

A major work on the scorpion fauna of Papua New Guinea with the description of 16 new species in the genus *Hormurus*

Atlas of Australasian hormurid scorpions. I. The genus *Hormurus* Thorell, 1876 in Papua New Guinea. Exceptional morphological diversity in male and female copulatory structures suggests genital coevolution

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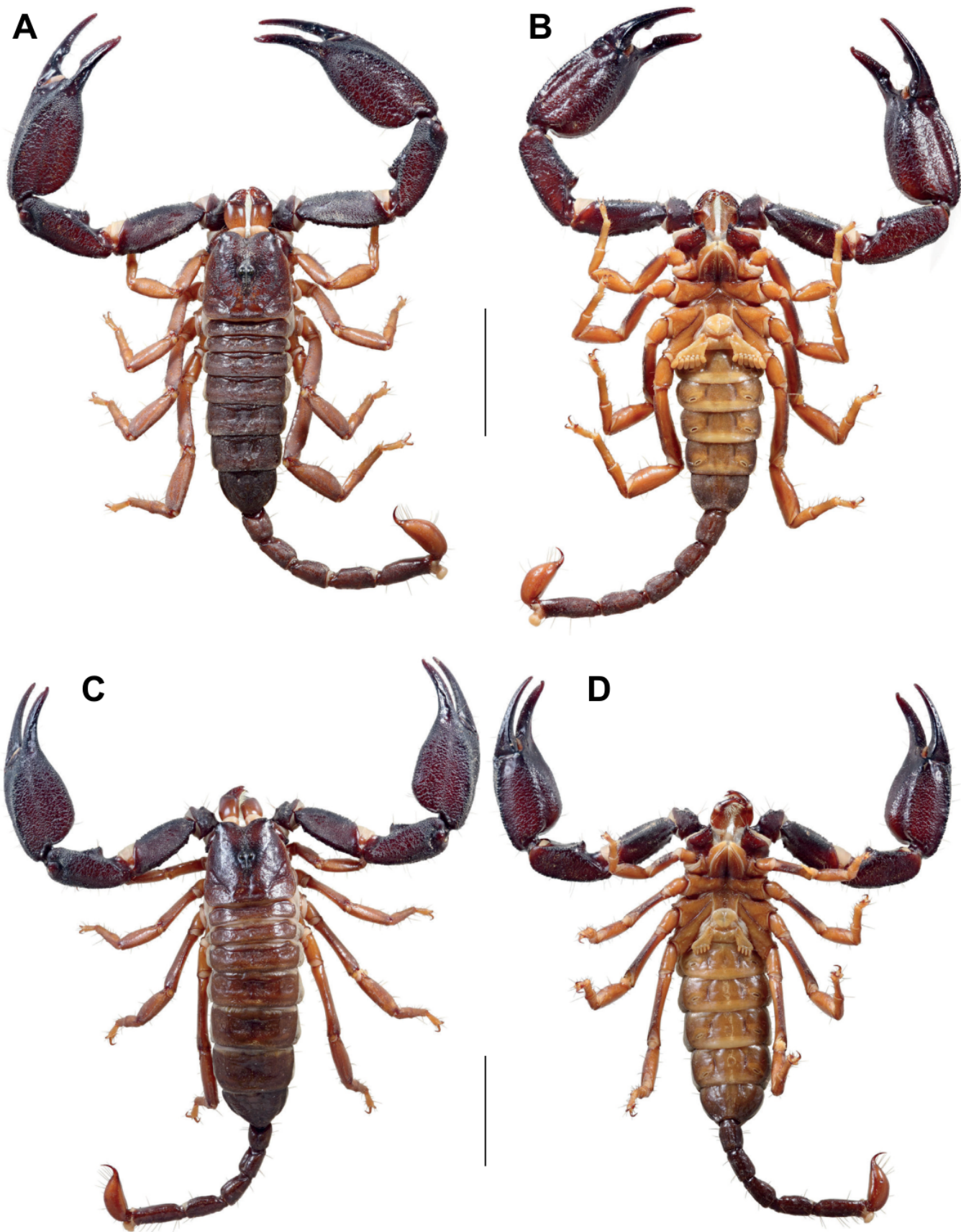


Fig. 40. *Hormurus oyatabu* sp. nov., habitus, dorsal (A, C) and ventral (B, D) aspects. (A-B) Male paratype (AMNH [LP2719]). (C-D) Female paratype (AMNH [LP2732]). Scale lines: 10 mm.

Papua New Guinea is a large island in the Pacific and a treasure chest when it comes to biodiversity. The scorpion fauna of the island is not well known. In an extensive study, Lionel Monod and his research group studied the scorpions in the family Hormuridae in Papua New Guinea

and 16 new species in the genus *Hormurus* Thorell, 1876 are described.

Hormurus ancylobus Monod & Prendini, 2023

Hormurus araiaspathe Monod & Prendini, 2023

Hormurus barai Monod, Iova & Prendini, 2023

Hormurus cameroni Monod, Austin & Prendini, 2023

Hormurus hypseloscolus Monod & Prendini, 2023

Hormurus krausi Monod & Prendini, 2023

Hormurus maiwa Monod & Prendini, 2023

Hormurus menapi Monod & Prendini, 2023

Hormurus muyua Monod & Prendini, 2023

Hormurus oyatabu Monod & Prendini, 2023

Hormurus oyawaka Monod & Prendini, 2023

Hormurus sibonai Monod & Prendini, 2023

Hormurus slapcinskyi Monod & Prendini, 2023

Hormurus sporacanthophorus Monod & Prendini, 2023

Hormurus tagula Monod & Prendini, 2023

Hormurus yela Monod & Prendini, 2023

Hormurus papuanus Kraepelin, 1914 is redescribed. This species was not previously listed in The Scorpion Files and is now added to the species list.

See abstract or article for further details about this study.

Abstract:

New Guinea is the largest Pacific island, and the world's second largest, with a land area of about 785,000 km². Located north of Australia, the island was gradually shaped since the Eocene by the geologically recent sequential accretion of several island arc systems onto the northern part of the Australian Craton. This complex geological history has resulted in a tremendous biological diversity with high rates of endemism. On the other hand, the rugged mountainous landscape and lack of infrastructure has hampered scientific research in the country and for the most part Papuan biotas remain thus far only superficially known. This is the case for scorpions of the genus *Hormurus* Thorell, 1876 (Hormuridae Laurie, 1896; Scorpiones C. L. Koch, 1837). Although they are the dominant scorpion group in Wallacea and Melanesia, only two species are currently recognized from New Guinea and its adjacent islands. A thorough revisionary study of the *Hormurus* material present in the scientific collections of various museums and of a large series of specimens more recently collected led to the discovery of 16 new species, i.e. *Hormurus ancylobus* Monod & Prendini, sp. nov.; *Hormurus araiaspathe* Monod & Prendini, sp. nov.; *Hormurus barai* Monod, Iova & Prendini, sp. nov.; *Hormurus cameroni* Monod, Austin & Prendini, sp. nov.; *Hormurus hypseloscolus* Monod & Prendini, sp. nov.; *Hormurus krausi* Monod & Prendini, sp. nov.; *Hormurus maiwa* Monod & Prendini, sp. nov.; *Hormurus menapi* Monod & Prendini, sp. nov.; *Hormurus muyua* Monod & Prendini, sp. nov.; *Hormurus oyatabu* Monod & Prendini, sp. nov.; *Hormurus oyawaka* Monod & Prendini, sp. nov.; *Hormurus sibonai* Monod & Prendini, sp. nov.; *Hormurus slapcinskyi* Monod & Prendini, sp. nov.; *Hormurus sporacanthophorus* Monod & Prendini, sp. nov.; *Hormurus tagula* Monod & Prendini, sp. nov.; *Hormurus yela* Monod & Prendini, sp. nov. Fully illustrated descriptions of these new taxa are presented in the present contribution, as well as a redescription

of *Hormurus papuanus* Kraepelin, 1914. *Hormurus* species are characterized by relatively few diagnostic external characters which hampers species differentiation. However, the unusual interspecific diversity of hemispermatophores observed in Papuan taxa partially alleviate this issue and enable reliable species discrimination. The position of the laminar hook is particularly variable and is correlated with the elongation of the female genital operculum which also shows an atypical diversity for the genus. This interdependence strongly suggests genital coevolution driven by a lock-and-key mechanism. This would be the first such case reported for the order Scorpiones Koch, 1837. Multivariate and geometric morphometric analyses were carried out to visually emphasize subtle interspecific differences in external morphology and hemispermatophore morphology. Additionally, the correlation between hemispermatophore laminar hook position and shape of the female genital operculum was assessed statistically and comments are provided concerning potential mechanisms underlying the coevolutionary process.

Reference:

Monod L, Lehmann-Graber C, Austin CC, Iova B, Prendini L. Atlas of Australasian hormurid scorpions. I. The genus *Hormurus* Thorell, 1876 in Papua New Guinea. Exceptional morphological diversity in male and female copulatory structures suggests genital coevolution. Rev Suisse Zool. 2023;130(Suppl.):1-243. [Open Access]

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