

Genetic Population Structure of Alvinocaridid Shrimps in the Okinawa Trough and the Izu-Ogasawara Arc

YAHAGI, Takuya^{1*}, WATANABE, Hiromi², KOJIMA, Shigeaki¹

¹The University of Tokyo, ²JAMSTEC

In hydrothermal vent fields and cold seep areas, most faunal communities are comprised of endemic species (Tunnicliffe and Fowler, 1996). In addition, the hydrothermal vent fields are unstable environments and patchy distributed. Therefore, vent endemic species are thought to have high dispersal ability to maintain gene flow among local populations.

In the northwestern Pacific, the Okinawa Trough and the Izu-Ogasawara Arc are sea areas in which many hydrothermal vent fields are distributed. Species composition of vent faunas and geological background in these two sea areas are strikingly different from each other. Therefore, it seems to be difficult for most species to disperse and maintain gene flow between the two areas. Actually, neoverrucid barnacles in the both fields have been shown to be genetically differentiated by population genetic analysis based on nucleotide sequences of a mitochondrial cytochrome oxidase c subunit I (COI) gene (Watanabe et al., 2005). Although an interspecific comparison of genetic population structures will provide important information to understand the relationship of the communities in the two sea areas, such researches are yet limited.

The purpose of this study is to clarify the population connectivity of alvinocaridid shrimps between the Okinawa Trough and the Izu-Ogasawara Arc by genetic population structure analyses.

An alvinocaridid shrimp, *Alvinocaris* sp. was collected at the Irabu Seamount in the southern Okinawa Trough and the Suiyo Seamount in the Izu-Ogasawara Arc during the NT11-09 and NT11-20 cruises of the R/V 'Natsushima' and the ROV 'Hyper Dolphin', respectively. We determined nucleotide sequences of the COI gene of *Alvinocaris* sp. for 20 individuals of each site.

Alvinocaris sp. populations in the both sites were shown to consist of two genetically deviated lineages. They, however, showed no significant genetic differentiation between two sea areas. In this presentation, we discuss the population connectivity and history of *Alvinocaris* sp. based on the population genetic analyses, ecological information, and geological background of the two sea areas.

Keywords: Okinawa Trough, Izu-Ogasawara Arc, Alvinocaridid shrimps, Genetic population structure