indicators for environmental changes in the ecosystems, potential biological invasion, biological pest control and act as natural prey and predators (Greenstone & Sunderland 1999). Till date, there are more than 40,000 recognized spider species from 100 families (Foelix 2011; Platnick 2014). Spiders represents between 5-10% among the canopy arthropods (Floren & Reinhold 2005), and represent about 4.5% of living creatures (Grinang 2004). Unfortunately, compared to the spider diversity documentation in temperate region, very little attention had been given to the tropical region including Malaysia which is known as mega diverse country.

Sarawak, the largest state in Malaysia is located in Borneo, the third largest island in the world. Located on one of the richest treasure houses, immense with a variety of wild animal and plants, Sarawak accommodate several protected areas such as Mulu National Park and Lambir Hills National Park, that are known as one of the 'biodiversity hotspots' (Hazebroek & Abang-Morshidi 2000). The first checklist on Sarawak spiders recorded at least 307 morpho-species, with 194 recognized spider spe-

cies including 46 newly recorded species for Sarawak (Koh *et al.* 2013). However, other species such as *Gasteracantha arcuata*, *G. hasselti* and *Phrynarachne ceylonica* which had also been recorded (Grinang 2004) were not listed. Recently, several newly described species such as *Jerzego corticicola* (Maddison & Piascik 2014), *Heteropoda parva* (Jager 2014), *Aposphragisma brunomanseri*, *A. confluens*, *A. kollerii*, *A. retifer*, *A. rimba* (Thoma *et al.* 2014), *Tisaniba bijibijan*, *T. dik*, *T. kubah*, *T. mulu*, *T. selan*, *T. selasi* (Zhang & Maddison 2014) and *Opadometa kuchingensis* and *O. sarawakensis* (Dzulhelmi *et al.* 2015) shown the impression that Sarawak provides a high species richness. Some collected specimens for identification are still pending due to the lack of taxonomist in this country. Some species such as *Friula wallacii* which was discovered dated back in 1896 was never found again in Sarawak or elsewhere (Koh *et al.* 2013). Compared to the number of spider fauna recorded in peninsular Malaysia (Norma-Rashid & Li 2009; Dzulhelmi *et al.* 2014a), and Sabah state (Dzulhelmi *et al.* 2014b), the spider fauna in this large state is still poorly investigated, with very limited published references. This present study aims to document the spider species that had not previously been recorded for Sarawak.

Spider specimens were collected between April 2014 and October 2014 by hand-picking and stored in 75% ethanol during fieldtrips in selected localities at Kuching division in Sarawak. Genitalia were dis-

sected from the specimens and studies either under SMZ-U stereo microscope (Nikon, Japan) or under 50x dissecting microscope (AmScope, USA). Species identification was performed using the following literatures and references therein where applicable: Barrion & Litsinger (1995), Song *et al.* (1999), Murphy & Murphy (2000), Sebastian & Peter (2009), Anonymous (2011), Koh & Ming (2013) and World Spider Catalog (2015). The names used in this present study followings Platnick (2014). Additional notes were based on field observations during the sampling period.

A total of 35 spider species from 30 genera and 10 families were identified as new records for the state of Sarawak. These new records are inclusive of Araneidae (10 species), Corinnidae (2 species), Psecridae (1 species), Salticidae (8 species), Sparassidae (1 species), Tetragnathidae (7 species), Theridiidae (2 species), Thomisidae (2 species), Uloboridae (1 species) and Zodariidae 1 species).

New records of spiders in Sarawak

Family: Araneidae

1. *Araneus mitificus* (Simon, 1886)
Material examined: BDC Kuching Park, 10.07.2014, ♀; Kubah National Park, 18.04.2014, ♀
Notes: Builds an orb-web to trap insects and a silken retreat nearby to rest in.
2. *Argiope catenulata* (Doleschall 1859)
Material examined: Semenggoh Nature Reserve, 28.10.2014, ♀
Notes: Builds an orb-web during the daytime.
3. *Argiope pulchella* Thorell, 1881
Material examined: Matang Wildlife Centre, 14.04.2014, ♀
Notes: Builds an orb-web above undergrowth shrubs at pitcher trail.
4. *Caerostris sumatrana* Strand, 1915
Material examined: Borneo Highlands Resort, 21.10.2014, ♀
Notes: Outside its web, the spider can camouflage very well on wooden stems.
5. *Cyrtophora cylindroides* (Walckenaer, 1841)
Material examined: Kubah National Park, 18.04.2014, ♀
Notes: The spider can be found at *Araucaria* trees in the forest up to 1000m elevation.
6. *Cyrtophora moluccensis* (Doleschall, 1857)
Material examined: Kubah National Park,

18.04.2014, ♀

Notes: This spider does not build orb-webs. A distinct thick cone-shaped silk structure is visible in its web resembling like a tent.

7. *Gasteracantha diardi* (Lucas, 1835)

Material examined: Kubah National Park, 18.04.2014, ♀; Gunung Gading National Park, 23.04.2014, ♀

Notes: This species is distinguished from other *Gasteracantha* species by their long dark abdomen. Its web is decorated with white specks of silk.

8. *Neoscona nautica* (Koch, 1875)

Material examined: Kubah National Park, 18.04.2014, ♀

Notes: They are often found snuggling under leaves during the day.

9. *Parawixia dehaani* (Doleschall, 1859)

Material examined: Gunung Gading National Park, 23.04.2014, ♀

Notes: The abdominal patterns of this nocturnal species are variable.

10. *Zygiella calypttrata* (Workman, 1894)

Material examined: Kubah National Park, 18.04.2014, ♀

Notes: The spider usually hides in a curled leaf nearby its orb-web during the daytime.

Family: Corinnidae

11. *Echinax oxyopoides* (Deeleman-Reinhold, 1995)
Material examined: Kubah National Park, 19.04.2014, ♀
Notes: This species hunts during the night time.
12. *Medmassa insignis* Thorell, 1890
Material examined: Bako National Park, 26.04.2014, ♀
Notes: This species can be found wandering on tree barks.

Family: Psecridae

13. *Psecchus borneo* Levi, 1982
Material examined: Kubah National Park, 18.04.2014, ♀
Notes: This species build webs in undergrowth shrubs and at the base of the tree root.

Family: Salticidae

14. *Bavia sexpunctata* (Doleschall, 1859)
Material examined: Bako National Park, 26.04.2014, ♀

Notes: This jumping spider hunts other spiders in which do not build webs. They rely more on agility and precision to capture prey.

15. *Cosmophasis umbratica* Simon, 1903
Material examined: BDC Kuching Park, 10.07.2014, ♂
Notes: The male of this species have iridescent markings all over its body that can reflect UV light.
16. *Hyllus semicupreus* (Simon, 1885)
Material examined: Kenyalang Park, 06.07.2014, ♀
Notes: This species sneaks up very slowly when in hunting-mode. Commonly found among foliage and tree trunks. Construct oval, thick silken retreat under the leaves surface.
17. *Menemerus fulvus* (Koch, 1877)
Material examined: Kenyalang Park, 06.07.2014, ♀
Notes: Associated with man-made structures. Usually found crawling on the walls outside houses.
18. *Phaeacius malayensis* Wanless, 1981
Material examined: BDC Kuching Park, 10.07.2014, ♀
Notes: Lives on the tree trunks of *Cyrtostachys renda* palm trees where it camouflages perfectly.
19. *Plexippus petersi* (Karsch, 1878)
Material examined: Kenyalang Park, 06.07.2014, ♀
Notes: This spider is usually associated with man-made structures. They prey on domestic pests like houseflies and mosquitoes.
20. *Ptocasius weyersi* Simon, 1885
Material examined: Kubah National Park, 19.04.2014, ♀
Notes: This species spends most of its time on plants where it hunts.
21. *Thorelliola ensifera* (Thorell 1877)
Material examined: Kubah National Park, 20.04.2014, ♂
Notes: Sexual dimorphism is evident in this species where males have a noticeable “horn-like projection” at the clypeus.

Family: Sparassidae

22. *Heteropoda natans* Jager, 2005
Material examined: Gunung Gading National Park, 23.04.2014, ♀
Notes: Normally found waiting to ambush preys

on tree trunks and on leaves of undergrowth foliage.

Family: Tetragnathidae

23. *Leucauge argentina* (Hasselt, 1882)
Material examined: Kubah National Park, 20.04.2014, ♀; Gunung Gading National Park, 22.04.2014, ♀; Permai Rainforest Resort, 25.10.2014, ♀
Notes: Found solitary on undergrowth shrubs, or sometimes aggregate their webs with conspecific at large tree roots.
24. *Leucauge celebesiana* (Walckenaer, 1841)
Material examined: Kubah National Park, 18.04.2014, ♂♀; Borneo Highlands Resort, 21.10.2014, ♀; Permai Rainforest Resort, 25.10.2014, ♀
Notes: Aggregate their webs with conspecific at windy areas in garden, residential area and also at waterfall area.
25. *Leucauge sabahan* Dzulhelmi, in review
Material examined: Kubah National Park, 18.04.2014, ♀; Gunung Gading National Park, 22.04.2014, ♀
Notes: The presence of dense brush of hairs on tibia IV resembles the *Opadometa* species. This species is usually found in disturbed area within the forest reserve.
26. *Mesida gemmea* (Hasselt, 1882)
Material examined: Kubah National Park, 19.04.2014, ♀; Gunung Gading National Park, 24.04.2014, ♀
Notes: Primarily inhabites the ground layer vegetation and bushes.
27. *Tetragnatha ceylonica* Cambridge, 1869
Material examined: Kubah National Park, 18.04.2014, ♀
Notes: This species will put the legs together to prevent detection from predators.
28. *Tetragnatha hasselti* Thorell, 1890
Material examined: Kubah National Park, 19.04.2014, ♀
Notes: Looks thin with fragile body, moves extremely fast and camouflage well.
29. *Tylorida ventralis* (Thorell, 1877)
Material examined: Bako National Park, 26.04.2014, ♀
Notes: This spider lives in many habitat types and gardens. They feed on a variety of prey type including leaf hoppers, termites and wasps.

Family: Theridiidae

30. *Chikunia nigra* (Pickard-Cambridge 1880)
Material examined: Kubah National Park,
18.04.2014, ♀; Permai Rainforest Resort,
24.10.2014, ♀
Notes: The “zebra stripes” and “smiley face” pat-
terns on the abdomen are characteristic of this
species. They feed on prey such as Homopteran
during the night.

31. *Janula bubalis* Yoshida and Koh, 2011
Material examined: Sama Jaya Nature Reserve,
15.07.2014, ♀
Notes: The horn-like projections and the face-like
mark on its abdomen are distinct of this species.

Family: Thomisidae

32. *Angaeus rhombifer* Thorell, 1890
Material examined: Gunung Gading National



Figure 1: (1): *Cryptothele sundaica* (2) *Medmassa insignis* (3) *Gasteracantha diardi* (4) *Phrynarchne ceylonica* (5) *Lycopus rubropictus* (6) *Parawixia dehaani*.

Park, 22.04.2014, ♀

Notes: During hunting mode, this crab spider remains stationary and patiently waits before ambushing any prey that moves nearby.

33. *Lycopus rubropictus* Workman, 1896

Material examined: Bako National Park, 26.04.2014, ♀

Notes: Females are often found in their silken retreat with their egg sac on thin leaves or grass.

Family: Uloboridae

34. *Philoponella raffrayi* (Simon, 1891)

Material examined: Gunung Gading National Park, 22.04.2014, ♂

Notes: Fully adult female have orange colored body for at least a week after the final molt and becomes black in color after a few weeks later.

Family: Zodariidae

35. *Cryptothele sundaica* Thorell, 1890

Material examined: Permai Rainforest Resort, 24.10.2014, ♀

Notes: This cryptic spider was spotted at still in between two dead leaves on the forest floor. They become immobile if it feels threatened rather than running-off in search for a hiding place.

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