

Marine Biologists Redefine the Phylogeny of *Coralliidae*, Provide Comprehensive Understanding of Precious Corals

A marine biology research team led by Dr. Ming-Shiou Jeng, Research Fellow at the Biodiversity Research Center, Academia Sinica recently examined 110 coral specimens collected from the sea areas around Taiwan and from museums all over the world to reconstruct the phylogenetic relationships of the Coralliidae family of corals. By using DNA extraction and sequencing, the researchers clarified the boundaries of three genera subordinated to Coralliidae. As corals have traditionally been regarded as materials for jewelry worldwide, the finding can not only be applied to the assessment of population status and conservation of corals but also used as reference for policy making and commercial needs. The paper was published in March, 2015 issue of *Molecular Phylogenetics and Evolution*.

There are over 6,000 known species of corals around the world, among them 1,000 species are in shallow waters and 5,000 species are in deep waters. Coralliidae live in sea waters from 20 meters deep to 2000 meters deep, and are spread from tropical areas to sub-polar regions. With hard and colorful skeletons, the Coralliidae are well-known precious corals and have been harvested for thousands of years. Due to their slow-growth, long life span, and late maturity, several members of the Coralliidae have already been endangered by long-term human exploitation. Thus, identification and assessment of these corals are needed for conservation and management.

In order to provide a comprehensive revision of the taxonomy of the Coralliidae, Dr. Jeng's team documented 110 specimens using eight mitochondrial and one nuclear loci to reconstruct their phylogeny. Three species from the Paragorgiidae family were chosen as a reference group. The results indicated that although the Coralliidae is a monophyletic group, the morphologically-based taxonomy is not supported by the phylogenetic relationships. In addition, based on the phylogenetic tree, members of the Coralliidae could be divided into two major clades, Clade I and Clade II. Clade I can be further divided into two subclades, Clade IA and Clade IB. Due to the inconsistency between morphological and molecular phylogenetic relationships, the team use the three clades in the phylogenetic tree to modify the taxonomy of the Coralliidae into a three genera-based classification. The three genera are *Corallium*, *Pleurocorallium*, and *Hemicorallium* and comprise 7, 14, and 16 species, respectively.

Dr. Jeng said: "This study could provide well delimited taxonomy for the implementation of management strategies of Coralliidae, for example, to develop conservation plans for Coralliidae, to set up standards for import and export, and the limitation of annual harvest."

The full article entitled "Phylogeny and systematics of deep-sea precious corals (Anthozoa: Octocorallia: Coralliidae)" is available at the *Molecular Phylogenetics and Evolution* journal website at: <http://www.sciencedirect.com/science/article/pii/S1055790315000044>

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