

## WHAT WE KNOW AND WHAT WE DON'T ABOUT THE FOSSIL MARINE MAMMALS ASSEMBLAGES OF BAHIA INGLESA FORMATION: A REVIEW OF TAPHONOMIC BIASES, TURNOVERS AND PALEOBIOGEOGRAPHIC RELEVANCE

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The Bahia Inglesa Formation (BIF, Northern Chile) is a marine Neogene sequence that includes a variety of environments preserved from deep to shallow water and transitional environments. BIF is known for hosting a great diversity of marine vertebrate fossil elements, with more than 70 taxa already recognized. The marine mammals are an important component of this fauna, with a sirenian, a few marine sloths, abundant and diverse phocids, and several cetacean taxa. In this manner, the BIF registers a variety of environments associated with this fauna as well as an array of phylogenetic and paleobiogeographic stories put together in the same geographic area. For example, the pinnipeds show a turnover between this sequence and the overlying Pleistocene unit (Estratos de Caldera), with 7 phocid morphotypes in the late Miocene as opposed to scarce records of the family in the Pliocene and only species of Otariidae in the Pleistocene. Meanwhile, the delphinidans apparently change their species composition and family representation between strata from the late Miocene to the early Pliocene. Among these, the Pontoporiidae (Iniioidea) is the best-represented family and the most abundant in fossil remains. Nevertheless, these are virtually absent from the upper levels, where delphinid records are more common. Taphonomically there are also important differences between the 5 most productive fossil strata (bonebeds). The bias that those differences can produce is under study. The Cerro Ballena assemblage is interpreted as resulting from synchronic catastrophic records, produced by recurrent mass mortalities and transport of carcasses to a taphonomic trap. Contrastingly, the “fosforita” is a hardground formed during sedimentation hiatus in a deeper environment near the coast (pronounced slope), which accumulated skeletal elements through time, and constituting the most productive and diverse layer so far (over 60 vertebrate taxa). Bahia Salado, El Morro (Late Miocene) and Los negros (Early Pliocene) localities consist of similar fine sandstone strata with differences in species composition, age, and probably paleoenvironments. The observed differences in species composition can be affected by each

of these factors, a topic that is part of our ongoing research. The marine mammal assemblages present species, genus, and family level richness, making BIF relevant for understanding the evolution and paleobiogeography of these groups. BIF shows similarities to the coeval fauna of the Pisco Formation (Peru), with particular differences (presence of Balaenidae), while it differs substantially from the older record of the West South Atlantic (Argentina).

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