

# 琉球大学学術リポジトリ

光共生性ネンエキボヤにおける鰓孔数の安定性と琉球列島で発見されたネンエキボヤ属の1未記載種について

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**PS-1 Stability of stigma number in photosymbiotic *Diplosoma* species (Didemnidae: Ascidiacea) and an undescribed *Diplosoma* of from the Ryukyus (光共生性ネンエキボヤにおける鰓孔数の安定性と琉球列島で発見されたネンエキボヤ属の1未記載種について)**

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Species in the family Didemnidae are all colonial ascidians with tiny zooids that are a few millimeters long or less. These features may discourage many biologists from studying them, but they are attractive for chemists studying natural products (Sings and Rinehart, 1996). This family is the largest in the class Ascidiacea, and many unknown species exist, especially in tropical waters (see Kott, 2005). In chordates, obligate photosymbionts are exclusively known to live in some didemnid ascidians. The photosymbionts are always prokaryotic algae: *Prochloron* in many host species, *Synechocystis* in some *Trididemnum* spp., as well as unknown cyanophytes (see Lafargue & Duclaux, 1976; Parry & Kott, 1988; Lewin & Cheng, 1989; Münchhoff, 2007). The host ascidians are distributed exclusively in tropical and subtropical waters, probably due to the vulnerability of the photosymbionts at low temperatures (Dionisio-Sese et al., 2001). To date, 15 or more photosymbiotic species are known to be distributed in Japan, mainly in the Ryukyu Archipelago (Hirose et al., 2004, 2007; Oka & Hirose, 2005, in press; Oka et al., 2005, 2007), including two *Diplosoma* species (*D. ooru* and *D. simileguwa*) described as new species from Okinawajima Island. However, the taxonomical survey of the didemnid ascidians is undoubtedly insufficient in the Ryukyu Archipelago, and photosymbiotic species still remain undescribed.

Here, we describe an undescribed photosymbiotic *Diplosoma* inhabiting shallow reef lagoons in the Ryukyu Archipelago. This species is characterized by its unique stigma number pattern, which is often variable within the same zooid, as well as within the same colony. The total number of stigmata per half brachial sac varies from 22 (five, six, six, and five stigmata from the top to bottom rows) to 27 (seven, seven, seven, and six). Among the 100 branchial sac halves we examined, "six, seven, seven, six" was the most common stigma number (45%) and " six, seven, six, six " was the second most common (18%). In contrast, the stigma patterns are constant in *D. ooru* (five, six, five, four), *D. simile* (six, six, six, five), *D. simileguwa* (four, five, four three), and *D. virens* (six, six, six, five). Thus, we concluded that the stigma number and its stability (or variability) are important features for the taxonomy of photosymbiotic *Diplosoma* spp., and the present species is distinguished from other photosymbiotic *Diplosoma* by the variable stigma pattern. The most frequent pattern, " six, seven, seven, six", is thought to be the principal stigma number, and the other patterns might be produced by slight errors. The morphogenetic constraint on stigma number appears to be loose in this species.