



# The Palaeontographical Society

Est. 1847

## NEWSLETTER 39 2023

### Notice of Annual General Meeting and Annual Address

**Date:** Wednesday 26<sup>th</sup> April, 2023, at 3pm

**Location:** Flett Theatre, Natural History Museum, London, SW7 5BD

We'd like to invite you to join us for the 176<sup>th</sup> Annual General Meeting. The Annual Report of Council will be presented, along with the Income and Expenditure Accounts for the year ended 31<sup>st</sup> December, 2022, and Council Members and Officers will be elected for the ensuing year.

This will be followed by our prize-giving, and this year for the first time we will be welcoming a series of short presentations by our previous Richard Owen Research Fund Awardees.

The AGM will be followed by the Society's Seventeenth Annual Lectures, and some refreshments and opportunity to chat afterwards. This event is open to members of the Society and any other interested parties.

Tea and coffee will be available from 2.30 pm. The AGM is open to all members of the Society, and our annual address is also open to the public.

#### Annual Lectures

PalSoc's Seventeenth Annual Addresses will take place following the AGM, at 4.30pm.

This year's speakers are:



Dr Tori Herridge (Natural History Museum, London)

Title: *FROM MINI-MAMMOTHS TO MEGA-MOLARS: EVOLUTIONARY INSIGHTS FROM ELEPHANTS*



Dr Frankie Dunn (Oxford University Museum of Natural History)

Title: *THE GENERATION OF ANIMAL FORM: THE SIGNIFICANCE OF THE EDIACARAN MACROBIOTA IN THE ASSEMBLY OF THE EUMETAZOAN BODYPLAN*

---

## PUBLICATIONS

Volume 175 (part 660 and 661) were both published in December 2021. Volume 176 (parts 662 to 664) were published in 2022.



### Vol. 175, for 2021

660. British Silurian stromatoporoids. Faunas, palaeobiology, and palaeogeographical significance, by S. Kershaw, A.-C. Da Silva, and C. Sendino (pp. 1–92, plates 1–22).

661. The osteology of *Dimorphodon macronyx*, a non-pterodactyloid pterosaur from the Lower Jurassic of Dorset, England, by S. Sangster (pp. 1–48, plates 1–4).

### Vol. 176, for 2022

662. The Early Jurassic Bivalvia from the Hettangian and Lower Sinemurian of South-West Britain. Part 4, by P. Hodges (pp. 145–330, plates 15–41).

663. British Silurian Beyrichiaceae (Ostracoda). Part 2, by D. J. Siveter (pp. 77–157, plates 28–47).

664. Osteology and relationships of *Cumnoria prestwichii* (Ornithischia: Ornithopoda) from the Late Jurassic of Oxfordshire, UK, by S.C.R. Maidment, K.E.J. Chapelle, J.A. Bonsor, D. Button & P.M. Barrett (pp. 1–55, plates 1–12).

The Editors welcome suggestions for new titles and would also be grateful for manuscripts that represent concluding or additional parts of ongoing, unfinished monographs.

---

## PALSOC NEWS

### Celebrating 175 years of the Society

The Palaeontographical Society celebrated its 175<sup>th</sup> anniversary in 2022. The Society was founded in 1847 on the suggestion of James Scott Bowerbank in order to speed up the publication of Sowerby and Sowerby's *Mineral Conchology* (1812–46). At a Geological Society meeting in February 1847, Edward Forbes also noted that information on Britain's fossils was scattered between different scientific publications, making it difficult to study. These men were among the founding members of the Society, setting out the main goal: 'to figure and describe as completely as possible a stratigraphic series of British Fossils'.

To mark the occasion, we organised a collaboration with the amazing team at Palaeocast to produce a two-part episode of their fantastic podcast series all about PalSoc's history, and how the society is changing to meet the needs of today's researchers.

The interviews were conducted by our new Secretary, Dr Elsa Panciroli. In episode one, she spoke to Dr Victor Monnin, a historian of science from the University of Strasbourg who specialises in the history of palaeontology, especially palaeoart. He explained how our society influenced the way in which fossils were visually represented in scientific literature. In episode two, she spoke to our president, Dr Caroline Buttler, who is a palaeontologist from Amgueddfa Cymru - National Museum Wales, and the first woman president of PalSoc. She discussed the place of scientific monographs in modern scientific practice, the role that women have played in PalSoc since its formation, and she reflected on the slow pace of change when it comes to diversity in scientific societies.

You can listen to both of these episodes on the Palaeocast website: [www.palaeocast.com/palsoc/](http://www.palaeocast.com/palsoc/)  
And read more about it in the blog on our website: [www.palaeosoc.org/latest-news/palsocs-175th-anniversary-celebrated-by-podcast/](http://www.palaeosoc.org/latest-news/palsocs-175th-anniversary-celebrated-by-podcast/)

## Monograph Mayhem Over?

In 2021 we had some problems with the distribution of our monographs. Members did not receive their monographs, received multiple copies, and in some cases were sent copies that were bound upside down. Most perplexing of all was the substitution of our monograph for a copy of *Rethinking Marxism*, which may have left some of you feeling quite confused! The problems lay with our publisher Taylor & Francis, and their distribution, and were out of our control. One good thing at least is that this chaos generated a lot of social media interest and amusement, which helped raise our profile if nothing else!

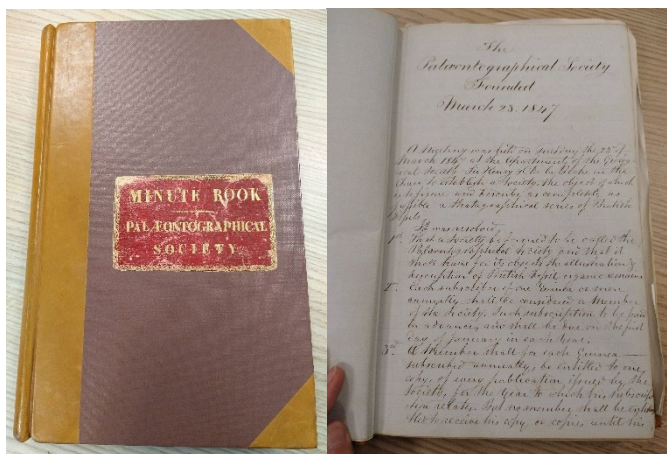
Thankfully, it appears that these problems have now been resolved and replacement copies distributed where appropriate. If you have not received your monograph/replacement, please get in touch with our Secretary, Dr Elsa Panciroli, at [secretary@palaeosoc.org](mailto:secretary@palaeosoc.org)

## PalSoc Monographs Digitised

We are delighted to announce that the digitization of our back catalogue of monographs is due for completion on the 1<sup>st</sup> April 2023. This is being carried out on our behalf by Taylor & Francis. As a member of the Palaeontographical Society you can access all of our monographs digitally via their website: [www.tandfonline.com/loi/tmps20](http://www.tandfonline.com/loi/tmps20)

## Society Archives – Can you Help?

We are looking for help bringing together our archival material. At the Council meeting on the 22<sup>nd</sup> November 2022, some of the council met early to look at the material in our archives at the Natural



History Museum in London. Although we knew this material existed, few of us were aware of the contents. We discovered the Society's minute books from the very first meeting in 1847, all the way to the present day, as well as ledgers, accounts, and correspondence from throughout the Society's history. There were original monographs from the 1800s owned by Sir Richard Owen, and a series of lavishly illustrated dinner invitations – similar to the one that featured in our 175<sup>th</sup> Anniversary podcast (see above). We also have archival material in the British Geological Survey at Keyworth, which comprises several boxes of ledgers and correspondence.

Our next step will be to bring these two collections together at a suitable location. We want to catalogue the contents of our archives, and hope to involve student archivists in this process. Ultimately, we plan to seek researchers to study our history – these archives are currently untouched, and we suspect will make an amazing project for historians of science at any career stage.

## Subscriptions

Individual subscription (1 year) = £35.00  
Student rate (1 year) = £17.50

Members receive the monograph and digital access to our back catalogue. Subscribe, or renew an existing subscription, via our website

[www.palaeosoc.org/membership](http://www.palaeosoc.org/membership)

or by post: Dr. T. McCormick, The Treasurer, c/o British Geological Survey, Nicker Hill, Keyworth, Nottingham, NG12 5GG, United Kingdom.

You can pay via PayPal, credit card, or by cheque (drawn on a UK bank) payable to The Palaeontographical Society.

A subscription renewal form for 2023 is enclosed with this Newsletter.

PalSoc no longer offers Institutional or Agency rates. Institutions can subscribe through Taylor & Francis at [www.taylorandfrancis-renewals.informa.com](http://www.taylorandfrancis-renewals.informa.com)

If you have any enquiries related to membership and payment, please contact our Treasurer Dr Tim McCormick at [tmcm@bgs.ac.uk](mailto:tmcm@bgs.ac.uk)

*If you or anyone you know might have material related to the Palaeontographical Society – including more recent material from the 20<sup>th</sup> Century – we would love to hear from you! Please contact our Secretary, Dr Elsa Panciroli, at [secretary@palaeosoc.org](mailto:secretary@palaeosoc.org)*

## **Changing to a CIO**

In the next couple of years, the Society is hoping to change from a Charitable Trust to a Charitable Incorporated Organisation, or CIO. To do so, we require our members to vote in favour of this change, so we'd like to explain the reasons for the switch in advance of a vote at the AGM in April.

One of the main reasons for changing to a CIO is to give PalSoc a legal personality, which removes legal and financial liability from our council members as individuals. Most other charities of similar size and scope have already made the change (for example, the Palaeontological Association). The process involves drafting an improved constitution, applying to the charity commission to obtain a new charity number, and switching to a charity bank account. The whole process should take two to three years.

The council believes this is an important step to bring PalSoc into line with other similar organisations, and hopes you will join us at our AGM to vote on this change.

## **Beris Cox and Robin Cocks**

We were saddened to learn of the recent deaths of two palaeontologists, Beris Cox and Robin Cocks, who both contributed greatly to the running of the Palaeontographical Society. Beris Cox was author of a PalSoc monograph on English Callovian perisphinctid ammonites (1988), an editor on PalSoc Council from 2008–15, and then became our first female Vice President in 2015. She was an invertebrate palaeontologist at the British Geological Survey from 1969 – 1998. Beris also served on the History of Geology Group Committee for many years.

Robin Cocks was an internationally respected expert on Palaeozoic brachiopods, and President of the Society from 1994-1998. Among his many publications he authored three of our monographs. Robin spent his career at the Natural History Museum, and was Keeper of Geology from 1986-1998. You can also read his obituary on Brachnet here:

<http://paleopolis.rediris.es/BrachNet/ANNONCES/OBITUARIES/Cocks.htm>

---

# **COUNCIL NOMINATIONS AND NEW MEMBERS**

## **Nominations for Council**

The Palaeontographical Society is open for nominations to serve on Council commencing 2023. The council meets two to three times a year, and is responsible for overseeing the running of the Society and providing guidance on how it can best serve the needs of the membership. Any member of the Society can nominate a candidate, including themselves. Names will be considered at the AGM, and where more than one person is nominated for a position, an online vote will take place.

We are currently seeking the following: Vice-President; Communications Officer; and Ordinary Member.

To find out more about these roles, and to nominate a candidate, take a look at our website, and/or e-mail the Secretary ([secretary@palaeosoc.org](mailto:secretary@palaeosoc.org)). Nominations must include a statement from the candidate that they are willing to be considered and why they are suited to the role. A proposer and seconder are required (both must be current members of the Society).

## **New Members**

We extend a warm welcome to the following recent new members of the Society: Andrew Gale, Andrew Edwards, Adam Jones, Richard Howard, Wynn Rees, Neil Gostling, David Taylor, Liam Herringshaw, Keith Duff, Michael Tigwell, Ian Stewart, Lewis Winchester-Ellis, Hans Sues, Christopher Prothero-Waller, Katrina Van Grouw, Josef Williamson, Sidney Johnston, Mark Worwood, and Tiffany Kirby.

---

## GRANTS AND AWARDS

### Richard Owen Research Fund

The Richard Owen Research Fund (previously the Palaeontographical Society Research Fund) aims to provide awards up to £1000 for research on the UK fossil flora and fauna. Applications should comprise a short CV, an account of research aims and objectives, and a breakdown of the proposed expenditure. Applications should be accompanied by the name and contact details of a scientific referee. On completion of the work, successful candidates must produce a short report (500–1000 words) for the Palaeontographical Society Newsletter and website, and will be expected to submit receipts for expenditure incurred.

Please see our website or contact our Secretary (Dr Elsa Panciroli at [secretary@palaeosoc.org](mailto:secretary@palaeosoc.org)) for further information. The closing date for applications is the 28<sup>th</sup> February each year, and the successful applicant(s) will be announced at the AGM. Two grants were awarded in 2022:

Mr Cassius Morrison (Natural History Museum, London), Palaeoneurology of *Eustreptospondylus oxoniensis* (Megalosauroida, Theropoda) and the Palaeoecology of British Theropods

Ms Katrina van Grouw (University of Cambridge), Fossil Birds of the London Clay Formation

Reports on five projects supported by this fund (three from 2020 and two from 2021) appear below.

### Edward Forbes Prize

The Society invites applications for the Edward Forbes Prize, which aims to recognize outstanding contributions by early career researchers in the field of taxonomic and systematic palaeontology (encompassing invertebrates, vertebrates, palaeobotany and microfossils). The Prize, which is to be awarded for publication excellence, comprises £250 and a one-year membership of the Society. The Prize will be awarded at the Society's Annual General Meeting each year. Full criteria for eligibility are posted on the Society's website. The Edward Forbes Prize was presented in 2022 to:

Dr Elsa Panciroli (Oxford University Museum of Natural History) for her two joint publications on the Scottish fossil mammaliaform, *Borealestes*: Panciroli, E., Benson, R.B., Fernandez, V., Butler, R.J., Fraser, N.C., Luo, Z.X. & Walsh, S. 2021. New species of mammaliaform and the cranium of *Borealestes* (Mammaliformes: Docodonta) from the Middle Jurassic of the British Isles. *Zoological Journal of the Linnean Society*, 192(4), pp.1323–1362; and Panciroli, E., Benson, R.B., Fernandez, V., Humpage, M., Martín-Serra, A., Walsh, S., Luo, Z.X. & Fraser, N.C. 2022. Postcrania of *Borealestes* (Mammaliformes, Docodonta) and the emergence of ecomorphological diversity in early mammals. *Palaeontology*, 65(1), p.e12577.

We invite submissions for the 2023 award on the basis of any eligible article that was published in 2022. Applications should be addressed to the Secretary (Dr Elsa Panciroli at [secretary@palaeosoc.org](mailto:secretary@palaeosoc.org)) and must be received by the closing date of 28<sup>th</sup> February each year. The decision of the Prize Committee will be announced at the Society's AGM. The successful applicant will be informed in advance, so that they may attend the meeting if they wish.

Newsletter compiled by our **Secretary, Dr Elsa Panciroli, March 2023**

You can contact her about any of the items featured here via our website, or at [secretary@palaeosoc.org](mailto:secretary@palaeosoc.org)

Twitter: @Palaeo\_Soc

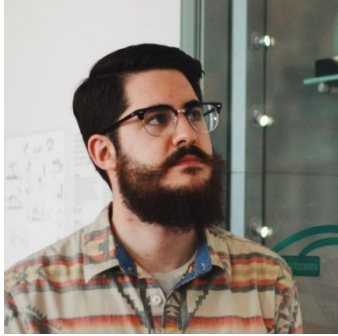
Facebook: [www.facebook.com/ThePalaeontographicalSociety](https://www.facebook.com/ThePalaeontographicalSociety)

---

## PALSOC RESEARCH FUND REPORTS

Due to the Covid-19 pandemic and lockdowns, many of our Richard Owen Research projects were delayed. Here we present an update on several projects awarded over the last few years, some of them still ongoing.

### Reconstructing the plesiomorphic nature of crown group birds



Dr Juan BENITO

University of Cambridge

Birds are the most diverse group of living terrestrial vertebrates, comprising nearly 11,000 living species and occupying virtually every environment on Earth. The bird crown group (the living bird radiation) constitutes the only clade of dinosaurs to have survived through the end-Cretaceous mass extinction, but the origins and early evolution of the group are poorly understood due to a particularly sparse fossil record. As such, insights about the plesiomorphic condition for the group must rely on inferences from their closest Cretaceous stem-group relatives and the earliest Cenozoic representatives of the clade.

*Ichthyornis dispar*, from the Late Cretaceous of North America, has long been considered one of the closest relatives of crown-group birds amongst the large diversity of Mesozoic stem birds (Clarke, 2004). However, until recently, most of our knowledge of *Ichthyornis* relied on the classic 19th century material housed in the collections of the Yale Peabody Museum. Thanks to the support of the Palaeontographical Society Richard Owen Research Fund I was able to obtain high-resolution CT-scans of a key *Ichthyornis* specimen from the Niobrara Formation (Kansas, US), housed in the Natural History Museum (NHM), which was incorporated into a comprehensive monograph reevaluating the postcranial morphology and phylogeny of *Ichthyornis* (Benito et al., 2022). This work revealed that several features previously considered unique to crown birds were already present in crownward stem birds, and clarified the phylogenetic relationships close to the origin of the crown group. The NHM *Ichthyornis* specimen was unique in preserving the most complete pectoral girdle for this taxon, including novel information on the morphology of the furcula, and was found to be amongst the largest *Ichthyornis* specimens known.

Palaeognaths (the lineage uniting ostriches and kin) represent the sister group to all other extant birds (Prum et al., 2015), and are therefore of utmost importance to reconstructing crown bird origins. The second portion of this project involved CT-scanning and restudying the neotype of *Lithornis vulturinus*, an early Cenozoic volant representative of the clade recovered from the Eocene London Clay formation and housed in the NHM collections. While recent work has focused on redescribing this taxon based on new specimens from the Fur Formation of Denmark (Bourdon & Lindow, 2015), its three-dimensional morphology remains obscure. Scans of the neotype have not only revealed several previously unknown skeletal elements that were completely hidden by matrix, but also the well-preserved endocast that has never been previously described. Work on the new data revealed by these scans is ongoing and is being led by Klara E. Widrig, PhD student at the University of Cambridge. These findings have potential in reconstructing the neuroanatomy of lithornithids, offering insights into their palaeobiology, and clarifying their phylogenetic affinities to extant palaeognaths.

#### REFERENCES

BENITO, J., Chen, A., Wilson, L. E., Bhullar, B.-A. S., Burnham, D. & Field, D. J. (2022). Forty new specimens of *Ichthyornis* provide unprecedented insight into the postcranial morphology of crownward stem group birds. *PeerJ*, **10**, e13919.

BENITO, J. & Olivé, R. (2022). Birds of the Mesozoic: An Illustrated Field Guide. Lynx Edicions.

Bourdon, E., & Lindow, B. (2015). A redescription of *Lithornis vulturinus* (Aves, Palaeognathae) from the Early Eocene Fur Formation of Denmark. *Zootaxa*, **4032** (5), 493-514.

PRUM, R. O., Berv, J. S., Dornburg, A., Field, D. J., Townsend, J. P., Lemmon, E. M., & Lemmon, A. R. (2015). A comprehensive phylogeny of birds (Aves) using targeted next-generation DNA sequencing. *Nature*, **526** (7574), 569-573.

## The Wessex Formation of Dorset



Simon PENN

University of Portsmouth

The palaeontology of the Lower Cretaceous, non-marine Wessex Formation (Wealden Group) has been examined multiple times for over 200 years. As a result, a diverse wetland biota including pteridophytes, gymnosperms, molluscs, selachians, actinopterygians, reptiles including dinosaurs, and mammals is well-documented (Austen & Batten, 2018).

The exposed Wessex Formation of south-central England occupies a geographical position spanning the northern margin of the Wessex Sub-basin (Dorset and the Isle of Wight), Hauterivian – Barremian outcrops on the south coast of the Isle of Wight have famously produced multiple dinosaur holotypes (Radley & Allen, 2012). In contrast, the palaeontology of Dorset's Wessex Formation remains largely disconnected from research, consequently, the succession within Dorset requires palaeontological and geological review (Penn & Sweetman, 2023).

Funding from the Palaeontographical Society's Richard Owen Research Fund facilitated field work within Dorset resulting in the palaeontological and lithostratigraphical documentation of the basal Wessex Formation of Dungy Head (Penn & Sweetman, 2023). Significantly, microvertebrate-rich gutter casts within a host mudstone have been identified and processed resulting in the documentation of a diverse wetland biota (Penn and Sweetman, 2023). Characteristically, the gutter casts act as a unique repository for microvertebrate remains; a mixed aquatic – terrestrial faunal assemblage comprising ostracods, molluscs, selachians, ray-finned fish, mesoeucrocodylians, and a tentative dinosaur are identified (Penn and Sweetman, 2023). Ostracods recovered from the gutter cast horizon indicate a depositional age of upper Berriasian – lower Valanginian; consequently, the faunal assemblage described represents the oldest biota documented from the Wessex Formation.



Results of the study have been published (Penn & Sweetman, 2023); furthermore, research into the Wessex Formation of Dungy Head continues with additional data being analysed. The authors would once again like express thanks to the society, the provided funding significantly enhanced this project by permitting additional fieldwork.

Results of the study have been published (Penn & Sweetman, 2023); furthermore, research into the Wessex Formation of Dungy Head continues with additional data being analysed. The authors would once again like express thanks to the society, the provided funding significantly enhanced this project by permitting additional fieldwork.

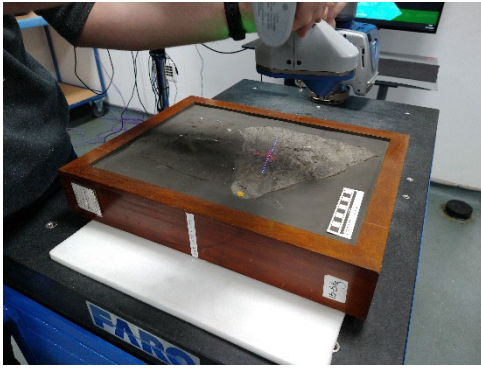
## REFERENCES

AUSTEN, P.A. & Batten, D.J., 2018. English Wealden fossils: an update. *Proceedings of the Geologists' Association*, **129** (2), 171-201.

PENN, S.J. & Sweetman, S.C., 2023. Microvertebrate-rich gutter casts from the basal Wessex Formation (Wealden Group, Lower Cretaceous) of Dungy Head, Dorset: Insights into the palaeoecology and palaeoenvironment of a non-marine wetland. *Cretaceous Research*, 143.

RADLEY, J.D. & Allen, P., 2012. The Wealden (non-marine Lower Cretaceous) of the Wessex Sub-basin, southern England. *Proceedings of the Geologists' Association*, **123** (2), 319-373.

## Identifying the mystery dinosaur footprint from Scotland



Dr Elsa PANCIROLI<sup>1,2</sup> and Dr Stig WALSH<sup>2</sup>

1 Oxford University Museum of Natural History, Parks Road, Oxford, OX1 3PW; 2 National Museums Scotland, Chambers Street, Edinburgh, EH1 1JF.

Fossil footprints provide important information on the presence and behaviour of extinct animals (Falkingham 2014). The footprint record for dinosaurs in Scotland is almost entirely confined to the Middle Jurassic deposits of the Isle of Skye (e.g. dePolo 2018). A footprint collected in Caithness in Northern Scotland in 1899 comprises the first putative

dinosaur print ever discovered in Scotland (Sarjeant, 1974), and one of the earliest found in the UK. However, its identity as a dinosaur print has never been confirmed, and its geological provenance is uncertain. This project will re-examine the Caithness print to investigate its origin, providing important palaeontological and historical context for this important fossil.

In November 2022 Dr Panciroli was able to access to the specimen, which is held in the Natural History Museum in London. The specimen is a single three-toed print on a block of sandstone, and at some point after donation to the museum it was mounted in concrete within a wooden frame. During her visit it was laser scanned (Fig 1) to produce a high resolution 3D copy, and a series of photographs and observations collected. These will now be used as the basis for a morphological study and literature review, to establish the possible trackmaker.

The conservation team at NHMUK are now in the process of carefully removing the specimen from its casing to permit access for sampling. This sample will be used for lithology matching against databases held at National Museums Scotland. Fieldwork in Caithness is planned for late 2023 to try and establish the locality from which the block might originate, and further constrain its geological context.

This project will continue the work of the late M.A Whyte, who bequeathed his initial research on this print to National Museums Scotland in 2014. He will be given co-authorship on any subsequent publication/s.

### REFERENCES

DEPOLO P. E, Brusatte SL, Challands TJ, Foffa D, Ross DA, Wilkinson M & Yi HY. 2018. A sauropod-dominated tracksite from Rubha nam Brathairean (Brothers' Point), Isle of Skye, Scotland. *Scottish Journal of Geology*, **54**, 1–12.

FALKINGHAM, P. L. 2014. Interpreting ecology and behaviour from the vertebrate fossil track record. *Journal of Zoology*, **292** (4), 222-228.

SARJEANT, W.A.S. 1974. A history and bibliography of the study of fossil vertebrate footprints in the British Isles. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **16** (4), 265-378.

# A reassessment of British Veneridae and their response to Cenozoic climate change



Dr Jed ATKINSON

Department of Earth Sciences, The Natural History Museum, London SW7 5BD

The Venus Clams (Veneridae) are an immensely successful family of bivalves in today's oceans with over 800 species recorded, including several taxa of economic significance in the shellfish industry (Mikkelsen et al., 2006). Their importance in the modern oceans raises concern over how these bivalves are likely to respond to anthropogenic climate change, potential insights to this can be gained from the fossil

record. Britain hosts an abundant record of fossil Veneridae from the Cretaceous onwards, meaning we can study how these bivalves responded to several climatic changes including the Palaeocene-Eocene Thermal Maximum (PETM) and the Early Eocene Climatic Optimum.

The project's first aim is to use biometric analyses to reassess the taxonomy of British Veneridae. This includes morphological variation within each species, which is assessed by treating stratigraphical and geographically related material as individual assemblages. These data will be subject to statistical analysis following adapted methods of Hodges (2000) and geometric morphometric analysis of landmark data from hinge lines and internal features.

Once the taxonomy has been consolidated the project's secondary aim is to detect long-term responses to environmental changes such changes in assemblage makeup, ecologies and variation in growth and shell size - the latter being of particular significance in the modern age given the prevalence of Veneridae in fish markets.

Receiving the Richard Owen Research Fund enabled me to visit the Natural History Museum, London, in Autumn of 2021. Whilst there I generated photographic database of approximately 800 specimens to be used to extract measurement and taxonomic information. In total around 50 different taxa were analysed from approximately 10 different intervals spanning the Palaeocene, Eocene, Oligocene, and Pliocene. This database includes a great many type specimens from the works of Dixon (1850), Wood (1850-56, 1861-77), Wrigley (1925), and Tremlett (1953a,b). Approximately half of the samples studied were from the Eocene, these had sufficient context to allow enable the Eocene to be finely subdivided allowing for higher resolution assessment of venerids after the Palaeocene-Eocene Thermal Maximum and across the Eocene Climatic Optimum. The remaining venerid specimens cover the Palaeocene, Oligocene, and Pliocene intervals to variable degrees.

Unfortunately, due to a change to personal circumstances the project was put on hold in 2022 however, work on the project will be resumed in 2023.

## REFERENCES

DIXON, F. 1850. The geology and fossils of the Tertiary and Cretaceous formations of Sussex. Longman, Brown, Green and Longmans, London.

HODGES, P. 2000. *The Early Jurassic Bivalvia from the Hettangian and Lower Sinemurian of south-west Britain, Part 1*. The Palaeontographical Society, London. **154**, 1-71

MIKKELSEN, P.M., BIELER, R., KAPPNER, I. and RAWLINGS, T.A. 2006. Phylogeny of Veneroidea (Mollusca: Bivalvia) based on morphology and molecules. *Zoological Journal of the Linnean Society*, **148**, 439-521.

TREMLETT, W.E. 1953a English Eocene and Oligocene Veneridae Part I. *Proceedings of the Malacological Society*. **30(1-2)**, 1-21.

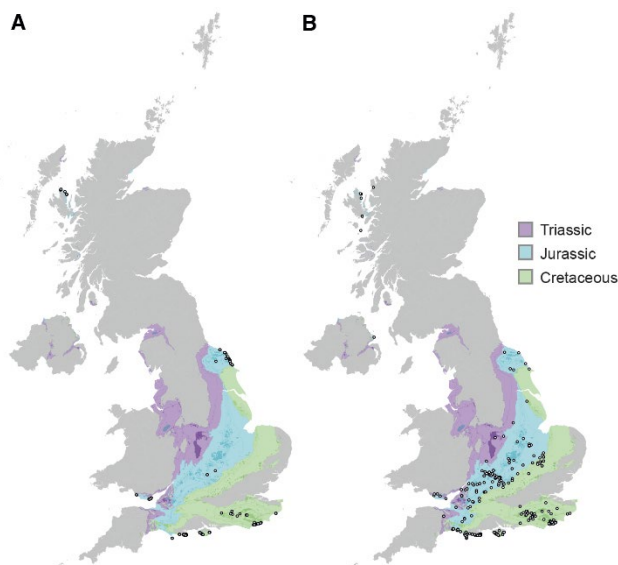
TREMLETT, W.E. 1953b. English Eocene and Oligocene Veneridae Part II. *Proceedings of the Malacological Society*. **30**, 55-71.

WOOD, S.V. 1850-1856. A monograph of the Crag Mollusca, with descriptions of shells from the Upper Tertiaries of the British Isles. Vol. II. Bivalves. *The Palaeontographical Society*, London. **4(8)**, 2-64.

WOOD, S.V. 1861-1877. A monograph of the Eocene Mollusca or, descriptions of shells from the older Tertiaries of England. Part I. Bivalves. *The Palaeontographical Society*, London. **13(58)**, 1-74.

WRIGLEY, A. 1925. Notes on English Eocene and Oligocene Mollusca, with descriptions of new species. *Journal of Molluscan Studies*, **16**, 232-248.

## ‘Forgotten’ footprints: understanding UK dinosaur macroecology



**Figure 1.** Map showing the geographical distribution of unique UK dinosaur (A) track and (B) skeletal fossil locations in relation to Mesozoic geology

Dr Daniel CASHMORE

School of Geography, Earth and Environmental Science, University of Birmingham, Edgbaston, Birmingham, UK, B15 2TT

Most studies of dinosaur macroevolution derive interpretations solely from the skeletal fossil record (Benson 2018), which provides a wealth of morphological and taxonomic information, but predominately constitutes isolated incomplete specimens prone to post-mortem transportation (Falkingham 2014). Alternatively, footprints (‘tracks’) preserve in situ evidence of dinosaur interactions with their environment and often occur in higher abundances in specific localities (Lockley and Hunt 1994). Therefore, they provide a complementary data

source to the skeletal fossil record, and a potentially invaluable insight into dinosaur evolution (Marsicano et al. 2007). UK dinosaur tracks have been the subject of considerable research (Sarjeant 1974), but never specifically utilised for macroevolutionary studies. This project presents a new comprehensive dataset of unique UK dinosaur track occurrences, enabling us to describe this record, elucidate any macroecological signals, and assess its degree of congruence with the skeletal record.

The UK dinosaur track record is restricted to fewer stratigraphic units and geographical localities than the skeletal record (Fig. 1), the vast majority of which are found in coastal sections in four key regions: Upper Triassic of south Wales; the Middle Jurassic to Lower Cretaceous of southern England; the Middle Jurassic Isle of Skye, Scotland; and the Middle Jurassic of North Yorkshire (Fig. 1). The latter two have significantly more track occurrences than skeletal fossils, and so provide our best understanding of dinosaur ecology of these areas. Some potential environmental preferences of major dinosaur groups (Theropoda, Sauropodomorpha, Ornithopoda, Thyreophora) are revealed, for example 75% of unique UK thyreophoran track occurrences are preserved in riverine/floodplain deposits (across regions and time intervals). Furthermore, UK thyreophoran tracks are underrepresented in comparison to their skeletal remains, potentially reflecting either their true relative abundance or historical identification issues. Despite gaps due to intervals of marine deposition, temporal occurrence patterns of UK dinosaur tracks are broadly similar to the skeletal fossil record. Direct statistical comparisons reveal significant correlations, emphasising the utility of the track record for understanding dinosaur community evolution. However, the UK track record also shows distinct features: the Norian and Aalenian have poor skeletal remains but track occurrence peaks, and an extreme track occurrence peak in the Berriasian corresponds to relatively infrequent skeletal preservation in comparison later Cretaceous stages (UK and worldwide). Therefore, tracks also provide our best insight into UK dinosaur palaeocommunities during these time intervals. Although tracks have preservation and taxonomic identification challenges, they are still an

underutilised resource with the potential to provide a more complete view of dinosaur ecosystems and evolution on regional and global scales.

The Palaeontographical Society's Richard Owen Research Fund enabled me to travel to a number of UK museums and gather useful informative that has aided this projects' data collection, and will be valuable in future related works. Me and my colleagues (Dr Kirsty Edgar, Lewis Haller, Dr Emma Dunne, and Prof. Richard Butler) are currently close to submitting a manuscript for publication. I thank the Society for awarding me the Fund and thank the many curators who have provided me with key information and collection access.

## REFERENCES

BENSON, R.B. 2018. Dinosaur macroevolution and macroecology. *Annual Review of Ecology, Evolution, and Systematics*, **49**, 379-408.

FALKINGHAM, P.L. 2014. Interpreting ecology and behaviour from the vertebrate fossil track record. *Journal of Zoology*, **292** (4), 222-228.

LOCKLEY, M. G. & HUNT, A. P. 1994. A review of Mesozoic vertebrate ichnofaunas of the Western Interior United States: evidence and implications of a superior track record. *Mesozoic Systems of the Rocky Mountain Region, USA*, 95-108

MARSICANO, C.A., DOMNANOVICH, N.S. & MANCUSO, A.C., 2007. Dinosaur origins: evidence from the footprint record. *Historical Biology*, **19** (1), 83-91.

SARJEANT, W.A.S. 1974. A history and bibliography of the study of fossil vertebrate footprints in the British Isles. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **16** (4), 265-378.

**REPORT OF THE COUNCIL**  
for year ending 31<sup>st</sup> December 2021

---

Vol. 176 (for 2022)

664. **Maidment, S.C.R., Chapelle, K.E.J., Bonsor, J.A., Button, D. & Barrett, P.M.** Osteology and relationships of *Cumnoria prestwichii* (Ornithischia: Ornithopoda) from the Late Jurassic of Oxfordshire, UK, 1–55, pls. 1–12.
663. **Siveter, D.J.** British Silurian Beyrichiacea (Ostracoda). Part 2, 77–157, pls. 28–47.
662. **Hodges, P.** The Early Jurassic Bivalvia from the Hettangian and Lower Sinemurian of South-West Britain. Part 4, 145–330, pls. 15–41.

Vol. 175 (for 2021)

661. **Sangster, S.** The osteology of *Dimorphodon macronyx*, a non-pterodactyloid pterosaur from the Lower Jurassic of Dorset, England, 1–48, pls. 1–4.
660. **Kershaw, S., Da Silva, A.-C., & Sendino, C.** British Silurian stromatoporoids. Faunas, palaeobiology, and palaeogeographical significance, 1–92, pls. 1–22.

Volume 175 (for 2021) published December 2021

659. **Hooker, J.J.** The Mammals of the Late Eocene – Early Oligocene Solent Group, Part 1, Introduction and Euarchonta: Nyctitheriidae, 1–147, pls. 1–48.

Volume 174 (for 2020) published May 2021:

658. **Donovan, S.K. & Fearnhead, F.E.** The British Devonian Crinoidea, Part 2, Addendum to Part 1, Cladida, Disparida and columnals, 57–148, pls. 16–29.

Volume 174 (for 2020) published February 2021:

657. **Slipper, I.J.** Ostracoda from the Turonian of South-East England, 47–168, pls. 10–26.

Volume 174 (for 2020) published September 2020:

656. **Kennedy, W.J.** The Ammonoidea of the Upper Chalk, 113–232, pls. 38–65.

Volume 173 (for 2019) published November 2019:

654. **Kennedy, W.J.** The Ammonoidea of the Upper Chalk, Part 1, 1–112, pls. 1–37.

Volume 173 (for 2019) published December 2019:

655. **Slipper, I.J.** Ostracoda from the Turonian of south-east England, Part 1, 1–75, pls. 1–9.

Volume 172 (for 2018) published March 2019:

651. **Perrier, V., Siveter, D.J., Williams, M. & Palmer, D.** British Silurian myodocope ostracods, 1–64, pls. 1–17.

Volume 172 (for 2018) published April 2019:

652. **Cocks, L.R.M.** Llandovery brachiopods from England and Wales, 1–262, pls. 1–41.

Volume 172 (for 2018) published November 2018:

650. **Moon, B.C. & Kirton, A.M.** Ichthyosaurs of the British Middle and Upper Jurassic. Part 2, Brachypterygius, Nannopterygius, Macropterygius and Taxa invalida. 85–176, pls. 31–40.

---

Read and adopted at the 175th Annual General Meeting in the lecture theatre of the Oxford University Museum of Natural History in person, and online via Zoom, on the afternoon of 26th April 2022, Dr Caroline J. Buttler, The President, in the Chair.

---

The two remaining issues of Volume 174 were published by Taylor and Francis for the Society during the year, in February and May 2021. Volume 175 (part 659) was published in December 2021. Delays of the monographs were due to the Covid pandemic at that time.

**Vol. 174, 2021**

657. Ostracoda from the Turonian of South-East England, by I.J. Slipper (pp. 47-168, plates 10-26).  
658. The British Devonian Crinoidea, Part 2, Addendum to Part 1, Cladida, Disparida and columnals, by S.K. Donovan & F.E. Fearnhead (pp. 57-148, plates 16-29).

**Vol. 175, for 2021**

659. The Mammals of the Late Eocene – Early Oligocene Solent Group, Part 1, Introduction and Euarchonta: Nyctitheriidae, by J.J. Hooker (pp. 1-147, plates 1-48).

Two Richard Owen Research Fund awards were made in 2021, to Jed W. Atkinson (Keighley, West Yorkshire) to describe and taxonomical reassess the British Veneridae bivalves, and then to detect their long-term evolutionary response to environmental change and Daniel D. Cashmore (School of the Earth, Geography and Geoscience, University of Portsmouth) to discuss the 'Forgotten' footprints; understanding UK dinosaur macroecology.

The Edward Forbes Prize was awarded to Michela M. Johnson (University of Edinburgh) for her joint publication entitled the "The phylogenetics of the Teleosauroida (Crocodylomorpha, Thalattosuchia) and implications for their ecology and evolution", co-authored with Mark T. Young and Stephen L. Brusatte.

The balance shown in the Statement of Accounts stands at £101670.19. The Income and Expenditure Account for 2021 is annexed.

At the Annual General Meeting, held on Thursday, 27th May, 2021, Dr S.K. Donovan retired as President. Dr C. J. Buttler retired as Vice-President, while Dr Y. Candela retired as Editor. Dr C.J. Buttler was elected as the new President, Dr Y. Candela was elected as a new Vice President, and Drs S. Beardmore and B. Moon were elected as new Editors. Dr N.R. Ainsworth was re-elected as Secretary, Dr T. McCormick was re-elected as Treasurer, Dr P.R. Crowther was re-elected as Editor, Dr A. Butcher was re-elected as Web Manager, while Ms E. Bernard was re-elected as Publicity Officer.

---

Following the Annual General Meeting, held on Wednesday, 26<sup>th</sup> April 2022, Professor Susan Evans retired as Vice-President, and Dr Peter Crowther, Dr Sam Giles, Dr Alex Liu retired as Members of Council., and Drs Jeffrey R. Thompson and Michela Johnson were elected as new Members of Council. Dr Caroline Buttler was re-elected as President, Dr Elsa Panciroli was elected as Secretary, Dr Yves Candela was re-elected as Vice President, Dr Timothy McCormick was re-elected as Treasurer, Dr Ben Moon, Dr Susan Beardmore and Dr Lucy McCobb were re-elected as Editors, Dr Anthony Butcher was re-elected as Web Officer, while Ms Emma Bernard was elected as Ordinary Member.

#### COUNCIL 2022-2023

<b>President</b>	Dr Caroline Buttler
<b>Vice-Presidents</b>	Dr Nigel Ainsworth, Dr Yves Candela
<b>Treasurer</b>	Dr Timothy McCormick
<b>Secretary</b>	Dr Elsa Panciroli
<b>Editors</b>	Dr Ben Moon, Dr Susan Beardmore and Dr Lucy.McCobb
<b>Communications Officer</b>	<i>Vacant</i>
<b>Web Officer</b>	Dr Anthony Butcher
<b>Ordinary Members</b>	Dr Michela Johnson, Dr Imran Rahman, Ms Emma Bernard, Dr Jeffrey R. Thompson

#### Independent Examiner's report to the Trustees of the Palaeontographical Society

I report on the accounts of the Palaeontographical Society for the year ending 31<sup>st</sup> December 2021.

#### Respective responsibilities of trustees and examiner

The charity's trustees are responsible for the preparation of the accounts. The charity's trustees consider that an audit is not required for this year under section 144 of the Charities Act 2011 (the Charities Act) and that an independent examination is needed.

It is my responsibility to:

- i. examine the accounts under section 145 of the Charities Act,
- ii. to follow the procedures laid down in the general Directions given by the Charity Commission under section 145(5)(b) of the Charities Act; and
- iii. to state whether particular matters have come to my attention.

#### Basis of independent examiner's statement

My examination was carried out in accordance with general Directions given by the Charity Commission. An examination includes a review of the accounting records kept by the charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items or disclosures in the accounts, and seeking explanations from the trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit, and consequently, no opinion is given as to whether the accounts present a 'true and fair view' and the report is limited to those matters set out in the statement below.

#### Independent examiner's statement

In connection with my examination, no matter has come to my attention

- (1) which gives me reasonable cause to believe that, in any material respect, the requirements:
- to keep accounting records in accordance with section 130 of the Charities Act; and
  - to prepare accounts which accord with the accounting records and comply with the accounting requirements of the Charities Act

have not been met; or

- (2) to which, in my opinion, attention should be drawn in order to enable a proper understanding of the accounts to be reached.



**Name:** Dr Stewart G. Molyneux  
**Address:** 71 Mount Pleasant, Keyworth, Nottingham NG12 5EG, UK  
**Date:** 20<sup>th</sup> April 2022

**Income and Expenditure Account for the Financial Year 2021 (ending 31/12/2021)**

Income (£)	2021	2020	2019
Members subscriptions <sup>1</sup>	£1,996.38	£2,219.71	£3,125.85
Stocks and shares dividends	£9,406.67	£1,214.85	£12,246.62
CUP royalties	-	-	£55.19
Informa UK royalties	£6,872.40	£5,643.49	£3,548.44
Informa UK editors fund	£1,500.00	£1,500.00	£1,500.00
Compensation from NatWest <sup>2</sup>	£100.00	-	-
Refunded bank charges	-	£3.14	-
Returned 2017 R Owen award	-	£700.00	-
	<b>£19,875.45</b>	<b>£11,281.19</b>	<b>£20,476.10</b>

Expenditure (£)	2021	2020	2019
Annual Report printing & mailing	£138.02	£104.17	£131.46
E Forbes Prize	£250.00	£250.00	£250.00
R Owen research fund awards	£1,000.00	£2,661.30	£430.00
Palaeontographical Society medals	-	£29.34	-
Donation to Mary Anning Statue Appeal	£1,050.00	-	-
Donation to Rutland Ichthyosaur Dig	£1,000.00	-	-
Donation to Crystal Palace Dinosaurs Appeal	-	-	£500.00
Donation to Progressive Palaeontology	-	-	£500.00
AGM / Annual Address <sup>3</sup>	-	-	£513.13
Administrative expenses <sup>4</sup>	£64.75	£549.16	£2,072.15
Website expenses	-	£3,312.00	£191.88
	<b>£3,502.77</b>	<b>£6,905.97</b>	<b>£4,588.62</b>

		2021	2020	2019
Balances carried forward at year start:	Current A/C	£82,027.16	£78,932.65	£63,980.14
	PayPal	£12,737.06	£11,456.35	£10,521.38
Income (see above):		<b>£19,875.45</b>	<b>£11,281.19</b>	<b>£20,476.10</b>
		<b>£114,639.67</b>	<b>£101,670.19</b>	<b>£94,977.62</b>

		2021	2020	2019
Balances carried forward at year end:	Current A/C	£96,893.46	£82,027.16	£78,932.65
	PayPal	£14,243.44	£12,737.06	£11,456.35
Expenditure (see above):		<b>£3,502.77</b>	<b>£6,905.97</b>	<b>£4,588.62</b>
		<b>£114,639.67</b>	<b>£101,670.19</b>	<b>£94,977.62</b>

Income over expenditure:		£16,372.68	£4,375.22	£15,887.48
--------------------------	--	------------	-----------	------------

**Schedule of Investments and Income for 2021**

	Cost (£)	Market Value (£)	2021 Income (£)
<b>Wide Range</b>			
8262.755 units M&G Charifund	£62,645.78	£128,584.99	£5,618.68
57797.805 units M&G Managed Growth Fund	£1,187.70	£74,721.00	£1,276.75
868 units Shires Income PLC 50p ordinary shares	£910.51	£2,326.24	£114.57
5920 units Securities Trust of Scotland Ordinary Shares	£655.27	£13,734.40	£337.44
	<b>£65,399.26</b>	<b>£219,366.63</b>	<b>£7,347.44</b>
<b>SR Units</b>			
3126.21 COIF Charity, Invest Inc	£20,061.55	£64,987.97	£2,059.23
	<b>£85,460.81</b>	<b>£284,354.60</b>	<b>£9,406.67</b>
<b>Total Investments</b>			
<b>Income from Bulman Fund (extracted from above account)</b>			
719.69 units M&G Charifund	£7,807.77	£11,202.19	£489.49
639 units M&G Charifund	£748.91	£9,946.23	£434.61
	<b>£8,556.68</b>	<b>£21,148.43</b>	<b>£924.11</b>

I have examined the above account, have compared it with the vouchers, books and records presented to me, and find it to be correct.



Dr S.G. Molyneux, Examiner  
20th April 2022

Notes:

1. Subscriptions are accounted for in the year in which they are credited to the current account.
2. NatWest paid a nominal sum into the account in recognition of an error on their part.
3. The 2021 AGM was a virtual event with no associated expense.
4. The amount reflects reduced expenses during the pandemic.