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Mollusk species at a pliocene shelf whale fall (Orciano Pisano, Tuscany)

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ABSTRACT

The recovery of an intact, 10 m long fossil baleen whale from the Pliocene of Tuscany (Italy) offers the first opportunity to study the paleoecology of a fully developed, natural whale-fall community at outer shelf depth. Quantitative data on mollusk species from the whale fall have been compared with data from the sediments below and around the bones, representing the fauna living in the muddy bottom before and during the sinking of the carcass, but at a distance from it. Although the bulk of the fauna associated with the fossil bones is dominated by the same heterotrophs as found in surrounding communities, whale-fall samples are distinguishable primarily by the presence of chemosymbiotic bivalves and a greater species richness of carnivores and parasites. Large lucinid clams (*Megaxinus incrassatus*) and very rare small mussels (*Idas* sp.) testify to the occurrence of a sulphophilic stage, but specialized, chemosymbiotic vesicomyid clams common at deep-sea whale falls are absent. The Orciano whale-fall community is at the threshold between the nutrient-poor deep sea and the shallow-water shelf, where communities are shaped around photosynthetic trophic pathways and chemosymbiotic specialists are excluded by competition.