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## Revision of the genus *Ophioeichus* H.L. Clark, 1938 (Ophiuroidea: Ophiolpididae)

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### Abstract

In this study we re-describe the ophiuroid genus *Ophioeichus* H.L. Clark, 1938 and diagnose the species using existing and new characters found by examining the type material. The species *Ophiolepis utinomii* Irimura, 1967, is very similar to the holotype of *Ophioeichus multispinum*, and is herein transferred to the genus *Ophioeichus*; this transfer expands the geographic range of the genus. *Ophioeichus* is currently composed of three species: *Ophioeichus parvispinum*, *Ophioeichus multispinum* and *Ophioeichus utinomii* **comb. nov.** The genus is now known from the eastern part of Australia, Philippines and the coast of Japan, with a bathymetric range from littoral down to 45.3 m.

**Key words:** Morphological revision, new characters, new records

### Introduction

The genus *Ophioeichus* was erected by H.L. Clark in 1938, based on two species *Ophioeichus parvispinum* and *Ophioeichus multispinum* the first being the type species. This genus is so far only known from the eastern part of Australia in littoral waters (H.L. Clark, 1938); however, because both species seem to be very rare, the genus is not well documented in the literature. The type material of both species is deposited at the Museum of Comparative Zoology (MCZ), Harvard University in Boston Massachusetts, USA; the holotypes are well preserved.

*Ophioeichus multispinum* H.L. Clark, 1938, was described from Lindeman Island, Great Barrier Reef, near Mackay, Queensland, Australia, and was collected from under dead coral (no bathymetric range documented). *Ophioeichus parvispinum* H.L. Clark, 1938, was described from Neds Beach, Lord Howe Island, Australia, collected from under rocks on a reef flat (no bathymetric range documented) (see H.L. Clark, 1938).

During a morphological and taxonomical revision of the genus *Ophiolepis* Müller and Troschel, 1840, one of us (TPE) noticed that the species *Ophiolepis utinomii* Irimura, 1967 (SMBL Holotype 205 of the Seto Marine Biological Laboratory, University of Tokyo, Japan) shared similarities with the species *Ophioeichus multispinum* and *O. parvispinum*. While reviewing the type material of the genus *Ophioeichus* we realized that some characters that are present in both species were not mentioned in the diagnosis of the genus, but some of them were included in the description of *Ophiolepis utinomii* Irimura, 1967. These characters are herein considered important in order to identify the genus and the species correctly.

Here we review the diagnosis of the genus in order to add this new information for each species. As a result, we transfer *Ophiolepis utinomii* to the genus *Ophioeichus* because it shows morphological characters diagnostic of the genus, resulting in the new combination *Ophioeichus utinomii* (Irimura, 1967) **comb. nov.** Inclusion of *O. utinomii* **comb. nov.** in the genus *Ophioeichus* is further supported by the similarities it shares with other species of the genus, namely *O. multispinum* and may be part of a species complex. In spite of certain similarities, the genera *Ophioeichus* and *Ophiolepis* can be clearly separated on the basis of the differences documented and described herein.

the radial shield which are minute and abundant, being more evident in *O. parvispinum*; some species of the genus *Ophiolepis* share this character (*Ophiolepis superba*, *Ophiolepis unicolor*, *Ophiolepis cincta*). Finally, *Ophiolepis* shows only two tentacle scales of the same size while *Ophioteichus* can have two (e.g. *O. parvispinum* and *O. multispinum*) or three tentacle scales (*O. utinomii* **comb. nov.**).

James (1981) transferred *Ophiolepis nodosa* Duncan, 1887 to the genus *Ophioteichus* but other authors never recognized this change. *Ophiolepis nodosa* was described by Duncan in 1887 and is also a species with few known records (Kohler, 1905, 1922; A.M. Clark and Rowe, 1971; Baker, 1979). We disagree with the change proposed by James (1981), since *Ophiolepis nodosa* lack the diagnostic characters of the genus *Ophioteichus*. It differs from the three species of the genus *Ophioteichus* in having a tubercle on each dorsal arm plate, disc scales that are imbricated and not surrounded by smaller ones, more than five tubercles along the margin of the disc (not as conspicuous as the ones in *Ophioteichus*), numerous oral papillae (more than five), an extra plate of oral shield on the proximal part of the oral shield (in the apex), and five arm spines. However, *Ophiolepis nodosa* is similar to *Ophioteichus multispinum* in having fragmented accessory dorsal and ventral arm plates, two tubercles on the distal part of the radial shields and two tentacle scales per segment. The arrangement and disposition of the accessory dorsal arm plates are similar to *Ophioteichus utinomii* **comb. nov.** which extends from the dorsal to the ventral part of the arm, joining laterally, in addition to the presence of a fragmented accessory ventral arm plate.

The presence of the accessory ventral arm plate has been recorded by Koehler (1922) for *Ophiolepis irregularis*, *Ophiolepis cincta*, *Ophiolepis affinis*, *Ophiolepis elegans* and *Ophiolepis nodosa*, although he did not consider it a generic character of *Ophiolepis*. The arrangement of the accessory dorsal and ventral arm plates differs in some of these species. In *Ophiolepis elegans* the fragmented accessory dorsal arm plates are quite separated from the accessory ventral arm plate. Consequently, we reject the transfer proposed by James (1981) of *Ophiolepis nodosa* to *Ophioteichus*, but we also disagree about placing this species in *Ophiolepis*, as these characters do not fit with the diagnosis of that genus either. A morphological phylogeny of the genus *Ophiolepis* (Pineda-Enrriquez, 2013), places *Ophiolepis nodosa* outside *Ophiolepis* sensu stricto, which also supports removing this species from *Ophiolepis* and *Ophioteichus*. This species clearly belongs to the Family Ophiolepididae, but its generic designation must be a subject of further studies.

The genus *Ophioteichus* is currently composed of three species: *O. parvispinum*, *O. multispinum* and *O. utinomii* **comb. nov.** However, more species could possibly be part of this genus if more taxonomic studies are made in the Indo-Pacific region, in addition to revisions of existing collections, such as the referred specimen from the Philippines mentioned above and the recently collected specimen from Australia.

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