

## Foreword

# Geology and paleontology of East Asia I

This is the first of two special issues of *Cretaceous Research* devoted to the geology and paleontology of East Asia. The second will be published as the next number of this volume. Both issues were brought together under the direction of guest editors Masaki Matsukawa of Tokyo Gaku-gei University and Martin Lockley of the University of Colorado at Denver. This first issue includes nine papers with descriptions and interpretations of dinosaur, pterosaur, and bird tracks from China, Japan, Laos, South Korea, and Thailand. The second will include papers ranging in subject matter from the tectonic setting of East Asia to biostratigraphy and ecosystem analysis, and will focus on such diverse fossil groups as insects, ostracodes, mollusks, dinosaurs, plant megafossils, and palynomorphs. Papers in the second issue will effectively expand the definition of East Asia to include Mongolia.

As indicated in the list that follows, this first issue has a unified theme: vertebrate ichnofossils, footprints, made by dinosaurs, pterosaurs, and birds. As discussed in the first paper by Matsukawa, Lockley, and Li, much of the research reported in this issue is the result of joint expeditions by Japanese, American, and Chinese collaborators. These expeditions were led by guest editors Matsukawa and Lockley and largely funded by The Ministry of Education, Science, Sports and Culture in Japan. The publication of the results of this research into the morphology of tracks and trackways and their stratigraphic settings constitutes a major contribution to the literature on vertebrate ichnology, not only of East Asia, but also of the world.

Matsukawa et al. compile information on more than 70 fossil footprint sites in China, Japan, Korea, Laos, Mongolia, and Thailand. They find that many vertebrate ichnofaunas of East Asia contain distinctive elements that are neither typical nor common in other regions, especially the abundance and diversity of bird tracks, some with web impressions; giant pterosaur tracks are also unique to this area.

Chen et al. summarize and update what is currently known about the geological ages of formations in China that have a dinosaur track record. Included are data from Upper Triassic through Upper Cretaceous units in 16 provinces.

Lockley, Matsukawa, Ohira et al. describe footprints of shorebird-like species from Liaoning Province, northeastern China, that may be the oldest known bird tracks from China. These tracks, from a site known locally as the “Golden Chicken,” provide new insight into the evolution of birds in earliest Cretaceous time.

Zhang et al. discuss a spectacular array of dinosaur, pterosaur, and bird tracks and trackways in Gansu Province, northwestern China. The site, which is currently inaccessible by road but can be reached by boat along the Yellow River, is being developed as a National Geopark.

Kim et al. report on webbed-bird and pterosaur tracks from South Korea that are the oldest records for these kinds of footprints known in Asia. The bird tracks contribute to an emerging picture of an avifauna of high diversity in mid-Cretaceous time in East Asia.

Lockley, Houck et al. make known the nature of extensive trackways in the Sangjok Dinosaur Tracksite National Monument in South Korea. The site is one of the richest track-bearing sections on record, preserving the evidence of the activity of hundreds of individual track makers, which include sauropods, ornithopods, and birds.

Houck and Lockley provide a depiction of the stratigraphic, sedimentologic, and paleoclimatic milieu of the dinosaurs and birds from South Korea described by Lockley, Houck et al. Facies analysis indicates that the track-bearing strata were deposited in a distal lowland area adjacent to active volcanoes.

Huh et al. disclose the existence of about 1500 well-preserved dinosaur footprints in the Upper Cretaceous of South Korea, most of them made by small theropods. Based on analyses of their gait, it is concluded that the small theropods were trotting and the larger ones were walking slowly.

Lockley, Matsukawa, Sato et al. reveal the significance of morphologically distinctive theropod tracks from Thailand. These and other tracks from the area indicate a diversity of track makers that parallels the diversity of the skeletal record of theropods in Thailand.

This set of papers covering various aspects of the ichnological record of the Cretaceous of East Asia will be set in broader context by the papers in the second special issue.

The full collection represents years of diligent effort by the authors in field work, laboratory analysis, and preparation of the results for publication. Special thanks go to the referees of the manuscripts, whose suggestions substantially improved the final products. My personal thanks go to Editor-in-Chief David Batten for his perseverance and guidance throughout the publication undertaking.

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