Title	Phylogenetic studies of cryptic octocoral diversity from coral reefs of the Ryukyu Archipelago(Review_審査要旨)
Author(s)	宮崎, 悠
Citation	
Issue Date	2015-09
URL	http://hdl.handle.net/20.500.12000/32705
Rights	

（様式第５－２号）課程博士

2015 年 8 月 10 日

琉球大学大学院
理工学研究科長　殿

論文審査委員
主査　氏　名　James Davis REIMER　印
副査　氏　名　傳田哲郎　印
副査　氏　名　戸田守　印

学位（博士）論文審査及び最終試験の終了報告書

学位（博士）の申請に対し，学位論文の審査及び最終試験を終了したので，下記のとおり報告します。

記

申　請　者	専攻名　海洋環境学　　氏名　宮崎　悠　　学籍番号　118602H	
指導教員名	James Davis REIMER	
成績評価	学位論文　[合格]　不合格	最終試験　[合格]　不合格
論文題目	Phylogenetic studies of cryptic octocoral diversity from coral reefs of the Ryukyu Archipelago（分子系統学的手法を用いた，琉球列島のサンゴ礁における八放サンゴ類の潜在的多様性に関する研究）	

審査要旨（２０００字以内）

The candidate investigated the diversity of subclass Octocorallia (Cnidaria, Anthozoa) in the waters around Okinawa and the Ryukyu Islands, while attempting to answer questions on how to most properly conduct taxonomy on the group. Octocorals have historically had taxonomic problems caused by a lack of morphological characters and a huge diversity of species. Although a morphological framework exists based on sclerites and gross colony morphology, recent molecular phylogenetic work has shown many existing classifications and organization may be incorrect. At the same time, DNA markers utilized lack the necessary resolution for accurate species delineation, and thus much more effort is needed to construct an effective taxonomic framework.

（次頁へ続く）

審査要旨

The candidate pursued research utilizing a variety of methodologies, from the traditional colony and sclerites morphology, to DNA phylogenetic work and microCT scanning. Specifically, the candidate focused first on the genus *Briareum*, which has had a confused taxonomic history. From specimens in the Ryukyus, the candidate demonstrated that differing morphologies, despite no intermediate forms between them, may apparently be the same species, while another group of specimens was morphologically and genetically unique, and potentially undescribed. However, molecular results of this work again demonstrate how low variation apparently is in common DNA markers for Octocorallia.

After this, the candidate then turned his research attention to identifying and describing some unknown specimens found by himself from Zamami Island, Okinawa. Based on DNA phylogeny, the specimens were identified as an unknown group related to the blue coral, *Heliopora*. The candidate then used a combination of tools and skills (light + electron microscopy, micro CT scans, DNA) to successfully describe these as a previously unknown genus and species (*Nanipora kamurai*), demonstrating the merit of such combined approaches for alpha taxonomy. This work has received attention from local, domestic and international media.

Overall, the candidate has completed a large body of work substantially advancing our knowledge of the Octocorallia in Okinawa, while filling in the phylogenetic tree of Octocorallia, and opening new lines of research utilizing new techniques. The candidate's results show how important it is to search for biodiversity in previously under-examined environments and locations. Finally, alpha taxonomy research is a critical first step towards a more complete understanding of coral reef ecosystems, allowing for more effective and accurate management and conservation. Thus, based on the above reasons, the downstream results of this research will be seen in various fields from basic zoology and biogeography studies, and to conservation-related themes.

The candidate's publication history related to this thesis more than meets graduation requirements, with 2 first author papers, both in respected international journals. The candidate gave a final thesis presentation (=final examination) on August 7, 2015, in the Science Collaborative Building Room 102, from 14:00 to 15:00 in front of all three members of the Committee. This presentation was open to the public, and attended by many people from both inside and outside the university. In his presentation he discussed his major results, and the implications for future octocoral research. Overall, the candidate talked for 45 minutes, and then appropriately answered numerous questions related to his thesis and research field for 15 minutes. The Committee then met on August 10, 2015, at 10:30, and discussed and judged the candidate's thesis, and his final presentation and answers to questions, as demonstrating his hard work, results, and knowledge. Thus, based on the above results, for these reasons, the Committee unanimously recommended "Pass" for the candidate.