

INTRODUCTION

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Recent habitats and organisms provide a natural laboratory for the paleoecologist. Reconstructing the past requires a thorough knowledge of the processes operating at present. For even though the present is not the only key to the past, what better way to understand processes than to watch them in operation? But as paleoecologists we must go beyond simply understanding what affects living organisms. Rarely have the fossils we see in the rock record "died in their tracks". Potential fossils must run a gauntlet of taphonomic processes. Most do not make it and the fossils we collect from the rocks are only a sample of what was once living. Thus the persistent questions: How well does the distribution and abundance of fossils reflect the distribution and abundance of living organisms? What physical and biological features are likely to be good environmental indicators? How can taphonomic attributes be used in paleoenvironmental analysis?

This is not a conventional field trip guidebook. There are no road logs and very limited descriptions of particular "stops" along the way. Fascinating as the northern Gulf of California is, our interest goes beyond learning about this particular corner of the globe. The guidebook is a forum for research in taphonomy and paleoecology. What the chapters have in common are the same natural laboratory--the Puerto Peñasco, Sonora region of the northern Gulf of California--and the same objective--a better "tool kit" for interpreting ancient environments.

The chapters offer varying perspectives on how we can use our knowledge of Recent intertidal organisms and environments to aid in the interpretation of ancient organisms and environments. Flessa and Ekdale's contribution briefly summarizes the environmental setting, taphonomy, and paleoecology of the region. It is the only chapter that was written as a field guide. The contributions by Ekdale, Sumpter, and Hayes review the major geologic and sedimentary features of the Puerto Peñasco area. Four chapters cover biological features: Beckvar, Norris and Suter provide a key to common shells; Hendry and Ekdale analyze the variation in a common snail; Stearly reviews how bioerosion leaves its mark; and Schmidt documents variation in shell repair in a species of gastropod. Three contributions focus on biostratigraphy and taphonomy: Hartshorne and others assess the correspondence between population structures of living gastropods and their empty shells; McKittrick shows how the varying settling velocities of shells might affect shell accumulations; and Cutler uses the microscopic surface textures of shells as taphonomic and environmental indicators. Meldahl's contributions concern the origin of shells beds in Bahia la Choya. Finally, in a summary of work that is still in progress, Fürsich and Flessa review patterns of species zonation and community distribution and then apply that knowledge to the interpretation of some adjacent Pleistocene deposits.

Bienvenidos!