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**Title:** UPPER APTIAN-LOWER ALBIAN MURAL FORMATION:  
STRATIGRAPHY, BIOSTRATIGRAPHY AND DEPOSITIONAL  
CYCLES ON THE SONORAN SHELF

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**Abstract:** The Upper Aptian-Lower Albian Mural Formation of the Bisbee Group in northern Sonora consists of eight members, in ascending order the Fronteras, Rancho Bufalo, Cerro La Ceja, Tuape Shale, Los Coyotes, Cerro La Puerta Shale, Cerro La Espina and Mesa Quemada. These members represent shallow marine facies of a major marine transgressive-regressive event that reached the Bisbee basin, except for the Rancho Bufalo Member which is a tongue of the fluvial Morita Formation that underlies the Mural Formation. The facies, succession and regional correlation of these members indicate that deposition of the Mural Formation occurred in northern Sonora on a broad carbonate shelf, the Sonoran shelf, where depositional environments varied from restricted shelf with local terrigenous deltaic and fluvial influence to open shelf with coral-rudist buildups, to offshore shelf. Facies of the Mural deepen across eastern Sonora into the Chihuahua trough and the formation pinches out northwestward in Sonora. The Sonoran shelf was flooded by three long-term depositional cycles of approximately 2.5 myr duration. The first cycle deposited the Fronteras and Rancho Bufalo members and is

older than 115.5 Ma, about 118 Ma. The marginal to shallow marine deposits of the Fronteras Members disconformably overlies fluvial strata of the Morita Formation and are sharply overlain by fluvial deposits of the Rancho Bufalo Member. The second cycle deposited the Cerro La Ceja, Tuape Shale and Los Coyotes members and probably embraces the Aptian-Albian boundary; the Cerro La Ceja Member disconformably overlies the Rancho Bufalo Member and Morita Formation in northeastern Sonora but gradationally overlies the Morita in the sections of north-central Sonora. The third cycle deposited the Cerro la Puerta Shale, Cerro la Espina and Mesa Quemada members and is Early Albian in age. The Mesa Quemada Member is gradationally to sharply overlain by fluvial deposits of the Cintura Formation. Biostratigraphy is based on ammonites, bivalves, gastropods, benthic and planktic foraminifers, and colomiellids and two biozones are erected to correlate the measured sections.