

PREFACE

The ecological analysis of fossil assemblages requires more than detailed knowledge of Recent ecological processes. Of at least equal importance is the knowledge of the processes that take place when live communities turn into death assemblages (thanatocoenoses), burial assemblages (taphocoenoses) and, finally, fossil assemblages. Only with this knowledge can the degree of taphonomic distortion that took place during these transitions be evaluated. Although such studies have been carried out repeatedly in the past, their results are too heterogeneous to allow conclusive statements about the impact of taphonomic processes on benthic marine faunas. We therefore felt the necessity for additional studies the results of which are presented in this volume. Bahía la Choya, a small bay near the head of the Gulf of California was chosen as study site, because there an extensive intertidal flat and supratidal salt marsh is surrounded by lithified Pleistocene rocks representing roughly similar paleoenvironments. This provided the rare opportunity to trace the fate of shelly benthic molluscs from life to their fossil state. Moreover Bahía la Choya, situated close to the American-Mexican border and only a few kilometres from the Centro de Estudios de Desierto y Océanos (CEDO) at Puerto Peñasco, provided few logistic difficulties and could be reached within less than a day from our base at Tucson, Arizona.

The major aims of our studies at Bahía la Choya were

- * to evaluate the correspondence between live, dead, and fossil remains of benthic shelly molluscs,
- * to identify the major physical, chemical, and biological processes affecting the transition of the organisms from one state to the next one (e. g. transition live–dead, dead–fossil),
- * to assess the importance of mixing of shells between major habitats such as rocky intertidal, sand flat, tidal creek, and salt marsh, and

- * to assess the paleoecological significance of the processes operating on the fauna.

The results of the study are presented in seven papers which deal with the sedimentary habitats and molluscan faunas, the zonation of molluscan species and life habit groups across the tidal flat, the benthic molluscan communities and taphocoenoses, the taphonomy of the Recent molluscs, and the paleoecology and paleoenvironments of the Pleistocene deposits. The volume concludes with a short discussion of the significance of the results for paleoenvironmental analysis. These results document that both live and dead benthic molluscs can be used to characterize subenvironments of the tidal complex and that taphonomic processes not only distort to some extent the original distribution pattern and pattern of relative abundance, but also leave characteristic signatures that define the various subenvironments. Integrated approaches to paleoecology – combining sedimentological, ecological, and taphonomic data – lead to fairly reliable interpretations of ancient environments.

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