

Habitat change and biodiversity maintenance: two faces of the same process?

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What generates biological diversity, how is it maintained and how does it function and vary through time are fundamental questions in a time of change. How can we quantify biodiversity and what are the consequences of human-induced global change have become central points if we want to save and preserve the most diversity of our planet. In order to have a correct picture of how biodiversity arises and is sustained, we need to be able to construct a rigorous predictive model of this process. Changes in temperature or primary productivity have been considered as the major factors responsible for the dramatic molluscan turnover that occurred in the western Atlantic over the Plio-Pleistocene boundary. But these theories have not been tested ecologically with a reliable enough data set to draw definitive conclusions. Over 400 collections (782 taxa, 190,000 specimens) from the panamic region were analyzed for changing molluscan life habits and trophic composition across 12 million years. Preliminary results show that although abundance of predatory gastropods and suspension feeding bivalves declined considerable, its diversity was maintained. On the other hand, the development of reef habitats brings about the diversification of a specific reef dweller molluscan fauna. In spite of the fact that shelf ecosystems changed noticeable in trophic structure since the Late Pliocene, most of the other ecological life habits remained stable. The faunal turnover was probably the result of the declining regional nutrient supply with its transition from heterotrophic and nutrient rich to more phototrophic and nutrient poor ecosystems. Changes in western Atlantic ecosystems compared with those present in the eastern Pacific were of such magnitude that these regions represent today two distinct macroecological entities.