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Reproductive pattern of a deep-sea mussel, Bathymodiolus platifrons

Yoshimi Takahashi[1*], Katsunori Fujikura[3], Hiromi Watanabe[3], Yamaki Aska[3], Eriko Seo[2], Tadashi Maruyama[3]

[1]Tokai University, [2]TAMSAT, [3]JAMSTEC

Reproduction is the most important factor in the life-history of organisms to maintain population. In the deep-sea chemosynthesis-based ecosystems, Bathymodiolus mussels are dominant animals. To understand reproductive characteristics, sex ratio and developing sizes were estimated. Bathymodiolus platifrons were collected both at the Off Hatsushima Island seep site in Sagami Bay and the Hatoma Knoll hydrothermal vent site in the Okinawa Trough. Sex determination and developing status were observed by the histocytological preparation technique. Sex ratio was male -biased. Ripe female was recognized >60 mm in shell length and ripe male was >30 mm in shell length. Average ripe sizes of male were smaller than that of female. All large specimens were female. Additionally, one specimen in moderate size had hermaphroditism. These results indicated reproductive pattern of Bathymodiolus platifrons is firstly simple protandric hermaphroditism where the smallest individuals are male, the next size up are hermaphrodites with early signs of oogenic development, and the largest sizes are fully developed females.

Keywords: Bathymodiolus platifrons, Reproduction, Protandric hermaphorodite, Mussels, Seep site, Hydrothermal vent