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Precious corals (Octocorallia: Coralliidae) from the northern West Pacific region with descriptions of two New Species

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Abstract

Members of the family Coralliidae, known as precious corals, are ecologically and economically important deep-sea organisms. However, these organisms are currently threatened by commercial harvesting. In order to create and implement effective conservative strategies, taxonomic knowledge of conservative targets is necessary, but unfortunately the taxonomy of precious corals in this family is still ambiguous. This study provides a review of 15 Coralliidae species from the northern West Pacific region and a key to species identification. In addition, descriptions of two new species, *Corallium carusrubrum* **n. sp.** and *C. taiwanicum* **n. sp.**, as well as a redescription of *C. sulcatum* Kishinouye, 1903 are included. *Corallium carusrubrum* **n. sp.** is distributed on seamounts off northeastern Taiwan. The autozooids of *C. carusrubrum* **n. sp.** are retractile and each can be fully withdrawn into the cortex thereby causing a mound on the surface which is short and cylindrical rather than typically hemispherical; additionally, there are no long spindles in their tentacles. *Corallium taiwanicum* **n. sp.** is distributed in an area off southwestern Taiwan. It has special unique 8-radiates with an oval shape and large projections. *Corallium sulcatum* is distributed from an area off southwestern Taiwan to western Japan. It has been harvested and traded for decades, but there were no illustrations in its original description, hence a redescription of this species is provided.

Key words: *Corallium*, *Paracorallium*, Taiwan

Introduction

Members of the family Coralliidae Lamouroux, 1812 are found from tropical to temperate oceans, including the Atlantic, Indian, and Pacific oceans as well as the Mediterranean Sea, at depths of 7–1500 m (Grigg 1974; Weinberg 1976; Bayer & Cairns 2003). Several species of the Coralliidae have been harvested for centuries for both decorative and religious uses (Grigg 1993), and the species of this family are known as precious corals. Members of this family do not possess symbiotic algae and they need to capture prey or organic materials from the water column as food sources, therefore, they usually inhabit rocky spots with relatively strong currents and low levels of sedimentation (Baco & Shank 2005). These rocky habitats are generally small, occur within a limited range, and are separated by large unsuitable sandy habitats. Thus, most precious corals occur as geographically isolated populations called beds or patches (CITES 2010). The colony shape of species of Coralliidae is usually tall and highly branched, so they are often regarded as framework-forming species that may increase the spatial complexity and biodiversity of their habitat. Unfortunately, these species and their associated deep-sea fauna in general are being threatened by human activities including bottom trawling and direct harvesting (Grigg 1993; Baco & Shank 2005; CITES 2010). These practices have negative impacts on these slowly growing species and also on the entire ecosystem (Koslow *et al.* 2001; Roberts 2002; Waller *et al.* 2007). As a result, the conservation of deep-sea and mesophotic octocorals has attracted much attention in recent years.

Seamounts in the northern West Pacific are suitable habitats for Coralliidae species, and among the 33 nominal species 15 are from this region. Several species have been harvested for decades by commercial fisheries, especially in Taiwan and Japan. Due to intensive fishing activities, the populations of some species, including *Coral-*

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