Ecology of Whale Falls

A review of the current knowledge about whale falls and their role in deep-sea ecology has recently been published by two of the leaders in the field, Craig Smith (University of Hawaii) and Amy Baco-Taylor (Woods Hole Oceanographic Institution). This paper is based in part on their studies of whale falls at the California continental margin, funded 1997-2003 by the West Coast & Polar Regions Undersea Research Center (NURP).

Whale falls, i.e., 30-160 ton whale carcasses falling to the sea floor, transport a massive amount of organic matter to the deep sea. This input is highly localized and episodic, but it can have a major impact in an environment with scarce food supplies. Whale falls support chemoautotrophic communities similar to those at hydrothermal vents and cold seeps, in some cases supporting the same species. As at vents and seeps, novel enzymes suitable for industrial use have been isolated from whale fall bacteria. However, whale falls are much more widespread than vents and seeps. Molecular comparisons of species from these settings suggests that whale falls have provided an evolutionary bridge from continental margin cold seeps to deep-sea hydrothermal vents.

The study of whale falls a relatively novel field, and many questions remain -- for example, how do the species specific to whale falls colonize new ones? Are the geographic distributions of whale fall species related to the migratory routes and feeding grounds of the whales themselves, or to the distribution of hydrothermal vents and cold seeps, or are these species simply widespread in the ocean basins? What is the ecological impact of a drastic decline in whale falls that must have occurred with the advent of industrial whaling in the 19th century?

Smith, Craig R. and Baco, Amy R. (2003): Ecology of whale falls at the deep-sea floor. *In* R.N. Gibson and R.J.A. Atkinson, eds., *Oceanography and Marine Biology: an Annual Review*, vol. 41, pp. 311-354.

URL: http://www.soest.hawaii.edu/hannides/galleries/Calbasins.html

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