

## Preface

# Ichnology: modern and fossil evidence of biological activity

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Ichnology is a multidisciplinary science that studies the traces produced by organisms on and within the substrate (Minter *et al.*, 2016). These traces have been studied and interpreted since the nineteenth century (see Baucon *et al.*, 2012), later Adolf Seilacher (1953, 1964, 1967, 2007, 2008) laid the foundations of modern Ichnology and spurred a new impetus. This impulse showed the importance of the aforementioned discipline in solving problems such as facies analysis, paleoenvironmental reconstructions and sequence stratigraphy. In addition, Seilacher's support and inspiration for other colleagues elicited the inclusion of Ichnology in studies of Evolutionary Paleocology. In Europe, the United States, Canada, Argentina, Brazil and Uruguay the importance of Ichnology has grown by leaps and bounds, whereas in the rest of the world it has only slightly developed. In Mexico, the study of vertebrate traces has received more attention. Nevertheless, this trend is changing as traces produced by invertebrates in continental and marine environments are being increasingly studied in more detail.

The idea of editing this special issue for the Boletín de la Sociedad Geológica Mexicana arose as a means to highlight: i) the approaches and tools for the study of different traces and their implications in areas such as Geology, Paleontology and Biology, ii) the Ichnology expansion in America, and iii) the state-of-the-art of the Mexican ichnological record. Therefore, the manuscripts included in this special issue can be grouped into Ichnotaxonomy, Paleobiology and Paleoenvironments, and Techniques applied to Ichnology.

The Ichnotaxonomical contributions consist of: i) a revision of the ichnogenera *Camurichnus* and *Hamipes* based on the examination of their type specimens (Getty), ii) the reevaluation of dinosaur ichnites from the Neuquén Province in Argentina, as well as the description of *Candelerichnus candelei* ichnogen. nov. ichnosp. nov. (Calvo and Rivera), iii) the description of the oldest record of camel footprints in Mexico (Jiménez-Hidalgo and Guerrero-Arenas), and iv) the southernmost record of *Tetrapodosaurus* ichnogenera in North America (Rodríguez de la Rosa *et al.*).

Paleobiology and Paleoenvironment contributions include: i) the study of predation traces on Holocene gastropod shells from the Ar-

gentinian littoral (Gómez-Espinosa *et al.*), ii) the recognition of ichnoassociations that allow determination of the depositional environment of a Carboniferous formation in Oaxaca (Hernández-Ocaña and Quiroz-Barroso), iii) a case study of ichnopathology on mammalian paleoichnites from South America (Oliva and Arregui), and vi) the paleobiological implications of the camelid and felid trackways study from the Cenozoic of Puebla (Cabral-Perdomo *et al.*).

The group of papers that rely on techniques applied to Ichnology comprise the study of traces through different modeling methods and neoichnological approaches such as: i) photogrammetry for dinosaur tracks from Coahuila (Gudiño-Maussán *et al.*), ii) the use of morphometric analysis to study the variation of Eocene pupation chambers from Oaxaca (Guerrero-Arenas *et al.*), and iii) the neoichnological analysis of hermit crab trackways as a function of the scavenged mollusk shell they chose to inhabit (Larrañaga and Kruesi).

We are grateful to our colleagues and friends that contributed with the different papers herein presented, to the many referees for their critical reviews and suggestions that improved each manuscript, to the technical editorial team, and to the editor-in-chief, Antoni Camprubí, for his trustful support during the edition of this special issue.

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