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One arachnid taxonomist, 1,000+ species described and the implications for conservation

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The megadiverse invertebrates are a fundamental component of global ecological functioning. There are estimated to be millions of unnamed species of terrestrial and aquatic arthropods alone. Limited expertise and funding mean that taxonomists across the world are only able to name a minute proportion of the undescribed species every year. One of the outstanding contributors is Dr. Mark Stephen Harvey, an Australian arachnid specialist, whose 'obsession' with that group began nearly 50 years ago. In 2025, he alone and with colleagues published 137 new species and 17 new genera. In the same year, Dr. Harvey joined the exclusive group of taxonomists who have described 1,000 species; most of his extraordinary total are pseudoscorpions and spiders, but also includes millipedes, scorpions, water mites and velvet worms. The efforts of Dr. Harvey and other taxonomists in cataloguing global biodiversity are vital to the study of disciplines such as ecology, evolution, biogeography, genetics and speciation; public education; and the promotion and implementation of biodiversity conservation across the planet.

In 1977, 18-year-old Mark Stephen Harvey collected his first pseudoscorpion in western Victoria, Australia. He described his first species, the pseudoscorpion, *Geogarypus rhantus* Harvey (Geogarypidae), from specimens collected in north Queensland in 1981 (Harvey 1981; Readfearn 2025). By 2025, 44 highly productive years later, he had gone from novice taxonomist to acclaimed international authority on arachnids, becoming one of the elite group of taxonomists who have described 1,000 species (Readfearn 2025). Dr. Harvey's extraordinary impact goes far beyond the discovery of new species; he has named more than 100 new genera and 10 new families of arachnids (Giribet & Austin 2025).

The planet, especially the Southern Hemisphere, has been Dr. Harvey's research domain during his long-term curatorship of arachnids and myriapods at the Western Australian Museum in Perth, Australia. His research as a single author and with colleagues has generated more than 600 publications (Anonymous 2025a). In addition to his 1,000 new species of pseudoscorpions, spiders, schizomids, mites and other arachnids, Dr. Harvey has described numerous millipedes and three peripatus (Giribet & Austin 2025).

In the field of acarology, fifteen taxonomic publications on water mites that included 47 new species and nine new genera (Harvey 1987, 1988, 1998), exemplify his exceptional work in diverse areas of arachnology. Among Dr. Harvey's considerable contributions to acarology is a monograph on the families and genera of Australian water mites (Harvey 1998).

In much more recent times, Wilson *et al.* (2025a), including Dr. Harvey, reported 55 new species of burrowing wishbone spiders from eastern Australia. He reached his 1,000th species in October 2025, when he and colleagues reported 24 new species in the same group (Wilson *et al*. 2025b). By the end of 2025, he had described 1,026 species (M. Harvey, pers. comm., 5 January 2026), including a publication on two new pseudoscorpion species phoretic on bats (Harvey 2025). There are more publications in the 'pipeline', so this total will continue to rise in 2026 (M. Harvey, pers. comm., 5 January 2026)

Dr. Harvey's body of work has spanned more than 20 research fields that include biodiversity, biogeography, conservation, ecology, evolution, phylogenetics, phylogeny, phylogeography, systematics and taxonomy (Anonymous 2025a). He is also a councillor and past Vice President of the International Commission on Zoological Nomenclature (Anonymous 2025b). The esteem in which he is held by colleagues is reflected in having 45 species named after him

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(Redfearn 2025). The compilation of a Special Collection of his papers (Giribet & Austin 2025) further highlights the high regard in which Dr. Harvey and his work are held.

Dr. Harvey laments the environmental degradation he has seen since his youth. He points to habitat loss, climate change and bushfires as contributors to biodiversity loss in Australia (Redfearn 2025). His entire body of work directly or indirectly has a global conservation context. For example, Harvey *et al.* (2011) asserted that studying short-range endemic taxa can improve conservation outcomes, and Rix *et al.* (2017) reported the decline of trapdoor spider populations in southern Australia. Dr. Harvey also coauthored a paper on the number and rate of extinction of non-marine invertebrates in Australia (Woinarski *et al*. 2024). In addition, Harms *et al.* (2025) reported 12 new pseudoscorpion species in the new genus *Karrichthonius* (Pseudotyrannochthoniidae) from the global biodiversity hotspot, Southwest Australia, and Harvey *et al.* (2025) reported pseudoscorpion endemicity on remote Pacific Ocean islands.

There are up to 1,500,000 arachnid species on the planet, mostly mites (Stork 2018), which include around 110,000 named species (Agnarsson 2023). One of the greatest modern tragedies is the loss of species before they are named (Winchester & Ring 1996; Sullivan & Ozman Sullivan 2021; Woinarski *et al*. 2024). Dr. Harvey has certainly made an extraordinary contribution to taxonomy by bringing 1,000+ new species to the attention of the scientific world and the public. Without names, it is extremely difficult to galvanise conservation effort for species; Dr. Harvey and his research colleagues have therefore made a remarkable contribution to global conservation efforts by 'chipping away at the mountain' of unnamed species and transferring them to the named species column.

The planet desperately needs the extraordinary insights of Dr. Mark Stephen Harvey, and of the other invertebrate taxonomists, to permeate the consciousness of the public, land managers and decision makers, so that the invertebrates, which are a cornerstone of global ecological functioning, are far more universally valued and much better integrated in global conservation planning and practice.

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