

Vesicomylid fossils from the Lower Pleistocene Imaizumi Sandstone and Conglomerate Member

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Vesicomylid fossils have been known to occur from the Imaizumi area, northern Miura Peninsula (Shikama and Masujima, 1969; Utsunomiya et al., 2014; Jimbo et al., 2015), where the lower Pleistocene Imaizumi Sandstone and Conglomerate Member (Eto, 1986) of the Nojima Formation is exposed. From the sandstones of this member, Utsunomiya et al. (2014) reported vesicomylid fossils from a sediment gravity flow deposit, and considered that they had been transported from the southern area on the basis of the imbrications and long axis arrangements of the fossils within the bed, and Jimbo et al. (2015) reported vesicomylid fossil fragments from the basal portion of a channel fill conglomeratic sandstone attaining 9 m in the single bed thickness. We observed four vesicomylid fossil localities (locs. 1-4) including those reported by Utsunomiya et al. (2014) (loc. 2) and Jimbo et al. (2015) (loc. 1) and clarify in this report all of the vesicomylid fossils occurring from the Imaizumi Sandstone and Conglomerate Member had been reworked and transported by sediment gravity flows, judging from their modes of fossil occurrences.

The Imaizumi Sandstone and Conglomerate Member is composed of the successions of a submarine fan. This fan show an overall upward coarsening in sequence, its basal part consists mainly of the alternation of sandstones and muddy sandstones, sandstones increase gradually in upward successions (locs. 2-4), and its most upper part is composed of a channel fill deposits interpreted as a topset of the fan (loc. 1).

At the loc. 1, vesicomylid fossil fragments occur in the basal part of a channel-fill conglomeratic sandstone in association with shallow water molluscan fossils (Jimbo et al., 2015) and are interpreted that they had been transported by a sediment gravity flow originated in shallow waters. Locs. 2-4 occur in sandstones and muddy sandstones alternation part of the successions that are interpreted as the mid-fan of the submarine fan sequence. In those localities, vesicomylid fossils occur in a pebbly course-grained sandstone bed that grades into fine-grained sandstone (loc. 2; Utsunomiya et al., 2014), in course-grained sandstone bed that grades into medium-grained sandstone (loc. 3), or three course-grained sandstone beds that grade into medium-grained sandstone (loc. 4). Many shells of the locs. 2-4 are fragmented, and no articulated shell occurs. Their commissure planes of the valves arrange parallel nearly to the beddings and both convex-down and convex-up positions are observed in nearly the same amount. No authigenic carbonates, associated frequently with the cold-seep depended fossil assemblages, are found in the four fossil localities described above. Those occurrences clearly show that they had been transported from their original habitats.

The fossil occurrences summarized above suggest that there were no methane seepage when the Imaizumi Sandstone and Conglomerate Member was deposited, at least in the area where the member is exposed now.

Keywords: Kazusa Group, Pleistocene, Vesicomylid, Miura Peninsula