Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

BPT023-P01 Room:Convention Hall Time:May 22 14:00-16:30

Egg capsule of vent and seep gastropod of genus *Oenopota* ? life-history traits in chemosynthetic environments

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Chemosynthetic biological community associated with deep-sea hydrothermal vent and methane seep is one of the important components of the marine ecosystem because of both high productivity and high biomass. However, due to logistic difficulties in the deep-sea, we only have limited information about the life-history traits of the chemosynthetic animals. To figure out the specific life-history traits of those animals, we need to compare the life-history traits of the chemosynthetic animals with their close relatives in the non-chemosynthetic marine environments. In the present study, we focused on the gastropods of the genus *Oenopota*, as *Oenopota* species are distributed wide range of oceanic environment, from intertidal to 4000 m deep-sea floor, including deep-sea hydrothermal vent and methane seep areas. We compared the number of the eggs in an egg capsule. A seep endemic species *Oenopota sagamiana* lays an egg capsule containing the largest number of eggs among the known *Oenopota*, whereas vent endemic species *Oenopota ogasawarana* lays an egg capsule with the second largest number of eggs, and the number of the eggs in an egg capsule of deep-sea non-vent/seep species is the third. The size of the egg capsule among *Oenopota* species, ranged from 2.0 to 5.5 mm. These comparisons suggested that the deep-water species, especially in chemosynthetic species, tends to lay the larger number of smaller eggs into an egg capsule.

Keywords: chemosynthetic ecosystem, life-history traits

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The youngest chemosynthetic fossil assemblage (0.57Ma) from Pleistocene Kasamori Formation of the Kazusa Group at Kousek

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We discovered a chemosynthetic fossil assemblage at Kouseki, Mobara City, Chiba Prefecture where the Pleistocene Kasamori Formation that is the uppermost stratum of the Kazusa Group, a Plio-Pleistocene forearc basin fill, crops out. The Kasamori Formation, 300m to 230m in thickness, consists mostly of mudstones and sandy mudstones (Tokuhashi and Endo, 1983). The chemosynthetic species of the assemblage consists exclusively of a lucinid bivalve Lucinoma aokii (Hirayama, 1958). Although this bivalve is an extinct species, it is considered to be a chemoautotrophic bivalve, because observed living lucinids at least harbor sulfur-oxidizing bacteria without any exception (Dame, 1996; Sibuet and Olu, 1998),

In the study area, the formation yields the tuff beds: Ks10, Ks11, Ks11.5B, and Ks12 in descending order. Among them, Ks11 had been dated in 0.57 plus or minus 0.17Ma (Tokuhashi and Endo, 1983). The assemblage occurs in the horizon between Ks11 and Ks10 where tuffaceous mudstones and sandy mudstones are greatly bioturbated. The many shells of Lucinoma aokii are preserved in articulated conditions with a position upward dorsally, indicating their life position. Authigenic carbonates are developed sporadically or aggregately among the lucinid shells and are composed of MG-calcite, dolomite, and a minor amount of calcite. These carbonates are greatly depleted in 13C ($d^{13}C$ = -51.2 to -34.1per mill), clearly indicating that the assemblage was depended on a methane seepage.

This is the youngest chemosynthetic assemblage in the fossil records. The youngest fossil chemosynthetic assemblage known previously occurs in the Kakinokidai Formation (about 0.70Ma: Majima et al., 2005) that consists of the middle part of the Kazusa Group.

Keywords: Mobara City, Chiba Prefecture, Kamori Formation, lucinid, carbonates