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A PRELIMINARY CHECKLIST OF SARAWAK SPIDERS

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ABSTRACT

This paper provides, for the first time, a preliminary overview of species richness of the spider fauna in Sarawak, a comprehensive bibliography of taxonomic literature containing references to Sarawak spiders, and a snapshot of the history of research of Sarawak spiders. A total of 307 morpho-species of spiders spanning across 38 families are recognised in Sarawak, including 194 fully identified species. Of these, 46 are recorded for the first time in the Sarawak spider inventory. Of the fully identified species, 67 are provisionally regarded as endemic to Sarawak.

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INTRODUCTION

Sarawak conjures certain images that are bound to excite Sarachnologists around the world. It is located in Borneo, the third largest island in the world, supposedly "one of its richest treasure houses, full of an immense variety of wild animals and plants, all living in a magnificent tropical forest" (Attenborough, 2006). Sarawak was where Alfred Russel Wallace stayed from November 1854 to January 1856, as part of his sojourn in the "Malayan Archipelago" from April 1854 to February 1862 (Beddall, 1969). Using a guest house at Santubong as his base, Wallace worked on the insects he collected in Sarawak and wrote *On the Law Which Has Regulated the Introduction of New Species*. (MacKinnon, 1975). It is difficult to escape from the impression that Sarawak could have been one of the places where

Wallace's ideas on natural selection and zoogeographic distribution may have been seeded.

These impressions naturally raise obvious questions about the diversity of spider fauna in Sarawak: its species richness and the extent of species endemic to Sarawak. The answers are not immediately available from Platnick's world spider catalogue version 13.5 (2013). Platnick does not list Sarawak as a geographic entity; instead, he lumps Sarawak spiders with those documented in Sabah, Brunei and the four Indonesian provinces of Kalimantan under a generic geographic region labelled "Borneo". Based on Platnick's catalogue, all one can say is that 357 species of spiders have been documented in Borneo, and that 259 species appear to be confined to Borneo, with no additional entries in Platnick's list of their presence outside the island.

History of Research in Sarawak Spiders

There has been considerable taxonomic work on the spiders of Sarawak since the French arachnologist Eugène Simon described for the first time a Sarawak spider, *Gastercantha doriae*, in 1877. Such early efforts to document Sarawak spiders in the 19th century were made mainly by European arachnologists who had probably never set foot on Sarawak. Apart from Simon, they included Tord Thorell (Swede), Reginald Innes Pocock (British), Frederick Octavius Pickard-Cambridge (British), and his uncle Octavius Pickard-Cambridge (an English church rector). Although Simon himself had visited Singapore and the Philippines, as far as specimens from Sarawak are concerned, he and all these early arachnologists had to rely on specimens sent to them by expatriate collectors based in Sarawak. One of such collectors was Alfred Russel Wallace. He collected a bizarre spider from Sarawak and sent it to the Rev. O. Pickard-Cambridge. It turned out to be a female araneid new to science. Pickard-Cambridge described it in 1897 and named it *Friula wallacii*, after the famous collector. It is apparently a very rare spider as there has not been any record that the spider has been found again in Sarawak or elsewhere.

The first paper that paid some attention to Sarawak spiders was published by an American arachnologist couple, using salticid specimens (jumping spiders) sent by Robert Shelford, a Cambridge-trained entomologist and a pioneer curator of Sarawak Museum during the period 1897-1905. The specimens were despatched to George Peckham and Elizabeth Peckham, a husband-and-wife team who lived in Milwaukee in the US and had written extensively on the taxonomy and behaviour of American, Caribbean and Central and South American salticids (Richman, 1977). Their study of Sarawak salticids, then known in their old family name "Attidae", led to a paper entitled "The Attidae of Borneo" (Peckham & Peckham, 1907), at a time when George Peckham held the post of Director of the Milwaukee Public Library. The paper described 42 species of spiders, of which 19 species were explicitly recorded as having been collected from Sarawak. The remaining were said to have been collected "in the neighbourhood of Sarawak", but included one from Singapore and another from the Philippines. The Peckham & Peckham paper is not an easy aid to identification as it does not contain any illustration. Nevertheless, subsequent arachnologists have since examined and redescribed the material and more user-friendly papers have flown out of their research (e.g., Wanless, 1980, 1984; Yamasaki, 2010).

The first concerted effort to collect Sarawak spiders was made by two arachnologists of the British Museum of Natural History in the 1970s, viz., Fred Wanless and Paul Hillyard. They participated in an expedition to the Gunung Mulu National Park organised jointly by the Sarawak Forest Department and the Royal Geographic Society in 1977 to 1978. With the help of members of the expedition, they collected some 360 species of spiders. They subsequently published a report documenting their field observations (Wanless and Hillyard, 1984). The report came with an inventory of the spiders of Borneo, incorporating names of identified spiders collected during the expedition. But the longer-term spin off of their Mulu collection was even more valuable: they provided the basis for arachnologists to describe many species new to science. These covered spiders from

families ranging from Psechridae (Bayer, 2011, 2012), Salticidae (Wanless, 1980, 1984) and Tetrablemmidae (Bourne, 1981).

Among the more recent workers, the Dutch arachnologist Christa Deeleman-Reinhold has made the most significant contribution to the documentation of Sarawak spiders. As part of her study of Southeast Asian spiders spanning over three decades, she made three trips to Sarawak, in 1984, 1985 and in 1998. The specimens she collected at the Semengoh Arboretum, the Matang Forest Reserve, Bako National Park, and the Niah Cave National Park allowed her to describe many more new species of Sarawak spiders. These included ten species of clubionids, five species of corinnids, five species of ochyroceratids, two species of oonopids, two species of pholcids (including one with Platnick) and eight species of salticids (with Prószyński). In addition, she also extended specimens in her collection to other arachnologists who described another three species of oonopids, three species of pholcids, two species of salticids and a species of telemidae. Altogether, the descriptions of 41 new species of Sarawak spiders may be directly and indirectly attributed to her.

MATERIALS AND METHODS

This checklist is built upon published and unpublished work on Sarawak spiders over the last 140 years. The published works encompass original descriptions of new species whose type localities were in Sarawak, as well as records of non-type specimens examined in any taxonomic investigation, including those cited under the "Material Examined" paragraphs. We record only those species that are explicitly recorded as being collected in Sarawak, and have excluded those species whose collection locality was recorded merely as "Borneo" without further details. Thus, we have excluded *Parabathippus shelfordi* (Peckham & Peckham, 1907) from the list, although circumstantial evidence suggests that it could have been collected in Sarawak by Robert Shelford, then curator of the Sarawak Museum.

Other inputs to this checklist include published collection records such as the preliminary list compiled by Wanless and Hillyard (1984) of the spiders collected during the expedition to Gunung Mulu National Park co-organised by the Sarawak Forest Department and the Royal Geographic Society in 1977 to 1978. The checklist is supplemented by records of Sarawak spiders collected by the first author. Voucher specimens of his collection will be deposited at the Sarawak Museum, Malaysia and the Raffles Museum of Biodiversity Research, Singapore.

Many of the species in the checklist cannot be fully identified down to the species level, either because it is new to science or because the original descriptions were too vague and therefore positive identification is not possible without comparing them with type specimens. Juveniles are excluded from the tally as we prefer not to speculate on the identity of specimens without fully-developed genitalia.

To establish the extent of species endemic to Sarawak, we have sought to establish the distribution records of the fully identified species in a broader geographic context, based on entries in Platnick (2013) and additional published material containing references to the distribution of the species in question. The distribution records are supplemented by unpublished entries from the first author's personal collection of Southeast Asian spiders outside Sarawak. The total picture is then selectively summarised in the Appendix. Countries are listed alphabetically in two clusters: countries within the regional grouping ASEAN, followed by countries outside ASEAN. Names within brackets indicate the states or provinces or districts where the species have been recorded. The endemism survey covers only those Sarawak spiders that are fully identified. For obvious reasons, we have refrained from attempting to draw up distribution records of unidentifiable or partially identified species, and have accordingly eschewed discussing the endemic status of these species.