

First Jurassic brittlestar from Neuquén Basin, Argentina

Débora M. Campetella, Evangelina E. Palópolo, Maximiliano N. Rodríguez, Ben Thuy, Juan J. Ponce, Noelia B. Carmona and Silvio Casadío

Acta Palaeontologica Polonica 68 (1) 2023: 143-153 doi:<https://doi.org/10.4202/app.01032.2022>

Articulated fossil ophiuroids from South America were reported for the Devonian, Cretaceous, Eocene, and Miocene. Here we report the first Jurassic record of an articulated ophiuroid from the Sierra Chacaicó Formation (early Pliensbachian– Sinemurian) in Neuquén Basin, Argentina, and discuss the taphonomic processes that allowed its preservation. The Sierra Chacaicó Formation represents the onset of the Early Jurassic extensive marine transgression in the basin. The basal section comprises shoreface and offshore Gilbert-type delta system, which was affected by hyperpycnal discharges. The middle and upper sections are represented by offshore deposits, affected by storms and eroded by hyperpycnal channel-levee systems. The ophiuroid specimen was found in levels of massive, fine, tuffaceous sandstone beds and covered by coarse sandstone containing a large amount of plant debris and organic matter. It was preserved articulated, with a complete disc and almost complete arms. Based on the microstructure of the spine-bearing lateral arm plates, the ophiuroid is assigned to *Sinosura*, an extinct genus of the family Ophioleucidae, widespread in the Lower Jurassic deposits of Europe but previously unknown from other parts of the world. The posture of the ophiuroid, with one arm curved distally and extended in one direction and the other four arms symmetrically oriented in the opposite direction, suggests a walking or escape movement frozen in time. This implies that the ophiuroid was buried alive by sediment thick enough to prevent successful escape. The taphonomic and sedimentologic evidence indicates that the fossil material was found in hyperpycnal deposits accumulated in offshore positions, which carried a high concentration of sediment in suspension.

Key words: Echinodermata, Ophiuroidea, *Sinosura*, Pliensbachian, Sierra Chacaicó Formation, Neuquén Basin, Argentina.

Débora M. Campetella [dmcampetella@unrn.edu.ar; ORCID: <https://orcid.org/0000-0002-0763-3420>], Universidad Nacional de Río Negro, Estados Unidos 750, (R8332EXZ) General Roca, Río Negro, Argentina. Evangelina E. Palópolo [eepalopolo@unrn.edu.ar; ORCID: <https://orcid.org/0000-0002-1272-5637>], Maximiliano N. Rodríguez [mnrodriguez@unrn.edu.ar; ORCID: <https://orcid.org/0000-0003-0286-0111>], Noelia B. Carmona [ncarmona@unrn.edu.ar; ORCID: <https://orcid.org/0000-0003-0923-3719>], and Silvio Casadío [scasadio@unrn.edu.ar; ORCID: <https://orcid.org/0000-0002-8130-641X>], Universidad Nacional de Río Negro, General Roca, Río Negro, Argentina; Instituto

de Investigación en Paleobiología y Geología, Río Negro, Argentina; Consejo Nacional de Investigaciones científicas y Tecnológicas (CONICET), Av. Roca 1242, (R8332EXZ) General Roca, Río Negro, Argentina. Ben Thuy [ben.thuy@mnhn.lu]; ORCID: <https://orcid.org/0000-0001-8231-9565>], Department of Paleontology, Research & Collections, Natural History Museum Luxembourg. 25, rue Münster, L-2160 Luxembourg. Juan J. Ponce [jponce@unrn.edu.ar; ORCID: <https://orcid.org/0000-0003-4148-5668>], Servicio Geológico Minero Argentino (SEGEMAR), Centro General Roca, Río Negro, Argentina.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(2,907.0 kB\)](#)