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Spider fauna (Arachnida, Araneae) from Sabah, Malaysia

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Abstract

This is the first series representing a total of 222 spider species from 30 families and 130 genera recorded in Sabah. The data was obtained from available literatures, scientific expedition and other field collections from November 2010 to December 2011. A total of 40 species is considered as new record for this state. This inventory aims to offer valuable information that can be used as general guidelines for future research of Sabah spider fauna.

Keywords: Diversity, new record, checklist, Borneo.

1. Introduction

The spider fauna from Sabah remains poorly explored. Besides the general book [e.g. 6, 13, 20] and several species notes (e.g. description of new species), there is lack of comprehensive studies [e.g. 10, 12] documenting the biodiversity of spiders from Sabah. These previous data are very important to serve as a base for future studies. Unfortunately, the information is scattered, which makes it difficult to determine the actual proportions of spider fauna for this large state. At least 550 spider species are estimated to be present in the tree canopy of Sabah [9]. About 543 species from neighboring Brunei [13], roughly 307 species from Sarawak [14], and approximately 305 species had been officially recorded from Kalimantan [24, 29]. The estimated numbers usually represent species that are common and easily found, while inadequate information for the existence on small, cryptic and undescribed species had been verified. To provide a brief insight and nurture the local interest on spider fauna of Sabah, we printed a poster on spiders of Malaysia in dual languages (English and Bahasa Malaysia) in 2013. The poster contains 32 species at genus level to demonstrate the variation in appearance to trigger some interest to the local researcher and public communities. The present paper is a compilation of information from many available literatures, from scientific expedition and other field collections. This first series inventory aims to offer valuable information and can be used as a general guideline for future research on spiders from Sabah.

2. Material & Methods

Specimens were photographed and collected by hand during the fieldtrip throughout Sabah from November 2010 to December 2011 (Figure 1). Female genitalia were dissected, cleared in Potassium Hydroxide (KOH) and observed under microscope. The details for specimens examined are presented in the following order: number of specimens (M: male, F: female), period of time (day or night), collectors (initials), date, situation of the spider when found, and localities. Published literatures for spider recorded in Sabah are presented in a table in the following order: family, species name, general notes (i.e. behaviors, distributions, habitats, natural history, etc.), page number (or figures/plates) and references (Table 1). Spider species recorded for the first time for Sabah is also noted. Unlike stated otherwise, additional notes were based on previous field observations from other localities throughout the country [7].

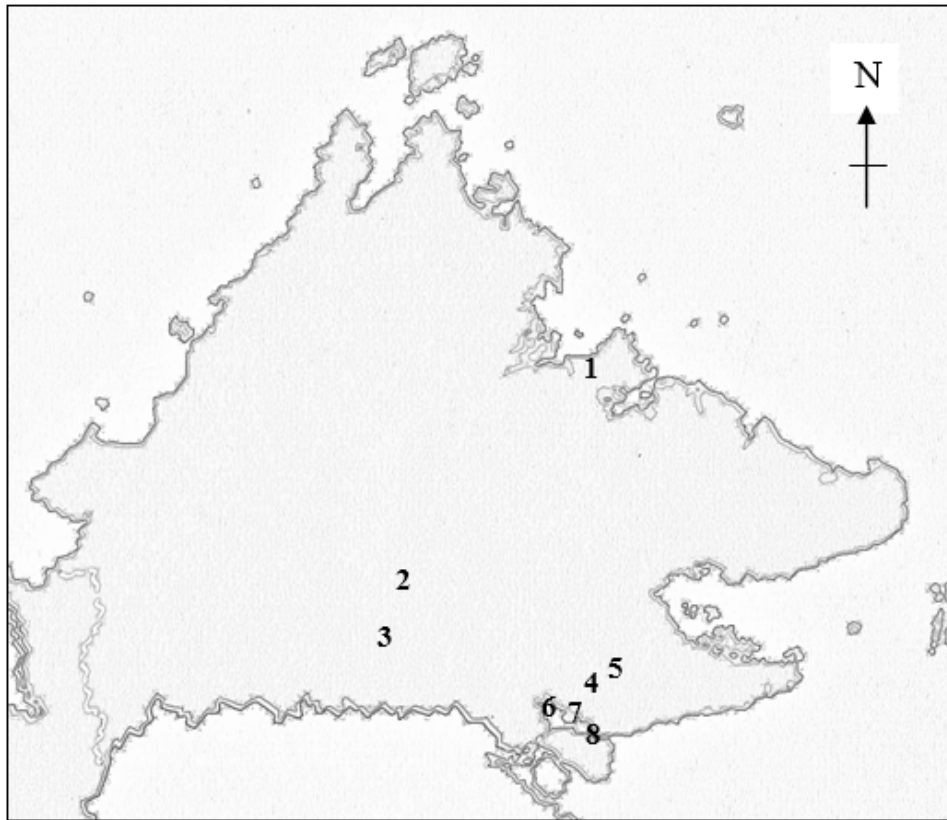


Fig 1: Map of Sabah, Malaysia, Borneo.

3. Localities

1. Rainforest Discovery Centre, Sandakan, 5°52'34"N, 117°56'41"E, 8-9 June 2011, Dipterocarp forest.
2. Imbak Canyon Conservation Area, Lahad Datu, 26 November-5 December 2010, 5°19'56"N, 116°91'4"E, Dipterocarp forest.
3. Maliau Basin, Tawau, 4°51'8"N, 116°50'9"E, 12-13 November 2011, Dipterocarp forest.
4. Bombalai Hill, Tawau, 4°23'16"N, 117°52'46"E, 29-30 August 2011, Hill forest.
5. Tawau Hills Park, Tawau, 4°23'53"N, 117°53'16"E, 1-2 November 2011, Dipterocarp forest.
6. Tawau Gemok Hill, Tawau, 4°19'7"N, 117°52'4"E, 18-19 July 2011, Hill forest.
7. Sungai Tawau, Tawau, 4°18'29"N, 117°53'17"E, 5-6 October 2011, oil palm plantation along river.
8. Semarak Garden, Tawau, 4°17'48"N, 117°53'24"E, 14-15 August 2011, gardens.

4. Results & Discussion

Table 1: List of spiders in Sabah from published literatures

Family / Species	General notes (i.e. behaviors, distributions, habitats, natural history, etc.)	Page / plates, References
Araneidae		
<i>Argiope aemula</i> (Walckenaer, 1841)	The spider found to feed on captured Orthoptera (i.e. grasshopper). It constructs its orb-web at long grasses. It is distributed in South East Asia, New Guinea, India, China, Japan and Australia.	Pl.13.4, [20]
<i>Cyrtophora beccarii</i> (Thorell, 1878)	This spider can be found in mangrove forests ^[22] in South East Asia and parts of India.	p65, [13]
<i>Friula wallacei</i> Cambridge, 1896	It is currently found in Borneo	p90, [20]
<i>Gasteracantha clavigera</i> Giebel, 1863	It can be found during the day time in dipterocarp forests in South East Asia.	Pl.16.1, [20]
<i>Gasteracantha crucigera</i> Bradley, 1877	Can be found in montane forests, heath forests and forest near streams ^[32] . It has been recorded at Poring Hot Spring NR and Maliau Basin.	p101, [32]; p74, [13]
<i>Gasteracantha sturi</i> (Doleschall, 1857)	It has been recorded at Kinabalu NP.	Pl.16.4, [20]
<i>Gasteracantha kuhli</i> Koch, 1837	Attaches its long fine silk between two trees to move from one place to another during the day time. It can be found in gardens. It can be found at Kinabalu NP.	Pl.16.5, [20]
<i>Neogea nocticolor</i> (Thorell, 1887)	It is recorded at in South East Asia and parts of India. It can be found at Ulu Dwun in Sandakan ^[28] .	p371, [28]

<i>Poltys idae</i> (Ausserer, 1871)	It is recorded in Borneo	p499, [20]
CLUBIONIDAE		
<i>Clubiona apiculata</i> Dankittipakul & Singtripop, 2014	Found in decomposing plant and organic materials at higher elevations and cooler area [3]. It can be found at Kinabalu NP.	p1928, [3]
<i>Clubiona biembolata</i> Deeleman-Reinhold, 2001	It is distributed at South East Asia. It can be found at Danum Valley NP.	P132, [6]
<i>Clubiona conica</i> Dankittipakul & Singtripop, 2014.	Lives under leaves and organic litter in dipterocarp forests. It has been recorded at Poring Hot Spring NR.	p1930, [3]
<i>Clubiona corticalis</i> (Walckenaer, 1802)	It is recorded from Europe to Central Asia [24].	p114, [6]
<i>Clubiona inquilina</i> Deeleman-Reinhold, 2001	It can be found at Kinabalu NP.	p138, [6]
<i>Clubiona krisiensis</i> Barrion & Litsinger, 1995	It can be found at Poring Hot Spring NR.	p134, [6]
<i>Clubiona pahilistapyasea</i> Barrion & Litsinger, 1995	It is distributed in South East Asia. It can be found at Poring Hot Spring NR.	p111, [6]
<i>Clubiona pala</i> Deeleman-Reinhold, 2001	It has been recorded in Indonesia and Borneo.	p137, [6]
<i>Clubiona parconcinna</i> Deeleman-Reinhold, 2001	It has been recorded in Thailand and Borneo.	p117, [6]
<i>Clubiona scandens</i> Deeleman-Reinhold, 2001	It can be found at Poring Hot Spring NR	p126, [6]
<i>Clubiona silvestris</i> Deeleman-Reinhold, 2001	It can be found at Poring Hot Spring NR	p137, [6]
<i>Malamatidia bohorokensis</i> Deeleman-Reinhold, 2001	It is recorded at Indonesia, Malaysia and Borneo.	p191, [6]
<i>Malamatidia vethi</i> Deeleman-Reinhold, 2001	It has been recorded in Malaysia and Borneo	p197, [6]
<i>Nusatidia aeria</i> (Simon, 1897)	It is recorded on an island off the east coast of Sabah.	p179, [6]
<i>Nusatidia borneensis</i> Deeleman-Reinhold, 2001	The spider can be found in Indonesia and Borneo. It can be found at Poring Hot Spring NR.	p171, [6]; p93, [13]
<i>Pristidia longistila</i> Deeleman-Reinhold, 2001	It is recorded in Borneo.	p187, [6]
<i>Pristidia prima</i> Deeleman-Reinhold, 2001	It is recorded at in Thailand, Malaysia, Indonesia and Borneo.	p182, [6]
<i>Pristidia viridissima</i> Deeleman-Reinhold, 2001	It is recorded in South East Asia. It can be found in Danum Valley NP and Kinabalu NP.	p189, [6]; p95, [13]
<i>Pteroneta saltans</i> Deeleman-Reinhold, 2001	It can be found in Malaysia, Indonesia and Borneo. It can be found at Kinabalu NP.	p148, [6]
<i>Pteroneta tertia</i> Deeleman-Reinhold, 2001	It can be found in Singapore, Indonesia, Borneo. It can be found at Kinabalu NP.	p152, [6]
<i>Scopelio verrens</i> Deeleman-Reinhold, 2001	It has been recorded in Borneo. It can be found at Ulu Dusun and Tamparuli	p147, [6]
CORINNIDAE		
<i>Aetius nocturnus</i> Deeleman-Reinhold, 2001	It has been recorded in Thailand and Borneo. It can be found at Danum Valley NP.	p336, [6]
<i>Castoponera lecythus</i> Deeleman-Reinhold, 2001	It can be found in South East Asia. It has been recorded at Danum Valley NP.	p314, [6]; p98, [13].
<i>Corinnomma javanum</i> Simon, 1905	It can be found in Thailand, Indonesia and Borneo. It can be found at Kinabalu NP	p321, [6]
<i>Corinnoma rapax</i> Deeleman-Reinhold, 1993	It has been recorded in Indonesia and Borneo. It can be found at Poring Hot Spring NR.	p323, [6]; p99, [13].
<i>Medmassa diplogale</i> Deeleman-Reinhold, 2001	It can be found at Poring Hot Spring NR.	p354, [6]
<i>Medmassa insignis</i> (Thorell, 1890)	It can be found wondering on tree trunk during the night time. It can be found at Poring Hot Spring NR.	p349, [6]; p101, [13].
<i>Medmassa tigris</i> (Deeleman-Reinhold, 1995)	It has been recorded in Indonesia and Borneo. It can be found at Poring Hot Spring NR.	p351, [6]; p102, [13].
<i>Serendib volans</i> Deeleman-Reinhold, 2001	It is recorded at Thailand and Borneo. It can be found at Poring Hot Spring NR.	p339, [6]
<i>Sphecotyplus birmanicus</i> (Thorell, 1897)	It has been recorded in Myanmar and Borneo. It can be found at Poring Hot Spring NR.	p331, [6]
CTENIDAE		
<i>Anahita feai</i> (Cambridge, 1902)	It has been recorded in Myanmar and Borneo.	p503, [20]
<i>Ctenus bicostatus</i> Thorell, 1890	It is recorded in Borneo.	p503, [20]
EUTICHURIDAE		
<i>Calamopus phyllicola</i> Deeleman-Reinhold, 2001	It is recorded in Borneo.	p244, [6]
GNAPOSIDAE		

<i>Hongkongia reatrix</i> Deeleman-Reinhold, 2001	It has been recorded in Indonesia and Borneo. It can be found at Danum Valley NP.	p520, [6]
<i>Micythus pictus</i> Thorell, 1897	It can be found in Myanmar and Borneo. It can be found at Poring Hot Spring NR.	p524, [6]
<i>Zelotes sarawakensis</i> (Thorell, 1890)	It has been recorded in Pakistan, Australia and Borneo. This species is found at Kinabalu NP.	p545, [6]
HERSILIIDAE		
<i>Hersilia jajaj</i> Rheims & Brescovit, 2004	It can be found at Kinabalu NP.	p2852, [26]
<i>Hersilia kerekot</i> Rheims & Brescovit, 2004	It can be found at Kinabalu NP.	p2856, [26]
<i>Hersilia kinabaluensis</i> Baehr & Baehr, 1993	It can be found at Kinabalu NP.	p508, [20]
<i>Hersilia lelabah</i> Rheims & Brescovit 2004	It can be found at Kinabalu NP.	p2855, [26]
<i>Tamopsis floreni</i> Rheims & Brescovit, 2004	It can be found at Kinabalu NP.	p2858, [26]
LINYPHIIDAE		
<i>Dubiaranea deelemanae</i> Millidge, 1995	It can be found at Kinabalu NP.	p512, [20]
<i>Indophantes kalimantanus</i> Saaristo & Tanasevitch, 2002	It can be found at Kinabalu NP.	p320, [27]
<i>Indophantes lehtineni</i> Saaristo & Tanasevitch, 2002	It can be found at Kinabalu NP.	p322, [27]
<i>Indophantes kinabalu</i> Saaristo & Tanasevitch, 2002	It can be found at Kinabalu NP.	p324, [27]
<i>Nerienne macella</i> (Thorell, 1898)	This spider lives in groups and constructs sheet-web on flowering shrubs at higher elevations and cooler regions. Lots of males and females were found mating in June. It can be found at South East Asia and China. It can be found at Mesilau Nature Resort, Kinabalu NP	p192, [20]; p122 [13]
<i>Nerienne sundaica</i> (Simon, 1905)	It has been recorded in Indonesia. It can be found at Kinabalu NP.	Pl.6.7, [20]
<i>Pronasoona sylvatica</i> Millidge, 1995	It has been recorded in Borneo.	p200, [20]
LIOCRANIDAE		
<i>Koppe kinabalensis</i> Deeleman-Reinhold, 2001	It can be found at Kinabalu NP.	p282, [6]
<i>Oedignatha mogamoga</i> Marples, 1955	It can be found in Seychelles, Samoa, Malaysia and Borneo. It is recorded at Kota Kinabalu.	p273, [6]
<i>Sesieutes borneensis</i> Deeleman-Reinhold, 2001	It can be found in Borneo, India and Philippines. It can be found at Poring Hot Spring NR.	p454, [6]
<i>Sesieutes bulbosus</i> Deeleman-Reinhold, 2001	It can be found at Danum Valley NP	p455, [6]
<i>Sesieutes minor</i> Deeleman-Reinhold, 2001	It can be found at Kinabalu NP	p458, [6]
<i>Teutamus andrewdavisi</i> Deeleman-Reinhold, 2001	It can be found at Danum Valley NP	p485, [6]
<i>Teutamus vittatus</i> Deeleman-Reinhold, 2001	It can be found at Kinabalu NP	p487, [6]
LYCOSIDAE		
<i>Lysania sabahensis</i> Lehtinen & Hippa, 1979	It is found at Kota Kinabalu.	p213, [20]
<i>Passiena spinicrus</i> Thorell, 1890	It is found at Tawau.	p402, [16]
<i>Zoica falcata</i> Lehtinen & Hippa, 1979	It is recorded at New Guinea and Borneo. It is found at Kota Kinabalu.	p214, [20]
MITURGIDAE		
<i>Tamin pseudodrassus</i> Deeleman-Reinhold, 2001	It can be found at Kinabalu NP, Danum Valley NP.	p213, [6]
<i>Tamin simoni</i> Deeleman-Reinhold, 2001	It is recorded in Borneo.	p215, [6]
<i>Xantharia floreni</i> Deeleman-Reinhold, 2001	It can be found at Poring Hot Spring NR	p217, [6]
NEPHILIIDAE		
<i>Herennia deelemanae</i> Kuntner, 2005	Can be found in heath forests and dipterocarp forests ^[15] . It is recorded at Poring Hot Spring NR and Beaufort.	p402, [15]
<i>Herennia multipuncta</i> (Doleschall, 1859)	They construct webs on tree trunk in peat swamp forests, mangrove forests and heath forests. It is distributed in South East Asia, New Guinea, India and China ^[24] .	p311, [21]
<i>Nephilengys malabarensis</i> (Walckenaer, 1841)	This spider constructs tubular retreat at wall corners, and also in cracks in soil at hill slope. It is distributed in South East Asia, New Guinea and India ^[24] . This spider can be found at Mesilau Nature Resort and Kinabalu NP.	p383, [20]

OCHYROCERATIDAE		
<i>Leclercera ocellata</i> Deeleman-Reinhold, 1995	It can be found at Kinabalu NP.	p226, [20]
<i>Psilodermes althepoides</i> Deeleman-Reinhold, 1995	It can be found at Kota Kinabalu.	p523, [20]
OONOPIDAE		
<i>Prethopalpus sabah</i> Baehr, 2012	It is recorded in Borneo.	p1, [2]
<i>Xyphinus lemniscatus</i> Deeleman-Reinhold, 1987	It can be found at Kinabalu NP.	p525, [20]
<i>Xyphinus xanthus</i> Deeleman-Reinhold, 1987	It is recorded at the west coast division of Sabah.	p525, [20]
OXYOPIDAE		
<i>Hamadruas hieroglyphica</i> (Thorell, 1887)	It has been recorded in Myanmar, Malaysia and Brunei	p142, [13]
<i>Hamadruas superba</i> (Thorell, 1887)	It is distributed in South East Asia. It is found at Poring Hot Spring NR.	p689, [5]; p143, [13]
<i>Hamataliwa catenula</i> Deeleman-Reinhold, 2009	It has been recorded in Malaysia, Indonesia and Borneo. It is found at Danum Valley NP.	p687, [5]
<i>Hamataliwa helia</i> (Chamberlin, 1929)	It is found at Kinabalu NP.	p682, [5]
<i>Hamataliwa floreni</i> Deeleman-Reinhold, 2009	It is recorded at at Malaysia, Indonesia and Brunei. It is found at Crocker Range NP.	p681, [5]; p144, [13].
<i>Hamataliwa ignifuga</i> Deeleman-Reinhold (2009)	It is found at Poring Hot Spring NR.	p687, [5]
<i>Hamataliwa incompta</i> (Thorell, 1895)	The female sits on the eggs that are cloaked with a silk which it guards until it hatch. It can be found in gardens and dipterocarp forests. It is distributed at South East Asia. It is recorded at Crocker Range NP and Kinabalu NP.	p678, [5]; p145, [13]
<i>Hamataliwa peterjaegeri</i> Deeleman-Reinhold, 2009	It is found at Poring Hot Spring NR	p685, [5]
<i>Hamataliwa pricompta</i> Deeleman-Reinhold, 2009	It is found at Poring Hot Spring NR	p683, [5]
<i>Hamataliwa vanbruggeni</i> Deeleman-Reinhold, 2009	It is found at Kinabalu NP, Poring Hot Spring NR and Danum Valley NP	p679, [5]
<i>Tapponia micans</i> Simon, 1885	It can be found in Malaysia, Indonesia and Brunei. It is found at Kinabalu NP	p692, [5]; p147, [13]
PHOLCIDAE		
<i>Aetana kinabalu</i> Huber, 2005	It can be found in Malaysia and Brunei. It is found at Kinabalu NP	p150, [13]
<i>Calapnita deelemanae</i> Huber, 2011	It is found at Poring Hot Spring NR	p152, [13]
PHRUROLITHIDAE		
<i>Abdosetae ornata</i> (Deeleman-Reinhold, 2001)	It can be found at Kinabalu NP.	p420, [6]
<i>Orthobula bilobata</i> Deeleman-Reinhold, 2001	It has been recorded at Indonesia and Borneo. It can be found at Tuaran.	p433, [6].
<i>Plynnon zborowskii</i> Deeleman-Reinhold, 2001	It is found at Poring Hot Spring NR	p439, [6]
PSECHRIDAE		
<i>Fecenia protensa</i> Thorell, 1891	A rolled leaf attached at the upper part of the web is used to hide itself. It can be found in South East Asia and India.	p167, [13]
<i>Psechrus argentatus</i> (Doleschall, 1857)	The spider also captured prey such as Apidae (i.e. stingless bee, <i>Trigona</i> sp.) as its food source. It can be found in Malaysia, Indonesia and Australis. It is found at Kota Kinabalu.	p128 [17]; p530, [20].
<i>Psechrus borneo</i> Levi, 1982	It is distributed at Malaysia, Indonesia, Brunei and Borneo. It is found at Poring Hot Spring NR and Kinabalu NP.	p168, [13]
<i>Psechrus kinabalu</i> Levi, 1982	It is found at Kinabalu NP.	p126, [17]; p530, [20]
<i>Psechrus libelti</i> Kulczynski, 1908	It has been recorded at Thailand, Malaysia, Indonesia and Brunei.	p169, [13]
SALTICIDAE		
<i>Agorius borneensis</i> Edmunds & Proszynski, 2001	It is found at Sepilok NR and Danum Valley NR.	p139, [8]; p36, [30]
<i>Artabrus erythrocephalus</i> (Koch, 1846)	It is recorded at Danum Valley NR	p36, [30]
<i>Bavia aericeps</i> Simon, 1877	Recorded at Sukau.	p36, [30]
<i>Cytaea sinuata</i> (Doleschall, 1859)	Recorded at Danum Valley NP.	p36, [30]
<i>Cytaea trusmadi</i> Proszynski & Deeleman-Reinhold, 2013	Recorded at Trus Madi FR.	p120, [25]
<i>Donoessus striatus</i> Simon, 1902	Recorded at Danum Valley NP.	p338, [20]; p124, [25]; p182, [13].
<i>Emathis weyersi</i> Simon, 1899	Recorded at Danum Valley NP and Sukau.	p36, [30]
<i>Epeus alboguttatus</i> (Thorell, 1877)	Recorded at Danum Valley NP and Sukau.	p36, [30]

<i>Epeus edwardsi</i> Barrion & Litsinger, 1995	This spider is normally found in gardens and dipterocarp forests. It has been found in India, Philippines and Brunei. It has been found at Rainforest discovery Centre and Danum Valley NP.	p36, [30]
<i>Epeus hawigalbuttatus</i> Barrion & Litsinger, 1995	Recorded at Danum Valley NP	p36, [30]
<i>Euryattus bleekeri</i> (Doleschall, 1859)	Recorded at Danum Valley NP	p36, [30]
<i>Euryattus kinabalu</i> Proszynski & Deeleman-Reinhold, 2013	Recorded at Kinabalu NP.	p128, [25]
<i>Euryattus koomeni</i> Proszynski & Deeleman-Reinhold (2013)	Recorded at Sukau-Bukit Timanggong Besar.	p128, [25]
<i>Euryattus pengi</i> Proszynski & Deeleman-Reinhold, 2013	Recorded at Danum Valley NP and Sukau.	p131, [25]
<i>Harmochirus brachiatus</i> (Thorell, 1877)	This spider is distributed at South East Asia, India, Sri Lanka and Japan. It is found at Sabah Tea Garden, Danum Valley NP and Sukau.	p36, [30]
<i>Holoplatys planissima</i> (Koch, 1879)	Recorded at Danum Valley NP	p36, [30]
<i>Hyllus diardi</i> (Walckenaer, 1837)	Recorded at Danum Valley NP	p36, [30]
<i>Leikung porosa</i> (Wanlsee, 1978)	It has been recorded at Brunei, Indonesia, Malaysia, Borneo. It is recorded at Sukau.	p197, [13]
<i>Menemerus bivittatus</i> (Dufour, 1831)	It can be found along river banks and human settlements. It is found at Kinabalu NP.	Pl.28.6, [20]
<i>Mintonia caliginosa</i> Wanless, 1987	Recorded at Kinabalu NP	p537, [20]
<i>Myrmarachne cuneata</i> Badcock, 1918	Recorded at Danum Valley NP	p36, [30]
<i>Myrmarachne gisti</i> Fox, 1937	Recorded at Danum Valley NP	p36, [30]
<i>Myrmarachne malayana</i> Edmunds & Proszynski, 2003	Recorded at Semarak Garden, Danum Valley NP and Sukau	p36, [30]; p205, [13].
<i>Myrmarachne platoleiodes</i> (Cambridge, 1869)	This spider is able to stay close to weaver ants (<i>Oecophylla smaragdina</i>) or 'Kerengga' colonies by mimicking the ants' behavior pattern. It is distributed at South East Asia, India, Sri Lanka, China. It has been recorded at Tawau Gemok Hill and Sukau.	p36, [30]
<i>Myrmarachne vulgarisa</i> Barrion & Litsinger, 1995	Recorded at Sukau	p37, [30]
<i>Neon reticulatus</i> (Blackwall, 1853)	Recorded at Danum Valley NP	p37, [30]
<i>Neon sumatranus</i> Logunov, 1998	This spider is distributed at Malaysia, Indonesia, New Guinea, Borneo. It is recorded at Sandakan.	p21, [18]
<i>Omoedus ephippigera</i> (Simon, 1885)	It is distributed at Brunei, Indonesia, Malaysia, Borneo.	p356, [20]; p206, [13]
<i>Onomastus danum</i> Proszynski & Deeleman-Reinhold, 2013	Recorded at Danum Valley NP.	p135, [25]
<i>Orcevia perakensis</i> (Simon 1901)	Recorded at Danum Valley NP	p36, [30]
<i>Parabathippus shelfordi</i> Peckham & Peckham, 1907	Recorded at Danum Valley NP and Sukau.	p36, [30]
<i>Phaecius canalis</i> Wanless, 1981	Recorded at Danum Valley NP.	p37, [30]
<i>Philates courti</i> Zabka, 1999	Recorded at Danum Valley NP	p36, [30]
<i>Philates platnicki</i> Zabka, 1999	Recorded at Danum Valley NP	p36, [30]
<i>Philates prozynski</i> Zabka, 1999	Recorded at Danum Valley NP	p36, [30]
<i>Phintella accentifera</i> (Simon, 1901)	Recorded at Danum Valley NP	p37, [30]
<i>Phintella arenicolor</i> (Grube, 1861)	Recorded at Danum Valley NP	p37, [30]
<i>Phintella bifurcilinea</i> (Bosenberg & Strand, 1906)	Recorded at Danum Valley NP	p37, [30]
<i>Phintella dives</i> (Simon, 1899)	Recorded at Danum Valley NP	p37, [30]
<i>Phintella vittata</i> (Koch, 1846)	This common spider can be found in human settlements, gardens and mangrove forests. It is distributed at South East Asia, India, China. It can be found at Semarak Garden, Danum Valley NP and Sukau.	p37, [30]
<i>Plexippus petersi</i> (Karsch, 1878)	This spider ambushes mosquitoes while mosquitoes are resting compared to capturing them in air ^[19] . It can be found at Danum Valley NP.	Pl.28.7 and Pl.28.8, [20]; p37, [30]
<i>Plexippus setipus</i> Karsch, 1879	Recorded at Danum Valley NP and Sukau	p37, [30]
<i>Poecilorchestes logunovi</i> Proszynski & Deeleman-Reinhold, 2013	Recorded at Danum Valley NP.	p139, [25]
<i>Portia fimbriata</i> (Doleschall, 1859)	This spider can be found in gardens, inside building and human settlements. It is known to hunt on other spiders at their webs ^[21] . It is distributed at South East Asia, Taiwan, Sri Lanka, Nepal and Australia ^[24] . It can be found at Poring Hot Spring NR and Danum Valley NP.	p37, [30]
<i>Pselcis latefasciata</i> (Simon, 1877)	Recorded at Danum Valley NP	p37, [30]
<i>Rhene flavigera</i> (Koch, 1848)	It is distributed at South East Asia, China, Hong Kong. It is found at Sungai Tawau and Sukau.	p542[20]; p37, [30]

<i>Siler semiglaucus</i> (Simon, 1901)	This spider is found in gardens. It is distributed at South East Asia, Hong Kong, Sri Lanka. It can be found at Semarak Garden and Sukau.	p37,
<i>Talavera aequipes</i> (Cambridge, 1871)	Recorded at Sukau.	p37, [30]
<i>Telamonia elegans</i> (Thorell, 1887)	Recorded at Sukau.	p37, [30]
<i>Thiania formosissima</i> (Thorell, 1892)	Recorded at Borneo	p544, [20]
<i>Thianitara spectrum</i> Simon, 1903	It is distributed at Indonesia, Brunei and Borneo.	p289, [20]; p228, [13].
<i>Thorelliola ensifera</i> (Thorell, 1877)	Found in garden, dipterocarp forests and human settlements. It is found at Kota Kinabalu and Sukau.	p355, [20]; p37, [30].
<i>Vailimia masinei</i> (Peckham & Peckham, 1907)	Recorded at Borneo.	p273, [20]
SPARASSIDAE		
<i>Heteropoda boiei</i> (Doleschall, 1859)	This spider wanders around on tree trunks and lower shrubs. It can be found in dipterocarp forests. It can be found at Poring Hot Spring NR.	p236, [13].
<i>Heteropoda hosei</i> Pocock, 1897	It is recorded in Borneo.	p251, [1]
<i>Heteropoda natans</i> Jager, 2005	This species had been reported hunting on water surface ^[1] . This spider rejected tadpoles and preferred cockroaches as its preferred diets in the laboratory experiments ^[1, 11] . It can be found at Poring Hot Spring NR.	p715, [11]; p239, [13].
<i>Heteropoda obtusa</i> Thorell, 1890	It is recorded in Borneo.	p251, [1]
<i>Thelcticopis orichalcea</i> (Simon, 1880)	Recorded at Indonesia and Borneo.	p511, [20]
STENOCHILIDAE		
<i>Colopea unifoveata</i> Lehtinen, 1982	Recorded at Tawau.	p546, [20]
TETRABLEMMIDAE		
<i>Ablemma circumspectans</i> Deeleman-Reinhold, 1980	It is found at Kinabalu NP.	p75, [4]; p546, [20].
<i>Ablemma merotai</i> Lehtinen, 1981	Recorded at Tawau.	p547, [20]
<i>Ablemma sternofoveatum</i> Lehtinen, 1981	Recorded at Tawau	p547, [20]
<i>Borneomma roberti</i> Deeleman-Reinhold, 1980	Recorded at Kinabalu NP.	p77, [4]; p547, [20]
<i>Brignoliella vulgaris</i> Lehtinen, 1981	Recorded at Sandakan.	p547, [20]
<i>Lamania inornata</i> (Deeleman-Reinhold, 1980)	Recorded at Tuaran.	p547, [20]; p251, [13].
<i>Paculla inornata</i> Deeleman-Reinhold, 1980	Recorded at Tuaran.	p71, [4]
<i>Sabahya bispinosa</i> Deeleman-Reinhold, 1980	Recorded at Kinabalu NP.	p74, [4]; p547, [20]
<i>Sabahya kinabaluana</i> Deeleman-Reinhold, 1980	Recorded at Kinabalu NP.	p72, [4]; p547, [20].
TETRAGNATHIDAE		
<i>Tetragnatha gressitti</i> Okuma, 1988	It is found at Kinabalu NP and Sandakan Bay.	p75, [23]; p385, [20].
THERAPOSIDAE		
<i>Phormingochilus everetti</i> Pocock, 1895	It is recorded in Borneo.	p77, [20]
<i>Phormingochilus tigrinus</i> Pocock, 1895	Recorded at Sungai Kuala Lama.	p487, [20]
THERIDIIDAE		
<i>Dipoenura fimbriata</i> Simon, 1909	Recorded at Vietnam, Malaysia, Indonesia, and Brunei	p418, [20]; p281, [13].
THOMISIDAE		
<i>Angaeus rhombifer</i> (Thorell, 1890)	It is distributed at South East Asia, China. It is found at Crocker Range NP.	p301, [13].
<i>Boliscus tuberculatus</i> (Simon, 1886)	It is distributed at South East Asia, China, Japan, Sri Lanka, New Calidonia. It is found at Tawau Hill Park.	p429, [20]
<i>Cebrennius rugosus</i> Simon, 1887	This spider will run back into the tree crevices when senses light from torchlight. It is found in peat swamp forests, dipterocarp forests and montane forests. It is distributed at South East Asia, China. It is found at Mesilau Nature Resort.	p433, [20]; p306, [13].
<i>Runcinia affinis</i> Simon, 1897	It is recorded in Africa, Bangladesh to Japan, India, and Philippines ^[24] . Recorded at Kota Kinabalu and Sungai Tawau.	p451, [20].
TRACHELIDAE		
<i>Utivarachna dusun</i> Deeleman-Reinhold, 2001	Recorded at Poring Hot Spring NR.	p389, [6]
<i>Utivarachna fukasawana</i> Kishida, 1940	It is recorded at in Brunei. It is recorded at Poring Hot Spring NR	p373, [6]; p107, [13].
<i>Utivarachna ichneumon</i> Deeleman-Reinhold, 2001	Recorded at Danum Valley NP.	p376, [6]
<i>Utivarachna kinabaluensis</i> Deeleman-Reinhold, 2001	Recorded at Danum Valley NP and Kinabalu NP.	p381, [6]

<i>Utivarachna phyllicola</i> Deeleman-Reinhold, 2001	It is distributed at Borneo, Indonesia, Thailand. Recorded at Kinabalu NP	p386, [6]
ULOBORIIDAE		
<i>Philoponella sabah</i> Yoshida, 1992	It is recorded in Borneo.	p565, [20]
ZODARIIDAE		
<i>Mallinella bigemina</i> Dankittipakul, Jocque & Singtripop, 2012	This spider actively hunts and feed on Formicidae (i.e. ants) which are about the same size as the spider. It has been recorded in Brunei and Borneo.	p334, [13]

5. New records for spiders of Sabah

ARANEIDAE

1. *Argiope versicolor* (Doleschall 1859)

Material examined: 1F, day, JH, 28.11.2010, eating prey at the center of the web, Imbak Canyon Conservation Area.

Distribution: South East Asia

Notes: These spiders are found in garden and forest.

2. *Cyclosa bifida* (Doleschall, 1859)

Material examined: 3F, day, CXW, 19.07.2011, at center of web with debris stabilimenta, Tawau Gemok Hill.

Distribution: South East Asia, New Guinea, India, Australia

Notes: This common spider can be found during the day and night time in gardens, mangrove forests, dipterocarp forests and montane forests of cooler areas at higher elevation. The web is decorated with debris from prey remains, twigs and shredded plants.

3. *Cyclosa insulana* (Costa, 1834)

Material examined: 1F, day, CXW, 06.10.2011, resting at center of web, Sungai Tawau; 1F, night, JH, 27.11.2010, resting at center of web, Imbak Canyon Conservation Area.

Distribution: South East Asia, India, New Guinea, China, Japan, Australia

Notes: This species is reported to act as predators on dengue fever vector mosquito *Aedes albopictus* ^[31]. This spider builds orb-webs with the present of stabilimenta from debris.

4. *Eriovixia laglaizei* (Simon, 1877)

Material examined: 3F, day, CXW, 19.07.2011, resting under leaves, Tawau Gemok Hill

Distribution: South East Asia, New Guinea, India, China

Notes: This common spider can be found hiding under leaves appear to be like a bird droppings in gardens. They are capable of capturing Homoptera (i.e. Leaf hoppers) which are larger than their own size.

5. *Gasteracantha diardi* (Lucas, 1835)

Material examined: 1F, day, CXW, 29.08.2011, resting under leaves, Bombalai Hill.

Distribution: South East Asia, China

Notes: This spider constructs orb-web in mangrove forests, heath forests and at higher elevation and cooler area.

6. *Gea spinipes* Koch, 1843

Distribution: South East Asia, China

Material examined: 1F, day, CXW, 08.06.2011, resting on branch, Rainforest Discovery Centre.

Notes: This spider constructs orb-web in-between long grasses close to the ground. They will free-fall onto the ground if disturbed. It occurs in gardens, dipterocarp forests and at higher elevations and cooler areas.

7. *Macracantha arcuata* (Fabricius, 1793)

Material examined: 1F, day, CXW, on leaves, 13.11.2011, Maliau Basin.

Distribution: South East Asia, New Guinea, Bangladesh, Sri Lanka, India

Notes: This species build orb-web high at a height of two meter from the ground, and is usually found in dipterocarp forests and gardens.

LYCOSIDAE

8. *Hippasa holmerae* Thorell, 1895

Material examined: 1F, day, CXW, 05.10.2011, walking on ground, Sungai Tawau.

Distribution: South East Asia, China, India

Notes: Lives in a huge colony that builds many sheet-webs on grasses in agriculture areas.

9. *Pardosa birmanica* Simon, 1884

Material examined: 4F, day, CXW, 06.10.2011, walking on ground, Sungai Tawau.

Distribution: South East Asia, China.

Notes: This common spider is found on sandy areas in garden and forests. The female carries around a large egg sac at the bottom end of the abdomen.

NEPHILIDAE

10. *Nephila pilipes* (Fabricius 1793)

Material examined: 2F, day, FR, 30.11.2010, resting at center of the web, Imbak Canyon Conservation Area.

Distribution: South East Asia

Notes: This large spider can be found at various locations in village, garden and forest. This spider was found close to the rivers.

OXYOPIDAE

11. *Oxyopes lineatipes* (Koch, 1848)

Material examined: 1F, day, CXW, 15.08.2011, resting on leaves, Semarak Garden; 1M, 1F, day, CXW, 05.10.2011, resting on leaves, Sungai Tawau.

Distribution: SEA, China, India

Notes: Common species found in agriculture areas, gardens and human settlements. The female spider sits on top and guards eggs cloaked in a fine silk.

PHOLCIDAE

12. *Crossopriza lyoni* (Blackwall, 1867)

Material examined: 2F, day, CXW, 14.08.2011, under leaves, Semarak Garden.

Distribution: South East Asia, China, India, Japan, Australia, Africa, America.

Notes: Common species found inside building, human settlements and rural areas.

PISAURIDAE

13. *Nilus albocinctus* (Doleschall, 1859)
Material examined: 1F, day, CXW, 08.06.2011, under leaves, Rainforest Discovery Centre, Sandakan.
Distribution: South East Asia,
Notes: Lives close to water bodies such as ponds, streams and waterfalls.

SALTICIDAE

14. *Burmattus pococki* (Thorell, 1895)
Material examined: 1F, day, CXW, 09.06.2011, on leaves, Rainforest Discovery Centre.
Distribution: South East Asia, China, Japan
Notes: This spiders hunt at shrubs in the forest.

15. *Carrhotus viduus* (Koch, 1846)
Material examined: 2F, day, CXW, 18.07.2011, on leaves, Tawau Gemok Hill.
Distribution: South East Asia, China, Japan.
Notes: This spider is found in gardens.

16. *Chrysilla lauta* Thorell, 1887
Material examined: 1F, day, CXW, 15.08.2011, on leaves, Semarak Garden.
Distribution: South East Asia
Notes: This spider is normally found in garden.

17. *Cosmophasis thalassina* (Koch, 1846)
Material examined: 1F, day, CXW, 14.08.2011, walking on house ceiling, Semarak Garden.
Distribution: South East Asia
Notes: This spider is normally found in garden and human settlements.

18. *Epeus flavobilineatus* (Doleschall, 1859)
Material examined: 1M, 1F, day, CXW, 15.08.2011, on leaves, Semarak Garden.
Distribution: Brunei, Indonesia, Singapore.
Notes: This spider also preys on other spiders from the genus *Chryso*. Normally found in mangroves, gardens ^[21] and dipterocarp forests.

19. *Hasarius adansoni* (Audouin, 1826)
Material examined: 1F, day, CXW, 18.07.2011, walking on wall, Tawau Gemok Hill.
Distribution: South East Asia
Notes: This common spider is found inside building and human settlements.

20. *Menemerus fulvus* (Koch, 1877)
Material examined: 1F, day, CXW, 05.10.2011, walking on house ceiling, Sungai Tawau.
Distribution: South East Asia, Japan.
Notes: This common spider is found inside building and human settlements.

21. *Myrmarachne cornuta* Badcock, 1918
Material examined: 1F, day, CXW, 01.11.2011, walking on leaves, Tawau Hills Park.
Distribution: Brunei, Malaysia, Singapore.
Notes: This spider can be found in gardens and shrubs near forest fringe.

22. *Phintella debilis* (Thorell, 1891)
Material examined: 1F, day, CXW, 02.11.2011, on leaves, Tawau Hills Park.
Distribution: South East Asia, India
Notes: This spider can be found in garden and agriculture area.

23. *Phintella versicolor* (Koch, 1846)
Material examined: 1M, 1F, day, CXW, 14.08.2011, walking on house ceiling, Semarak Garden.
Distribution: South East Asia, China, Japan, Korea.
Notes: This spider can be found in garden.

24. *Phaecius malayensis* Wanless, 1981
Material examined: 1M, day, CXW, 18.07.2011, on leaves, Tawau Gemok Hill.
Distribution: Malaysia, Brunei, Indonesia
Notes: This spider can be found on tree trunks in gardens, mangrove forests and dipterocarp forests.

25. *Plexippus paykulli* (Audouin, 1826)
Material examined: 1F, day, CXW, 15.08.2011, on tree branch, Semarak Garden.
Distribution: South East Asia.
Notes: This common spider can be found inside building and human settlements. It can also be found in mangroves, agricultural area and hunt for armyworm ^[21].

26. *Rhene albigera* (Koch, 1846)
Material examined: 2F, day, CXW, 15.08.2011, on leaves, Semarak Garden.
Distribution: India to Japan, Indonesia
Notes: This spider is commonly found in gardens.

27. *Rhene rubrigera* (Thorell, 1887)
Material examined: 1F, day, CXW, 06.10.2011, on leaves, Sungai Tawau.
Distribution: Indonesia, India to China, Hawaii
Notes: This spider is found in gardens.

28. *Thiania bhamoensis* Thorell, 1887
Material examined: 1F, day, CXW, 01.11.2011, on low shrubs along trail, Tawau Hills Park.
Distribution: South East Asia
Notes: This spider build its nest by binding two leaves together using its silk. It tends to wait for its prey that passes by its nest ^[13].

SPARASSIDAE

29. *Gnatopalystes kochi* (Simon 1899)
Material examined: 1F, night, FR, 27.11.2010, on leaves, Imbak Canyon Conservation Area.
Distribution: Singapore, Brunei ^[13]
Notes: It is often found hiding under leaves in gardens and forest.

30. *Heteropoda davidbowie* Jager 2008
Material examined: 1F, night, FR, 29.11.2010, on rock, Imbak Canyon Conservation Area
Distribution: South East Asia
Notes: It is often found sitting very still on leaves in the forest.

31. *Heteropoda tetrica* Thorell, 1897
Material examined: 1F, night, JH, 28.10.2010, walking on forest floor, Imbak Canyon Conservation Area; 1F, night, CXW, 01.11.2011, on the forest floor, Tawau Hills Park.

Distribution: South East Asia, China

Notes: These spiders are commonly seen resting on low vegetation and buttress roots during the night.

32. *Heteropoda venatoria* (Linnaeus, 1767)

Material examined: 1F, FR, 29.10.2010, on tree bark, Imbak Canyon Conservation Area; 1F, night, CXW, 01.11.2011, on the ground near walking pavement, Tawau Hills Park.

Distribution: South East Asia, China.

Notes: The spider waits on lower shrubs and ambushes potential prey that passes by. Mainly found in gardens and dipterocarp forests.

TETRAGNATHIDAE

33. *Tetragnatha maxillosa* Thorell, 1895

Material examined: 4F, day, CXW, 06.10.2011, resting on leaves, Sungai Tawau.

Distribution: South Africa, Bangladesh to Philippines, New Hebrides [24].

Notes: This spider construct orb-web in small groups between four to six individuals. They can be found at heath forests and montane forests.

34. *Tetragnatha praedonia* Koch, 1878

Material examined: 1F, day, CXW, 06.10.2011, resting on leaves, Sungai Tawau.

Distribution: Russia, China, Korea, Taiwan, Japan, Malaysia, Laos [24].

Notes: This spider constructs webs above shrubs and grasses at 80 to 180 meters high above ground. They are usually found at heath forests and montane forests.

35. *Tylorida ventralis* (Thorell, 1877)

Material examined: 3F, night, CXW, 08.06.2011, walking on rock, Rainforest Discovery Centre.

Distribution: South East Asia, New Guinea, India, Sri Lanka.

Notes: This common spider is found in garden, mangrove forests and dipterocarp forests. The species feeds on prey from Dermaptera, Homoptera (i.e. Leaf hoppers), Hymenoptera and Isoptera (*Alates* sp.).

THERIDIIDAE

36. *Argyrodus flavescens* Pickard-Cambridge, 1880

Material examined: 1F, day, CXW, 18.07.2011, on leaves, Tawau Gemok Hill.

Distribution: South East Asia, Sri Lanka

Notes: This spider is usually found on other large spiders' web.

37. *Theridion zebrinum* Zhu, 1998

Material examined: 1F, day, CXW, 01.11.2011, under leaves, Tawau Hills Park.

Distribution: South East Asia, China.

Notes: This common spider is found in gardens and forests.

THOMISIDAE

38. *Oxytate virens* (Thorell, 1891)

Material examined: 2F, night, CXW, 30.08.2011, on leaves, Bombalai Hill.

Distribution: South East Asia, India.

Notes: This spider is normally found in agriculture areas.

ULOBORIDAE

39. *Philoponella quadrituberculata* (Thorell, 1892)

Material examined: 1F, day, CXW, 13.11.2011, resting on leaves, Maliau Basin.

Distribution: Indonesia, Malaysia, Singapore, Brunei

Notes: This spider is normally found in gardens and dipterocarp forests.

40. *Zosis geniculata* (Olivier, 1789)

Material examined: 1F, day, CXW, 15.08.2011, spider guarding the egg sac, Semarak Garden.

Distribution: South East Asia

Notes: It can be found in gardens

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