64TH PALAEONTOLOGICAL ASSOCIATION ANNUAL MEETING

16-18 December 2020

OXFORD UNIVERSITY MUSEUM
OF NATURAL HISTORY



The Palaeontological Association

64th Annual Meeting

Virtual meeting

16th-18th December 2020

Oxford University Museum of Natural History

PROGRAMME ABSTRACTS AGM papers



14.15 – 14.20 Spiralling out of control: morphology and ecology of Eoandromeda octobrachiata from Nilpena, South Australia

*<u>Tory Botha</u>, Emma Sherratt, Mary L. Droser, James G. Gehling and Diego C. Garcia-Bellido

14.20 – 14.25 Biostratinomy of carbonate-hosted Ediacaran macrofossils in the Khatyspyt Formation, northeastern Siberia

*Olzhas Zharasbayev, Natalia Bykova and Dmitriy V. Grazhdankin

14.25 – 14.35 Questions and panel discussion

Session 8B (in parallel with session 8A)

14.00 – 14.05 Humeral diaphysis structure across mammals

Eli Amson

14.05 – 14.10 New data on the *Nacholapithecus* elbow show close affinities with *Equatorius* and living papionins

Marta Pina and Masato Nakatsukasa

14.10 – 14.15 Could Lucy run? Reconstructing lower limb musculature in Australopithecus afarensis

<u>Sian McCormack</u>, Evie Donald, Sam Coatham, Charlotte A. Brassey, Thomas O'Mahoney, William Sellers and Karl T. Bates

14.15 – 14.20 Ginglymostomatid-like multicuspid teeth in an elusive rajid skate from the Tuscan Pliocene

<u>Alberto Collareta</u>, Frederik H. Mollen, Marco Merella, Simone Casati and Andrea Di Cencio

14.20 – 14.25 New insights in morphology and histology of Triassic Hybodontiform shark fin spines

Matthew Cowen and Živilė Žigaitė

14.25 – 14.35 Questions and panel discussion

14.35 - 14.40 Break

Session 9A (in parallel with session 9B)

14.40-14.45 Finding the worm: first palaeoscolecid from the middle Cambrian Marjum Formation of Utah, USA

*<u>Wade Leibach</u>, Rudy Lerosey-Aubril, James D. Schiffbauer, Anna F. Whitaker and Julien Kimmig

14.45 – 14.50 **Testing hypotheses of trilobite head modularity with emphasis on the eyes***Ernesto Vargas-Parra and Melanie Hopkins

14.50 – 14.55 What triggered coccolithophore calcification?

*Mariana Yilales, Rachel Wood, Rosalind E. M. Rickaby, Fabio Nudelman, Tianchen He, Sylvain Richoz and Matthew O. Clarkson



Convex hull estimation of mammalian body segment parameters

*Sam Coatham1, William Sellers1 and Thomas A. Püschel2

¹The University of Manchester, UK

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Obtaining accurate values for body segment inertial parameters (BSPs) is fundamental for gait analysis. BSPs comprise the specific mass and inertia properties of each body segment. Convex hulling, whereby the smallest-possible convex object that surrounds a set of points is calculated, has been suggested as an effective and time-efficient method to estimate these parameters in extinct animals, where soft tissues are rarely preserved. We investigated the effectiveness of convex hull BSP estimation in a range of extant mammals, to inform the potential future usage of this technique with extinct taxa. Using segmented CT scans, we compared the BSPs calculated from skin segments with parameters estimated from convex hull reconstructions based on the underlying bone morphology. Using both phylogenetic generalized least squares and ordinary least squares regressions, we found consistent predictive relationships between estimated and true BSPs for each body segment. The resultant regression equations can be used in future volumetric reconstruction and biomechanical analyses of mammals, both extinct and in extant species where such data may not be freely available.

Ginglymostomatid-like multicuspid teeth in an elusive rajid skate from the Tuscan Pliocene

<u>Alberto Collareta</u>^{1,2}, Frederik H. Mollen³, Marco Merella¹, Simone Casati⁴ and Andrea Di Cencio⁴.⁵

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Among extant rays (Elasmobranchii: Batomorphii), those assigned to the order Rajiformes are known as 'skates' and number some 290 species. The fossil record of Rajiformes is scant, and the low number of diagnosable extinct rajiform species contrasts with the high alpha-diversity of the recent stock. Here we report on four unusual skate teeth from two Pliocene localities of Tuscany, central Italy. While being attributable to Rajiformes and somewhat reminiscent of *Dipturus* and *Rostroraja*, these specimens display an idiosyncratic multicuspid crown design that does not compare favourably with any skate species known to date; consequently, they are interpreted as representing a yet to be described taxon of Rajidae. In light of similarities between the rather large-sized teeth of the latter and those of extant ginglymostomatids (*i.e.* the nurse sharks), this extinct skate form might have been capable of actively foraging upon relatively large food items. This elusive rajid was likely an uncommon component of the Pliocene Tuscan elasmobranch fauna, and it inhabited littoral and shelf settings characterized by tropical climate conditions. The origin of this extinct skate form might be referred to an earliest Pliocene diversification phase that also saw the emergence of the Mediterranean endemic stock of extant rajid species.

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