



The presence of foraminifera in lacustrine facies of the Santa María Group (San José and Chiquimil Formations), middle/upper Miocene, Tucumán and Catamarca, Argentina

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The "Paranaense Sea" (middle/upper Miocene) presents a clear marine gradient from the east to the west into the Chaco-Paraná Basin. To the west, diverse formations present paranaense's foraminifera together with groups of brackish or fresh-water macro and microfauna. In this region, the Santa María Group (Sierras Pampeanas, Tucumán and Catamarca provinces), includes two formations with thick lacustrine sequences, the San José Formation (middle Miocene) and the Chiquimil Formation (upper Miocene). Since the foraminifera discovery in this group in the 1980s, the sedimentary rocks that hold them were in general assigned to the San José Formation, but without a precise stratigraphic control. The goals of the present work are the systematic identification of the foraminifera fauna, the stratigraphic identification into formational units of the layers that contain them and the exposure of hypotheses explaining the presence of foraminifera in lacustrine facies. Methodologically we made facial and systematic field sampling in outcrops of layers assigned as fertile in foraminifera, and we have also used samples supplied by YPF, extracted during the 1980s. From a total of 35 samples, 14 were positive containing foraminifera. Four samples correspond to the Chiquimil Formation with the following species: *Ammonia parkinsoniana* (d'Orbigny) and *Lippsina demens* (Bik) forma *santamariana* Zabert. It is noteworthy, in this formation, the joint presence of characids with *Ammonia parkinsoniana* (d'Orbigny) in the same stratigraphic level. Ten samples of the San José Formation gave the following species: *Ammonia parkinsoniana* (d'Orbigny) and *Nonion* sp. We conclude that both lacustrine formations of the Santa María Group hold a foraminiferal microfauna. The direct relationship of the lakes with the Paranaense Sea or the possible foraminiferal sowing in the lakes by coastal birds migrations, are the two hypotheses that must be contrasted to explain the presence of foraminifera in the Santa María Group.

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