

specimen consists of 26 bone fragments, including a partially-preserved braincase. It is the third crocodyliform to be found in Jilin Province, after *Paralligator sungaricus* Sun 1958 and *Rugosuchus nonganensis* Wu 2001. Specimen IVPP-YJDM 00009 is small in size. Some of the distinctive features include a heavily ornamented frontal lamina with interorbital midline ridge and preorbital groove; supratemporal fenestrae borders with the frontal, parietal, postorbital and the squamosal; dorsolaterally 90° bent postorbital bar; jugal that extends the triradiated infratemporal fenestrae; diastematic fossa on the dentary symphysis; amphicoelous vertebrae; proximally bent fibular head; relatively broad scapula shaft as well posteromedially raised keel of the osteoderms. Four numerical cladistic analyses have placed this new crocodyliform as a neosuchian, with paralligatorid affinities. The clade includes *Rugosuchus nonganensis* Wu 2001 and various species of the genus *Shamosuchus* from Mongolia, and its discovery contributes to vast importance in understanding the biogeographic evolution of Paralligatoridae in Central Asia.

Grant Information:

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Regular Poster Session III (Friday, October 11, 2019, 4:15 - 6:15 PM)

A NEW ANKYLOSAUR DINOSAUR SKELETON FROM THE UPPER JURASSIC OF PORTUGAL

RUSSO, João, FCT-NOVA, Lourinhã, Portugal; MATEUS, Octávio, FCT-NOVA, Lourinhã, Portugal

Ankylosaurs are very rare in Upper Jurassic and their record is restricted to five genera. Among them, is the poorly known *incertae sedis Dracopelta zbyzowskii* from the Upper Tithonian of Portugal.

Here we present a new specimen recovered in the coastal cliffs near the beach of Porto da Calada, about 40 km North of Lisbon, in a light gray, fine to medium grained sandstone, close to the top of the Lourinhã formation, Upper Tithonian. It consists of a nearly complete skull, with maxillary teeth, at least eleven articulated dorsal vertebrae with proximal half of ribs, ten articulated anterior caudals, mostly complete and articulated synsacrum, several fragments of disarticulated and broken ribs, both femora articulated in the acetabulum, partial ilia with attached pelvic shield, right humerus missing the proximal end, partial right scapulocoracoid, over 180 osteoderms (lateral, caudal and dorsal, most in situ) of various size (0.5-18 cm), at least 40 ossified tendons mostly attached to the vertebrae, and partial pelvic shield. This specimen (FCT-UNL 702), still under preparation, is one of the most complete Jurassic ankylosaurs.

Many of the ankylosaurian traits are present: medially inset maxillary tooth row; dorsal expanded proximal T-shaped ribs; posteriormost dorsal vertebrae fused to form a rod; horizontal hypertrophied preacetabular process, showing attachment scar of a posterior dorsal rib; robust humerus with deltopectoral crest extending mid shaft; distally positioned ridge-shaped fourth trochanter; extensive dermal armor (scutes, lateral plates and pelvic shield); and large hollow-based lateral plates.

The femoral head is separated from greater trochanter by a distinct slope which is diagnostic of Nodosauridae, but contrary to these, the posterior width of the skull is twice the width across the orbits. The phylogenetic position of the Portuguese specimen is not yet fully understood, but likely close to the split between the two major clades: Nodosauridae and Ankylosauridae. Also, it is still unclear if this is a second specimen of the sympatric and coeval *D. zbyzowskii*.

Grant Information:

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Education and Outreach Poster Session (Wednesday - Saturday, October 9-12, 2019, 4:15 - 6:15 PM)

FUNDING MEANINGFUL RESEARCH EXPERIENCES ENCOURAGES UNDERGRADUATES TO PURSUE DEGREES IN PALEONTOLOGY AND GEOSCIENCE

RUTZKY, Sara M., Wake Technical Community College, Raleigh, NC, United States of America

Minority students are highly underrepresented in the geosciences, especially in vertebrate paleontology. Additionally, the number of new students entering a geology or paleontology major in the United States is not keeping up with industry demand. In order to address these issues, Wake Technical Community College (WTCC) geology faculty partnered with faculty at North Carolina State University (NCSU) from 2012-2019 and with researchers at

the North Carolina Museum of Natural Sciences (NCMNS) from 2016-2019 to provide paid summer research internships to community college geology students who have only completed one or two geology courses. Student interns perform meaningful research, including planning, data collection, and analysis under the mentorship of faculty, researchers, and graduate students at our partner institutions, and then produce a poster that is presented at both local and national/international meetings, including both the Geological Society of America (GSA) and the Society of Vertebrate Paleontology (SVP). Successful student interns come from diverse backgrounds including a variety of minority populations. The experience for most student interns has been transformative and has led to them continuing their education in a geoscience field. We find that meaningful paid research experiences early in a student's career can encourage minority and underrepresented student groups to choose a major and career in geoscience or paleontology.

Grant Information:

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Technical Session XII (Friday, October 11, 2019, 9:45 AM)

SEXUAL DIMORPHISM IN NON-AVIAN DINOSAURS AND OTHER EXTINCT TAXA: THE IMPORTANCE OF EFFECT SIZE STATISTICS IN PALEONTOLOGY

SAITTA, Evan T., Field Museum of Natural History, Chicago, IL, United States of America; STOCKDALE, Maximilian T., University of Bristol, Bristol, United Kingdom; BONHOMME, Vincent, University of Sheffield, Sheffield, United Kingdom; LONGRICH, Nicholas R., University of Bath, Bath, United Kingdom; BENTON, Michael J., University of Bristol, Bristol, United Kingdom; CUTHILL, Innes C., University of Bristol, Bristol, United Kingdom; MAKOVICKY, Peter J., The Field Museum, Chicago, IL, United States of America

Despite many published reports of sexual dimorphism in extinct taxa, such claims in non-avian dinosaurs have been significantly underrepresented in recent years and have often been met with sharp criticism. Given that dimorphism is widely prevalent in sexually reproducing organisms, such a consensus would suggest that either this diverse group exhibited a highly unusual biology or that research bias is at play. Here we show that so-called 'species recognition' and 'mutual sexual selection' hypotheses for non-avian dinosaurs are poor explanations, and that there are multiple lines of evidence for sexual selection and variation of structures consistent with secondary sexual characteristics. We also show how univariate significance testing approaches, especially tests for bimodality, are uninformative and prone to false negatives. Instead, we propose a novel methodology for studying sexual dimorphism in the fossil record that focuses on traits likely to be secondarily sexual and tests against all alternate hypotheses for variation in those traits using multiple lines of evidence. Notably, we utilize effect size statistical approaches that are appropriate for low sample sizes, rather than significance testing, to analyze potential divergence of growth curves in these traits, constrain maximum and minimum estimates for dimorphism magnitude, and gauge support for sex-based growth models. Thus, it is more appropriate to compare estimates for the magnitude of and support for dimorphism between datasets than to attempt to decisively reject or fail to reject dimorphism in a single species. This approach allows for the study of sexual selection across phylogenies and time. We discuss our approach with both simulated and empirical crocodylian and avian data.

Regular Poster Session IV (Saturday, October 12, 2019, 4:15 - 6:15 PM)

NEW DINOSAUR, PTEROSAUR, AND CROCODYLIFORM FOSSILS FROM THE UPPER CRETACEOUS (CENOMANIAN) BAHARIYA FORMATION OF THE BAHARIYA OASIS, EGYPT

SALEM, Belal S., Benha University, Benha, Egypt; SALLAM, Hesham M., Mansoura University Vertebrate Paleontology Center, Mansoura University, Mansoura, Egypt; EL-SAYED, Sanaa, Mansoura University Vertebrate Paleontology Center, Mansoura University, Mansoura, Egypt; THABET, Wael, Egyptian Environmental Affairs Agency, Cairo, Egypt; ANTAR, Mohammed, Egyptian Environmental Affairs Agency, Cairo, Egypt; LAMANNA, Matthew C., Carnegie Museum of Natural History, Pittsburgh, PA, United States of America

The Upper Cretaceous (Cenomanian) Bahariya Formation of the Bahariya Oasis in the Egyptian Western Desert has yielded a diverse fossil vertebrate assemblage, including the type specimens of the non-avian theropods *Spinosaurus*, *Carcharodontosaurus*, and *Bahariasaurus*, the titanosaurian sauropods *Paralititan* and *Aegyptosaurus*, and the crocodyliforms *Libyosuchus*, *Stomatosuchus*, and *Aegyptosuchus*. Recent paleontological fieldwork within the oasis has resulted in the discovery of new fossil