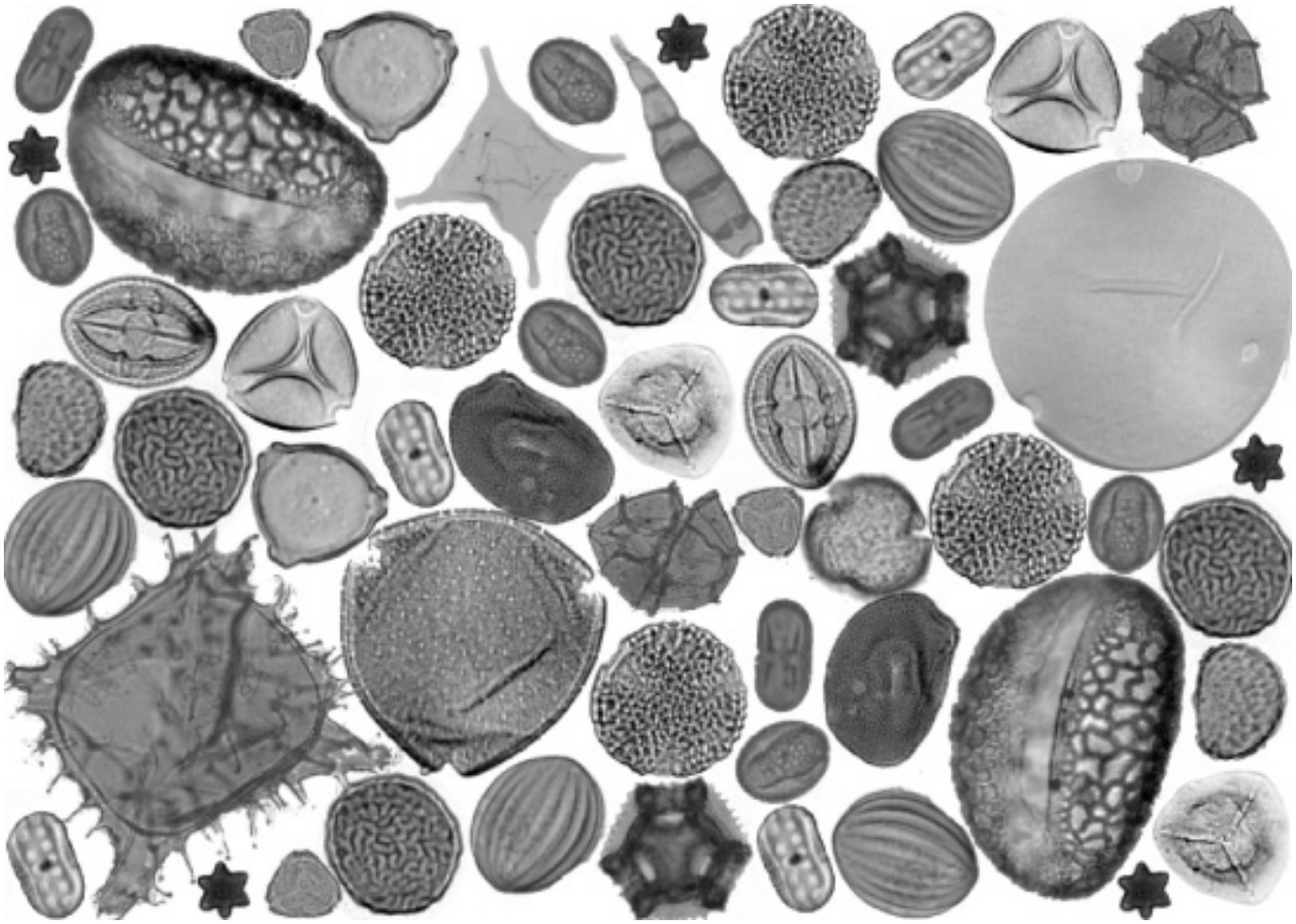
AASP – The Palynological Society

Promoting the Scientific Understanding of Palynology since 1967



NEWSLETTER

March 2025

Volume 58, Number 1

Published Quarterly

AASP – TPS NEWSLETTER

Published Quarterly by AASP – The Palynological Society

March 2025, Volume 58, Number 1

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AASP
The Palynological Society

The American Association of Stratigraphic Palynologists, Inc. - AASP –The Palynological Society - was established in 1967 by a group of 31 founding members to promote the science of palynology. Today AASP has a world-wide membership of about 200 and is run by an executive comprising an elected Board of Directors and subsidiary boards and committees. AASP welcomes new members. The AASP Foundation publishes the journal Palynology (quarterly), the AASP Newsletter (quarterly), and the AASP Contributions Series (mostly monographs, issued irregularly), as well as several books and miscellaneous items. AASP organises an Annual Meeting which usually includes a field trip, a business luncheon, social events, and technical sessions where research results are presented on all aspects of palynology.

AASP-TPS Scientific Medal recipients
Professor William R. Evitt (awarded 1982)
Professor William G. Chaloner (awarded 1984)
Dr. Lewis E. Stover (awarded 1988)
Dr. Graham Lee Williams (awarded 1996)
Dr. Hans Gocht (awarded 1996)
Professor Svein B. Manum (awarded 2002)
Professor Barrie Dale (awarded 2004)
Dr. David Wall (awarded 2004)
Dr. Robin Helby (awarded 2005)
Dr. Satish K. Srivastava (awarded 2006)
Professor Estella B. Leopold (awarded 2013)
Professor Vaughn M. Bryant (awarded 2016)
Professor David Batten (awarded 2018)
Dr. Robert Fensome (awarded 2024)
Dr. James Riding (awarded 2024)

AASP-TPS Honorary Members
Professor Dr. Alfred Eisenack (elected 1975)
Dr. William S. Hoffmeister (elected 1975)
Professor Leonard R. Wilson (elected 1975)
Professor Knut Faegri (elected 1977)
Professor Charles Downie (elected 1982)
Professor William R. Evitt (elected 1989)
Professor Lucy M. Cranwell (elected 1989)
Dr. Tamara F. Vozzhennikova (elected 1990)
Professor Aureal T. Cross (elected 1991)
Dr. Robert T. Clarke (awarded 2002)
Professor Vaughn Bryant (awarded 2005)
Professor Alfred Traverse (awarded 2005)
Professor Bernard Owens (awarded 2011)
Dr. John E. Williams (awarded 2013)
Mr. Paul W. Nygreen (awarded 2013)
Professor Norman Norton (awarded 2016)
Professor George F. Hart (awarded 2020)

AASP-TPS Board of Directors Award recipient
Dr. Robert T. Clarke (awarded 1994)
Dr. Thomas D. Demchuk (awarded 2014)

AASP-TPS Medal for Excellence in Education
Professor Aureal T. Cross (awarded 1999)
Professor Alfred Traverse (awarded 2001)
Professor Bill Evitt (awarded 2006)
Professor Vaughn M. Bryant (awarded 2013)
Professor Geoffrey Clayton (awarded 2016)
Professor Sophie Warny (awarded 2021)
Professor Francisca Oboh-Ikuenobe (awarded 2023)

AASP-TPS Distinguished Service Award recipients
Dr. Robert T. Clarke (awarded 1978)
Dr. Norman J. Norton (awarded 1978)
Dr. Jack D. Burgess (awarded 1982)
Dr. Richard W. Hedlund (awarded 1982)
Dr. John A. Clendening (awarded 1987)
Dr. Kenneth M. Piel (awarded 1990)
Dr. Gordon D. Wood (awarded 1993)
Dr. Jan Jansonius (awarded 1995)
Dr. D. Colin McGregor (awarded 1995)
Professor John H. Wrenn (awarded 1998)
Professor Vaughn M. Bryant (awarded 1999)
Dr. Donald W. Engelhardt (awarded 2000)
Dr. David T. Pocknall (awarded 2005)
Dr. David K. Goodman (awarded 2005)
Professor Owen K. Davis (awarded 2005)
Dr. Thomas Demchuk (awarded 2009)
Professor Reed Wicander (awarded 2014)
Professor Fredrick Rich (awarded 2016)
Dr. James B. Riding (awarded 2016)
Professor Martin B. Farley (awarded 2019)
Professor Jennifer O'Keefe (awarded 2023)

AASP – TPS NEWSLETTER

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Volume 58, Number 1
Jan Hennissen, Editor

The AASP – TPS Newsletter is published four times annually. Members are encouraged to submit articles, "letters to the editor," technical notes, meetings reports, information about "members in the news," new websites and information about job openings. Every effort will be made to publish all information received from our membership. Contributions which include photographs should be submitted two weeks before the deadline. Deadline for submission for the next issue of the newsletter is June 1, 2025. All information should be sent by email. If possible, please illustrate your contribution with art, line drawings, eye-catching logos, black & white photos, colour photos, etc. We DO look forward to contributions from our members.

A Message From Our President

Please Join us in North Africa !

PLEASE REGISTER BY 15 MARCH

https://palynology.org/57th-annual-meeting-aasp-the-palynological-society/

Dear Friends,

Dr. Hamid Slimani, his team, and I have been working hard to offer you what we hope will be a fantastic meeting in the beautiful town of Rabat, Morocco.

As you know by now, the registration website is open, and abstract submission is closed. We have about 50 scientists registered so far, from around the World.

It is truly amazing to see the diversity of registration, including some members that are new to our society. We can't wait to meet you ! We have a full schedule with 51 talks and 23 posters received.

The next phase for us is to organize the details of the schedule. Several of the scientists who submitted an abstract are not yet registered.

We kindly ask you to let us know immediately if someone else, who is registered, will present the abstract for you, or please register by March 15 at the latest.

Contact Hamid or myself if you need an extension (but are sure you will attend). We want to avoid the « no show » in the schedule, so your help in this matter is very much appreciated.

It was my pleasure to serve a Society that guided me so much since I was a graduate student in Montpellier in the nineties. I will pass the leadership of the Society to Dr. Matthew Pound at the Business Luncheon in Rabat.

We cannot wait to welcome you to our first meeting in Africa!

Sophie

Dates

Rabat, Morocco

April 22-26th 2025

Organizing Committee

Hamid Slimani (Department of Geology and Remote Sensing, Scientific Institute, University Mohammed V of Rabat, Morocco).

Sophie Warny (CENEX, Louisiana State University, Baton Rouge, US).

Nadia Barhoun, Naima Bachiri Taoufiq, and Touria Hssaida (Department of Geology, Faculty of Sciences Ben M'Sik, University Hassan II, Casablanca, Morocco)

Ahmed El Hassani (Hassan II Academy of Science and Technology, Rabat, Morocco).

Tentative program

We are finalizing the details, but at present, the plans are as follow to keep special events such as Ramadan and Easter in consideration:

- Arrival in Rabat Tuesday April 22nd: Ice-breaker on Tuesday evening.
- Wednesday to Friday April 23rd to 25th: three days of talks and posters, various board meetings, early career lunch, business luncheon and conference dinner. The details will be provided soon.
- Saturday April 26th: field trip.

Field trips potentially include visits to the Palaeozoic basement rocks and the Miocene to Pliocene cover. Pictured is the Tortonian/Messinian GSSP in the Rabat Salé region.

Technical Sessions

Abstract submission is now closed.

The three-day program will include a wide range of general to technical sessions. We welcome abstracts on any aspects of palynology, covering deep time to present. We have identified five focus sessions in addition to a general session. Updates will be made as abstracts are being submitted.

Proposed sessions:

- Session 1: Mesozoic and Cenozoic Dinoflagellate cyst research.
- Session 2: Palynological data, climate reconstructions and model simulations.
- Session 3: Human-environmental interactions and vegetation change.
- Session 4: Paleozoic and Mesozoic palynology.
- Session 5: Applied palynostratigraphy
- Session 6: General palynology and new frontiers in palynology.
- Session 7: Neogene vegetation and climate in the Mediterranean region.
- Session 8: The role of palynology in carbon sequestration efforts and energy transition.

Registration and costs

IMPORTANT : If you have an abstract submitted, it is necessary for you or the presenting author to register by 15 March in order to be included in the program. If the presenting author is different than the first author, please let us know.

	Early Bird (before 15 March)	Regular (March 16 onwards)
Student Member	$200	$225
Student Non-Member	$250	$275
Professional Member	$280	$310
Professional Non-Member	$340	$370

Optional extras: Conference Dinner ($69), AASP-Business Luncheon ($30), Post-Meeting Field-trip ($50).Register on: https://palynology.org/57th-annual-meeting-aasp-the-palynological-society/

Accomodation and Travel

Please visit the registration website (link above) for hotel options and travel information.To check visa requirements to enter Morocco, please visit: https://www.acces-maroc.ma/#/

Managing Editor's Report

by Jim Riding

The first Part of *Palynology* Volume 49 (2025) was published online recently (https://www.tandfonline.com/toc/tpal20/current). This issue comprises 251 pages, which is probably a record high. Issue 49/1 comprises only nine articles, which is ironic for a Part which is easily one of the largest we have ever produced! This is because three of the Research Articles are very long papers.

The first is the majority of Jennifer Cooling's PhD thesis. Jen, together with John McKellar (both of Queensland, Australia), outlined the palynology of the Jurassic–Cretaceous transition of the Surat Basin, Australia over 64 pages (very well done indeed Jen!).

Then there is a veritable *tour de force* of 80 pages by Henrik Nøhr-Hansen of the Geological Survey of Denmark and Greenland (GEUS), in Copenhagen, Denmark. Henrik recently formally retired from GEUS, but (inevitably for us palynologists) is still there as an Emeritus Researcher. Henrik, and his colleague Stefan Piasecki, were the two palynologists working virtually exclusively on the dinoflagellate cyst biostratigraphy of the Mesozoic and Cenozoic successions of Greenland and adjacent Arctic regions for GEUS.

Henrik specialised on the Cretaceous to Paleogene interval, and this endeavour took up his full career; he did a really fantastic job, visiting Greenland for fieldwork on many occasions. Henrik is a truly talented palynologist, and undoubtedly is one of our subject's nice guys. A couple of years ago Henrik successfully applied to a higher doctorate from the University of Copenhagen; I was privileged to be one of Henrik's specialist interlocutors. This paper was distilled from Henrik's higher doctorate, which is in turn, a summary of his life's work. It is undoubtedly the longest paper this journal has ever published. Again – very well played Henrik!

The final big paper is 71 pages long, and is a comprehensive (25 plates!), monograph-style, account of the modern pollen and spores from the Peruvian lomas. A lomas is an area of fog-watered vegetation in the Pacific coastal deserts of Peru and northern Chile. The Peruvian authors of this major paper are Axel Tejada-Fajardo, Juan-Felipe Montenegro, María-Isabel La Torre, Brenda Orosco and Diana Ochoa, who are all to be very enthusiastically congratulated for this superb study of an important diverse desertic ecosystem.

It should be emphasised at this juncture that the other two Research article in this issue are also really good! It goes without saying that this journal is very open to the submission of big papers. Other journals have relatively low word counts; by contrast, with Palynology, size is emphatically not an issue. If you have a suitable large manuscript, please consider submitting it to *Palynology*.

Part 1 also carries two obituaries, one for AASP stalwart Bob Clarke (1937–2024) and the other for Karen Steidinger (1938–2023), who was a pioneering researcher on living dinoflagellates.

There are also two 'Announcements'. These are to mark to awards of two AASP-TPS Medals for Scientific Excellence in 2024. The nominators, Vânia Correia and Julia Gravendyck, expressed a strong wish that these medal citations should be covered in the journal, and the Board of Directors agreed. Clearly this sets a precedent for the future. Going forward, the successful nominators for the association's major honours will have the option to

put together an announcement for publication in *Palynology*.

Our 'backlog' of finalised papers continues to be very healthy, and Part Two of Volume 49 for 2025 is now complete. Please keep the manuscript submissions rolling in.

Finally, we really hope that you like this year's light-blue cover, featuring a SEM-photomicrograph of a superbly-preserved specimen of the tricrassate Mississippian miospore species Diatomozonotriletes cervicornutus (Staplin 1960) Playford 1963. The image was kindly supplied by Dmitriy A. Mamontov of Moscow, Russia.

James B. Riding
Managing Editor, AASP – TPS
British Geological Survey
Keyworth, Nottingham NG12 5GG, UK
E-mail: jbri@bgs.ac.uk

28th February 2025

The contents of Palynology Volume 49, Part 1 (February 2025)

Obituaries

1. Pocknall, D.T., Riding, J.B., Goodman, D.K., O'Keefe, J.M.K. and Demchuk, T.D. Robert Travis Clarke (1937–2024): a tribute to one of the pillars of AASP-TPS. Article number 2432810, 5 pp.

2. Dale, B. Karen Andrea Steidinger (1938–2023): phytoplankton taxonomist, ecologist, administrator, teacher and mentor. Article number 2395724, 2 pp.

Announcements

3. Gravendyck, J. and Correia, V. AASP-TPS Medal for Scientific Excellence to Dr Robert A. Fensome. Article number 2419770, 6 pp.

4. Correia, V. and Gravendyck, J. AASP-TPS Medal for Scientific Excellence to Dr James B. Riding. Article number 2419769, 6 pp.

Research Articles

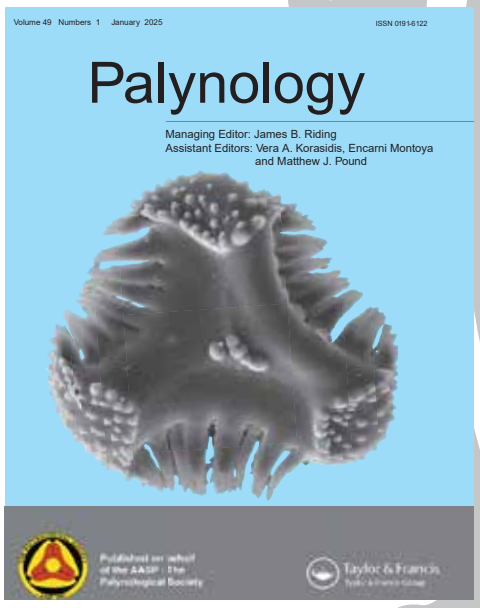
5. Cooling, J.J. and McKellar, J.L. Palynology of the Jurassic–Cretaceous transition, Surat Basin, Australia. Article number 2384509, 64 pp.

6. Karadağ, G.E.A. and Altunoğlu, M.K. Airborne pollen seasonality of Kars province, a high-altitude region in NE Anatolia-Turkey. Article number 2382959, 11 pp.

7. Nøhr-Hansen, H. The Cretaceous to Eocene: a biostratigraphical review and a new detailed palynostratigraphy of Greenland and adjacent areas. Article number 2377158, 80 pp.

8. Head, M.J., Gravendyck, J., Herendeen, P.S. and Turland, N.J. Dual nomenclature to be supported explicitly in the International Code of Nomenclature for algae, fungi, and plants. Article number 2395280, 6 pp.

9.Tejada-Fajardo, A., Montenegro, J.-F., La Torre, M.-I., Orosco, B. and Ochoa, D. Palynological characterization of a diverse desertic ecosystem: The Peruvian Lomas. Article number 2396003, 71 pp.



AASP – TPS 50th Anniversary Jewelry Collection

Exclusive, Custom-made 50th Anniversary Jewelry

Limited-Edition and availability

Special thanks to John Firth and Ingrid Romero for palynomorph images.

Celebrate the 50th anniversary of AASP – The Palynological Society with a beautiful, sterling silver palynomorph necklace. The Society board worked with jeweler and designer, 'Science-inspired jewelry', to create these one-of-a-kind, unique necklaces in honor of our golden anniversary. There are a limited number available of two designs, a pollen grain ***Macrolobium multijugum*** (a) and a dinoflagellate cyst of ***Diphyes recurvatum*** (b).

Each necklace comes with a commemorative information card that includes a picture and description of the palynomorph. **The society is selling them now for $60.00 OR one *M. multijugum* + one *D. recurvatum* for $100.00.** This is a wonderful way to support AASP-TPS and is a great conversation starter!

All jewelry can now be purchased at palynologyshop.org which is a tab on the AASP-TPS website (palynology.org).

Awards Committee News

By Marie Thomas

Society Awards Nominations for 2025

AASP–The Palynological Society has several awards that recognize outstanding service to the Society or to the discipline of palynology. The basic nomination procedure is similar for most awards (main letter of nomination accompanied by letters of support, which include documentation of the accomplishment). Details of the procedures for each award can be found at https://palynology.org/student-support/professional-awards/award-procedures/

The deadline for submission of society awards nominations is March 1 of each year. A complete list of previous winners can be found on the third page of this newsletter.

Distinguished Service Award

This award recognizes individuals who have generously supported the AASP–TPS with their work and resources over several years, and whose efforts have advanced the Society. Typically, recipients have held society office, participated in committees, or dealt with publications or meetings. There have been twenty recipients of this award, most recently Jen O'Keefe in 2023.

Honorary Life Membership

This is the oldest AASP–TPS award, with the first awards dating to 1975. This award is either bestowed upon individuals who have made a fundamental contribution to the discipline of palynology, or to people who have given devoted service to the AASP–TPS. Honorary Life Membership has been awarded to seventeen individuals, most recently to George Hart in 2020.

Medal for Excellence in Education

This medal recognizes leaders in palynological education. Nominees are expected to have considerable experience and accomplishment in aspects of academic education involving palynology. The medal has been awarded 6 times, most recently to Francisca Oboh-Ikuenobe in 2023.

Medal for Scientific Excellence

The Society's highest award for achievement in the science of palynology is the Medal for Scientific Excellence. The official description lists "fundamental contributions to the development of the science of palynology" as the main criterion. Recipients should have a substantial research history in the field. The medal has been awarded fifteen times in the history of the Society, most recently to Robert Fensome in 2023 and James Riding in 2024.

Medal for Scientific Merit and Outstanding Promise

This newly established award recognizes individuals in their mid-career who have made important contributions to the science of palynology and who show the promise of continued excellence in the discipline. Typically, nominees will have no more than 15 years' experience beyond their M.Sc. or Ph.D. graduation (excluding time spent in industry or on leave).

2025 Travel Award Winners

The AASP Awards Committee evaluated applications for the AASP-TPS 2025 Travel Awards to attend our 57th annual meeting. Congratulations to our winners: Ivona Baniček, Yoanna Katreva, Alexa Crawford and Rafael Cabral.

Below are the biographies of Ivona, Alexa and Rafael with Yoanna's biography to follow in the next Newsletter.

Ivona Baniček

Croatian Geological Survey, Zagreb, Croatia

Project Title: Quaternary climate and vegetation changes of the eastern Adriatic

Supervisor: Koraljka Bakrač & Dario Hruševar

Biography: I finished my Bachelors and Masters at the University of Zagreb, Faculty of Mining, Petroleum and Geology, Croatia in 2016 majoring in Quaternary Geology. A research career was something I was striving for, but could not find an opportunity until 2021 at the Department of Geology, Croatian Geological Survey when I applied for a palynological PhD under the supervision of Dr. Koraljka Bakrač and Dr. Dario Hruševar.

The project studied Quaternary deposits of the eastern Adriatic Sea that captured the dynamic environmental changes and the transition from terrestrial, lacustrine to marine conditions. During the PhD, I have visited various research institutions and worked with XRF, ancient environmental DNA and *n*-alkane lipid biomarkers to gain insight into all vegetational proxies detectable from the sediment.

Research: My research will depict the paleoenvironmental development of the eastern Adriatic using palynological and palynofacies analyses, geochemical and sedimentological results, and lipid biomarker analysis to assess ecological changes during Quaternary climatic oscillations.

The aim is to determine the overall changes in the eastern Adriatic area, including plant species' responses to environmental stressors, using diverse methodological approaches.

The research seeks to identify how vegetation adapted to past climate changes, allowing predictions of its adaptations for the future. Coastal ecosystems, particularly vulnerable to sea level rise, sedimentation change, erosion, aeolian and fluvial processes, wave abrasion, and anthropogenic influence, provide an ideal habitat for observing environmental changes due to their variability and significance for human life, occupying the space between sea and land.

Alexa Crawford

CENEX, Louisiana State University, Baton Rouge, Louisiana

Project Title: Reconstructing Mio-Pliocene Climate and Sea-Surface Conditions: A Palynological Study of the Mediterranean-Atlantic Gateway Evolution

Supervisor: Sophie Warny

Biography: I am originally from Mississippi and graduated with a Bachelor of Science degree in Professional Geology from Mississippi State University in May 2024. During my last

year at Mississippi State University, I realized that I needed a Master of Science degree to go into the oil and gas industry which was my goal career wise.

While applying to schools, Dr. Sophie Warny, from Louisiana State University, and I were going back and forth a lot about the research I would be doing if I got in. At the time, I had never heard of palynology, yet Dr. Warny was confident in my abilities to learn and take on this research project that is part of IODP Expedition 401.

Now, it is my second semester at Louisiana State University, and I have been blessed with so many opportunities. In November 2024, I successfully presented my thesis proposal to my committee and am now continuing my research under Dr. Warny.

I'm currently a part of a four-person team competing in the AAPG Imperial Barrel Award competition, and I was honored to receive the Houston Geological Society's Warren L. and Florence W. Calvert Memorial Scholarship. The 57th Annual Meeting AASP – The Palynological Society in Rabat, Morocco will also be my first conference/research presentation which I am excited for!

Research: My research project is to get an understanding of the evolution of marine gateways and their exchange of water, heat, salt and nutrients between oceans and seas. Specifically looking at the Mediterranean-Atlantic water exchangeand its significant dense saline water outflows that play a crucial role in the global system of ocean currents, thermohaline circulation, and atmospheric carbon cycling.

IODP Expedition 401 has sampled a continuous record of the exchange's development in the Mio-Pliocene by drilling cores on both sides of the Gibraltar Strait. This research project focuses on the palynological analyses of one of the 4 sites drilled, U1610 on the Atlantic coast of Portugal and Spain. Specifically, I will examine dinoflagellate cysts to determine past sea-surface conditions and assess changes in the local vegetation by analyzing pollen and spores at Louisiana State University's CENEX Lab.

This will provide a detailed chronology of environmental shifts and vegetation changes over time. The palynological data will be run through climate models to attempt to reconstruct parameters such as mean annual temperature and precipitation. Investigating these parameters will enhance our understanding of the Mediterranean-Atlantic gateway's evolution and its relationship with regional climate.

The changes in this gateway may be influenced by factors such as local tectonic activity, global climate changes, and variations in Antarctic glaciation and sea ice volume. Studying these changes will improve our knowledge of their impact on global processes, including ocean circulation patterns, heat transport, and sea ice dynamics. This comprehensive approach will help clarify how past climate changes have shaped and continue to shape global climate systems.

Rafael Cabral

Muséum national d'Histoire naturelle, Paris, France

Project Title: History of the Holocene semi-arid vegetation and landscape shaping since the Capsian and Neolithic periods in central Tunisia

Supervisors: Vincent Lebreton & Yannick Miras

Biography: Passionate about human-environment interactions and social-ecological systems, I pursued a Master's degree in Quaternary science and Bioarchaeology at the Muséum national d'Histoire naturelle, Paris, France, where I completed a specialization in Archaeobotany in 2024.

I was introduced to palynology during my classes and was struck by its potential to restitute environmental dynamics and human impact on ecosystems. My interest gave rise to a first two months research project under the guidance of Profs. Vincent Lebreton and Jean-Michel Carozza, during which I conducted a preliminary study of a Holocene sequence of the Moknine sebkha (central Tunisia).

Whilst results confirmed the potential of the sequence, I noticed that signals of human impact were 1) faint before the French colonial era and 2) hard to untangle from little-understood climatic fluctuations during the Lower and Middle-Holocene (e.g., the last African Humid Period). There was therefore a need for a new approach to better interpret past sequences in the region, which I developed during a semester long Research Project funded by the Île-de-France Region in 2024.

Under the guidance of Prof. Vincent Lebreton and Dr. Yannick Miras, I set out to acquire modern pollen and Non-Pollen Palynomorph (NPP) spectra to investigate the relationships between modern pollen, NPP and vegetation in the landscape mosaic of the Tunisian Dorsal. Through this, I aimed to identify weak signals of these relationships in semi-arid landscapes, which would be transposable to Holocene sequences.

This experience motivated me to continue developing new approaches to face the challenges posed by (semi-) arid environments in palynology. As such, I started a PhD at the Muséum national d'Histoire naturelle under the supervision of Prof. Vincent Lebreton, Dr. Yannick Miras and Dr. Ana Ejarque in October 2024. My project focuses on the vegetation dynamics of central Tunisia since the transition between the local Capsian and Neolithic periods.

Research: In Tunisia, the transition between the Capsian (i.e., local hunter-gatherer Paleolithic) and the Neolithic (i.e., semi-nomadic pastoralism) periods and the related onset of human impact on the environment remain poorly characterized by archaeological and environmental data.

This PhD project is an exceptional opportunity to characterize the variability of vegetation in relation to climate forcings (e.g., African Humid Period and Holocene Rapid Climate Change), before identifying the major tipping points in landscape shaping during the Holocene.

I follow a high-resolution multi-proxy approach using pollen, NPP, charcoal, and sedimentological data on a continental sequence (Sebkha El Bhira, Kairouan Governorate) which will be compared with a marine sequence that will be collected in the Gulf of Gabès in 2025.

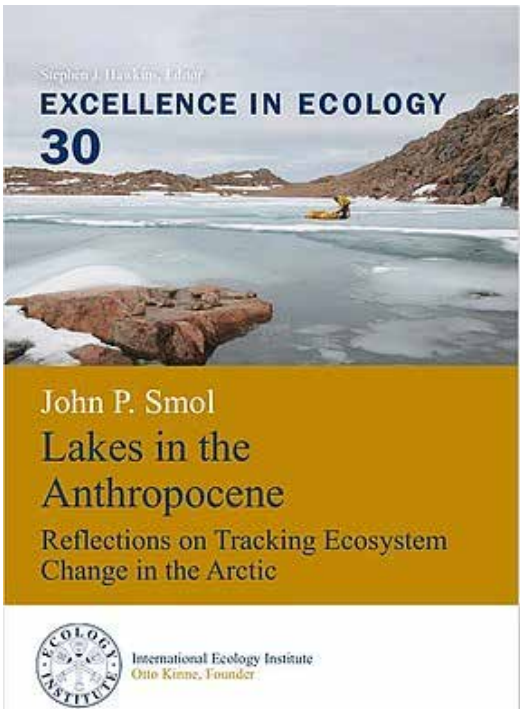
Landscape structure and diversity dynamics will be investigated through a number of numerical analyses. For the first time in North Africa, the open-access data mining algorithm MobiPaleo will be used to identify groups of indicators related to palaeoecological or land-use changes.

The sequences will be discussed in relationship with modern spectra from the Tunisian Dorsal as well as other surface samples from the central Tunisian steppe, providing modern analogues for the interpretation of fossil data. Thus, my research will shed light on landscape shaping processes in the fragile social-ecological systems of the Eastern Maghreb and offer insight into these semi-arid environments' responses to climate and anthropogenic forcings.

Book Review: Lakes in the Anthropocene

By Jennifer Galloway; Geological Survey of Canada (GSC)

Review of: Smol, J. P. Lakes in the Anthropocene: Reflections on Tracking Ecosystem Change in the Arctic. Excellence in Ecology Book Series. Oldendorf/Luhe, Germany: International Ecology Institute (ECI), 430 pp. ISBN 978-3-946729-30-3. ISSN 0932-2205.



Professor John Smol is a Distinguished University Professor in the Department of Biology (cross-appointed with the School of Environmental Studies) at Queen's University in Kingston, Ontario. He founded and now co-directs the Paleoecological Environmental Assessment and Research Laboratory (PEARL) at Queen's University. PEARL represents a group of about 30 paleolimnologists and researchers studying long-term changes in aquatic ecosystems using sediment as archives of these changes. He is quoted as saying "Every lake has a history book at the bottom" (Canadian Broadcasting Corporation interview with Dan Taekema, posted April 18, 2023). John's latest book "Lake in the Anthropocene: Reflections on Tracking Ecosystem Change in the Arctic" is a memoir of a ~40 year career examining those history books. The book is the result of his recognition by the International Ecology Institute with their Prize in Freshwater Ecology in 2015. Acceptance of this prize comes with the commitment to author a book in the Excellence in Ecology series, which is the subject of this scientific book review.

The book's 13 chapters follow the trajectory of John's career. The first chapters outline the importance of studying Arctic lakes (Chapter 1), describes pioneering research in Arctic limnology and paleolimnology (Chapter 2), and the methodological and foundational research in limnology, paleolimnology, and paleoclimatology (Chapters 3 & 4) that permits the result-oriented research that is increasingly called upon scientists in Canada and elsewhere to produce. Chapter 4 tackles the concept of the Anthropocene, that remains an unofficial Epoch of geological time and describes the most recent period in Earth's history when human activity began to significantly impact global climate and ecosystems.

Chapter 5 introduces the human element (aside from climate change explored in Chapter 4). The Arctic has been inhabited by people for millennia and these people impacted Arctic lakes in various ways. Chapter 5 explores the methods, findings, and importance of these human-ecosystem interactions and highlights the holistic interplay of people and the environment in which they live.

Chapters 6, 7, and 8 describes paleolimnological research to address specific processes and questions, ranging from placing recent changes in a long-time context, reconstructing storminess (paleotempestology), to the

effect of permafrost thaw on lake ecology, and eutrophication of northern lakes.

Chapter 6 highlights "different ways of knowing". Indigenous knowledge refers to complex and holistic knowledge systems based on worldviews of Indigenous people. Indigenous knowledge offers the potential to identify and monitor cumulative impacts of climate and land-use change by providing long-term descriptions of climate variability and its effects on ecosystems, as well as human contextual information, which fill knowledge and understanding gaps that cannot be addressed by western science practices alone. Indigenous knowledge and paleoecological studies are particularly well suited for integration, as knowledge gained from both approaches is typically local to regional in spatial scale but covers a great deal of time (decades to millennia).

Chapters 9 and 10 address pollutants in the surficial aquatic environment. Chapter 9 tells the story of the long history of mineral mining in northern Canada, that often left a legacy of severe and widespread contamination. John presents some case studies from the famous Klondike Gold rush in the Yukon Territory and the infamous Giant Mine located near Yellowknife, Northwest Territories. The legacy of pollution from historical mining in northern Canada impacted lakes in these and other regions but also offers a cautionary tale; the opportunity for pro-active paleolimnology and lessons learned are also explored in this chapter.

Chapter 10 tackles the unique situation of the Arctic in that it receives pollutants emitted at lower latitudes due to the "grasshopper effect" or "cold condensation" – phenomena that result in long-range transportation of pollutants emitted at more southern latitudes to the Arctic where they are deposited and accumulate.

Chapters 11 and 12 discuss animals as integral parts of lacustrine ecosystems; specifically the nutrients they provide and the contaminants they may transport and how paleoecological approaches can broaden the temporal and spatial scales of wildlife monitoring. Some animals, such as sea-birds, move from marine to inland waters and can behave as "funnels and pumps" transporting astonishing amounts of nitrogen and phosphorus (and contaminants) from ocean to land. This chapter illustrates the connectedness of Arctic ecosystems, and indeed all ecosystems. Declining bird populations will affect inland lake ecology.

The book ends with Chapter 13, which places the aforementioned body of research into the "now". John circles back to near the beginning of his career, to the Cape Herschel ponds that he began sampling in 1983. Predictions made ~25 year ago (Douglas et al., 1994) that these ponds would dry up with continued climate warming were realized upon John's return to the site in 2006 when he bore witness to their terrestrialization.

John has had an exemplary career in Arctic ecology and has been a first-hand witness of the changes that have taken place over almost 4 decades. He asks, how can we use the knowledge we now have to better understand the thresholds for change, or tipping points, of ecosystems? What will happen in the future as the climate continues to warm?

John ends his book by warning us that "what happens in the North does not stay in the North" and presents some inconvenient truths. The Arctic is the first to show signs of environmental change, and often to the greatest degree, due to feedback mechanisms. The long-term consequences of climate change in the Arctic, however, remain poorly understood. With polar warming, what were once greenhouse gas sinks may become sources, Arctic cryosphere collapse will introduce toxic elements to the surficial environment that accumulated over millennia and were frozen in place, and the reduction or elimination of per-

manent sea-ice will undoubtedly affect global weather patterns.

John describes northern people and ecosystems as being on the frontline of climate and environmental change, despite most of the drivers of those changes being industries and activities that occur elsewhere. In doing so, he addresses some societal ethics and pulls no punches in this last chapter. His passion for the ecosystems he studied, and the people who rely on them, is apparent.

Others have described the book as part memoir, part textbook, and it is indeed that. John has a wonderful story to tell in his own right of 4 decades of research on high Arctic lakes and ponds, as well as the stories revealed in the mud that he has shared in his over 700 peer-reviewed publications and book chapters and nicely summarized in *Lakes in the Anthropocene: Reflections on Tracking Ecosystem Change in the Arctic*.

The book has wide appeal. The personal reflections are integrated with a well-referenced description of research that make the book easy to read by specialists and non-specialists alike. The numerous figures and photos help to tell the story from both a scientific and personal perspective. It has been my pleasure to have had the opportunity to read, and review, *Lakes in the Anthropocene: Reflections on Tracking Ecosystem Change in the Arctic* by John Smol.

AASP FOUNDATION CENTURY CLUB

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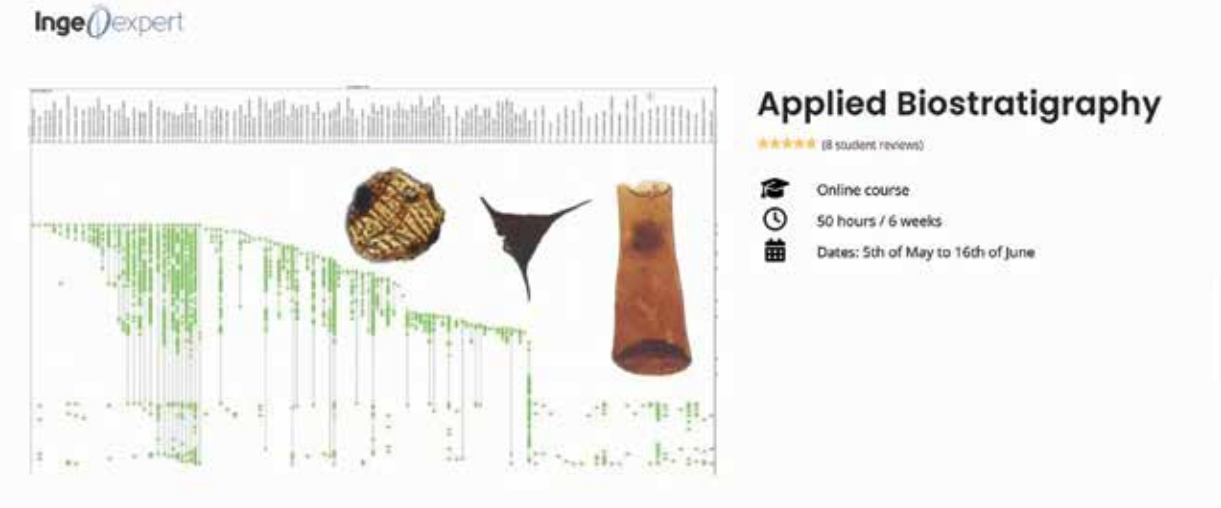
Other News: Biostratigraphy Course

By Gil Machado



Applied biostratigraphy online course

This is a fully online course, self-paced, starting May 5th, and spanning 6 weeks.

Each week a new module is released, with introduction text, videos and presentations, followed by exercises, tutorials and other content.

This course will introduce the applied use of biostratigraphy in both an exploration and development context with working examples, covering the several fossil groups used in industrial applications. More information and registrations can be found here:

https://ingeoexpert.com/en/courses-online/applied-biostratigraphy-course/ (English version)

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