Newsletter of the International Network for Conservation Paleobiology

Issue #33
Jan 2026

INCP Newsletter

International Network for Conservation Paleobiology

INSIDE THIS ISSUE:

Meet the INCP Council and Board Members

***Image caption**: Interim council and board members pictured alphabetically from top left: Carlos Cintra-Buenrostro (Board), Erin Dillon (Council), Danijela Dimitrijević (Council), Molly Grace (Council), Michal Kowalewski (Council), Michelle LeFebvre (Board), Josh Miller (President), Alexis Mychajliw (Council), Roger Portell (Board), Torben Rick (Council), Lucia Snyderman (Council), and Lynn Wingard (Council).*

We are excited to introduce the new INCP interim council members: Interim President Josh Miller, eight members of the Interim Council, and three members of the Interim Board of Directors. These individuals serve on a fixed term and represent diverse perspectives within the field of Conservation Paleobiology. To see the complete list of council members with their roles and affiliations, please visit: https://conservationpaleorcn.org/planning-team/

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Conservation Paleobiology Research Highlight

By Mariana Walther Mendoza, The Nature Conservancy

A window to the past and future aquaculture in the Gulf of California: the abundant times of 'Meyibó'

"Understanding what the seascape looked like in the past allows us to make better decisions around natural resource management and conservation efforts"

Information about historic presence and distribution of bivalves can provide useful insights to better channel and prioritize investment for future restoration efforts, and the sustainable use of resources through existing industries such as fisheries and aquaculture.

We describe the long-term impact that different human cultures have had along the coast of the peninsula Baja California, Mexico, with a focus on bivalve species that once created productive and critical habitats such as pearl oyster beds and reefs. Like many places worldwide these habitats are now considered to be functionally extinct and greater intervention through aquaculture and restoration is needed to enable their recovery.

Using geospatial analysis that includes written and verbal sources across three distinct time periods - historical information (prehistoric to 1760), late modern period (1760 to 1950), and contemporary history (1950 to present) - we developed and applied a spatial dataset and prioritization process to inform restoration and ecologically sustainable aquaculture development for bivalve species going forward.

Our results show how bivalve abundance and distribution has changed along the Baja peninsula, with fossil records indicating their presence since the Mesozoic Era, more than 66 million years ago, and written sources in the early 1700 recording that several species attained a mile in length in some sites, highlighting their abundance, and finally, recordings noting their decline and patchy distribution in the 1900s.

Understanding what the seascape looked like in the past allows us to make better decisions around natural resource management and conservation efforts. Combining historical data with stakeholder participatory workshops reveals hopeful possibilities and big opportunities for restorative aquaculture development in the Gulf of California.

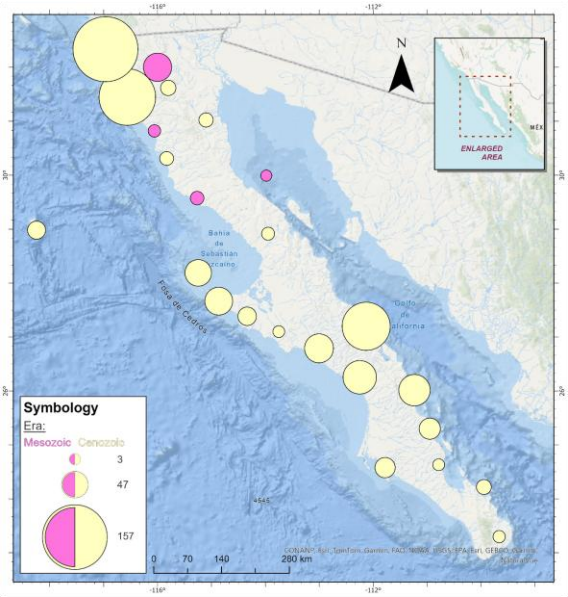

***Image caption**: Map of the Gulf of California showing the records of species and genus of bivalves from the Mesozoic and Cenozoic in the Paleobiology Database.*

For more information, see: ***Walther Mendoza, Mariana, Heidi K. Alleway, Sebastián Quiñones, Jonathan Mackay, and Giovanni Fiore Amaral. "A window to the past and future aquaculture in the Gulf of California: the abundant times of 'Meyibó'." Philosophical Transactions of the Royal Society B: Biological Sciences 380, no. 1930 (2025).***

https://doi.org/10.1098/rstb.2024.0041

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Practitioner Perspective *By Lucia Snyderman*

Dr. Stephen Durham - Office of Resilience and Coastal Protection, Florida Department of Environmental Protection

***Image caption**: Dr. Stephen Durham conducting fieldwork with oysters.*

1. How would you introduce yourself to our readers?

I am an invertebrate paleoecologist by training, but I have long had an interest in applying knowledge of the past to resource management or conservation issues. I studied the paleoecology of the eastern oyster (*Crassostrea virginica*) in graduate school, which is the most widespread reef-forming oyster species here in the United States and is an important focus for many resource management organizations here. I worked on studies of oyster fossil and death assemblages from Louisiana, Connecticut, and South Carolina, using them to examine questions like how oyster body sizes changed before and after the 2010 Deepwater horizon oil spill and how oyster lifespans and growth rates today differ from those of oysters that lived during a warmer Pleistocene interglacial period. I also studied the attitudes of oyster managers and restoration practitioners about the sorts of geohistorical information I was using in my research. These experiences helped to solidify my decision to pursue a career in applied science, and I have now worked for the Florida Department of Environmental Protection since 2017, when I started as a post-doctoral science policy fellow.

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Practitioner Perspective Continued

2. Tell us about your work with the Florida Department of Environmental Protection. Are historical or paleontological data used to directly inform conservation?

I was awarded a one-year Gulf Research Program Science Policy Fellowship from the U.S. National Academies of Sciences, Engineering, and Medicine after graduate school that placed me with the Florida Department of Environmental Protection's Office of Resilience and Coastal Protection. The team I was brought in to work with was implementing a project called the Statewide Ecosystem Assessment of Coastal and Aquatic Resources (SEACAR).
The purpose of SEACAR is to aggregate and standardize data collected by partner organizations from around the state on one or more of five priority habitats (submerged aquatic vegetation, coral reefs, oyster reefs, coastal wetlands, and the water column) and then use the standardized data to develop meta-analyses of the status and trends of the priority habitats to inform management. In addition to using my training in data analysis and technical writing to help the SEACAR project, because of my background in paleoecology I was also tasked with developing a pilot project to fill historical gaps in oyster size data for SEACAR using dead, buried oyster shells (i.e., reef death assemblages). So, in partnership with the Paleontological Research Institution (PRI) and colleagues on the SEACAR team, I wrote a proposal for what we called the Historical Oyster Body Size (HOBS) project.

I was fortunate to be hired following my fellowship to continue working with the SEACAR team and to lead the implementation of the HOBS project. To-date we have produced what is probably one of the largest collections of radiocarbon-dated oyster reef death assemblage bulk-samples in the world, extended oyster size time series by decades for eleven localities around Florida to supplement the SEACAR trend analyses of real-time monitoring data, and published two papers in scientific journals with a third in preparation. Our collaboration with PRI has also inspired learning and reflection on knowledge co-production and the dynamics in our partnership that helped build trust and make the project successful (and became the subject of one of our completed papers).

I am proud to have had the opportunity to use my paleoecology expertise to contribute to the broader work of SEACAR and to learn more about oyster reef death assemblages in the process! Being a pilot, the project data has not had much direct effect on management so far, but my hope is that, as part of the corpus of oyster information available from SEACAR, the HOBS project data will help inform the development of management plan objectives and encourage other researchers and managers to consider reef death assemblages as sources of useful information on the long-term dynamics of oyster populations.

3. What would you say to students hoping to work in conservation paleobiology now? What non-academic opportunities are available?

There are many different directions you could take a non-academic career as a trained conservation paleobiologist, from more policy-focused to more research-focused and at federal, state or local government agencies, non-governmental organizations, or even environmental consulting firms and private companies.

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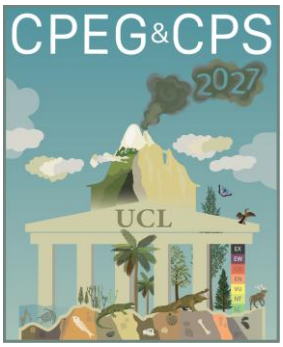
Practitioner Perspective continued

The ones that might work for you will depend on where you live, your areas of expertise (e.g., terrestrial, aquatic, marine), and the types of work that interest you (e.g., funding, policy, research, communication), but keep an open mind! Your scientific training and long-term perspectives can benefit teams in all of these areas. I would suggest that students hoping to work in conservation paleobiology begin finding their way by learning about and gaining experience in resource management settings as soon as possible. It is never too early to talk with staff members of resource management or conservation organizations that are doing work that interests you, go to scientific meetings that applied scientists attend, pursue internship or volunteer opportunities with government agencies or nongovernmental organizations as part of your education, etc. These experiences will give you insight into the types of work you might find interesting and fulfilling, as well as the sorts of skills and training that would benefit you in those roles that you might not get in a typical graduate degree program, and will also help you begin building your network of professional contacts beyond paleontology and geoscience.

Upcoming Conference Reminders

Crossing the Palaeontological–Ecological Gap



The next joint Crossing the Palaeontological–Ecological Gap (CPEG) meeting and Conservation Paleobiology Symposium will take place at University College London in early August 2027. This follows on from last year's joint meeting in Zurich:

More information can be found HERE.

23rd Annual Meeting of the European Association of Vertebrate Palaeontologists (EAVP)

The 23rd Annual Meeting of the European Association of Vertebrate Palaeontologists will be held in Lithuania from 29 June to 5 July 2026.

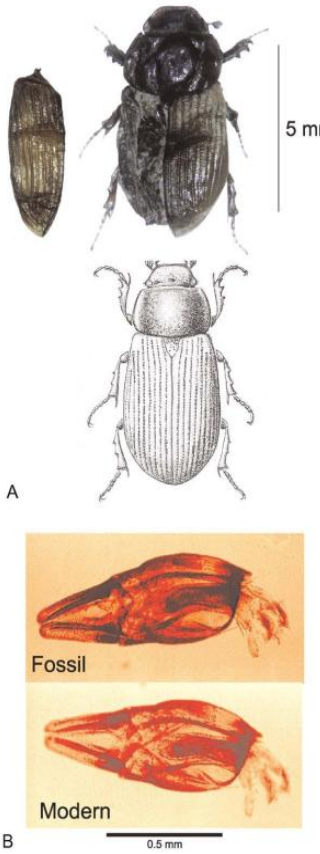
More information can be found HERE.

Paleo Proxy Spotlight – Beetle Remains

By Nick Schafstall, Nature Research Centre, Vilnius, Lithuania

In this section we highlight data types that can be used as proxies for information about past conditions. Put your hands together for the beetles (Coleoptera)! When you let all the information that beetle remains can offer you come together, you can find out if there were strawberry fields forever or if they were only there since yesterday.

Quaternary entomology is as old as Quaternary sciences and follows the same history. When researchers examined sediment layers from glacial and interglacial deposits, not yet knowing how old these layers exactly were, the various insect remains found in these deposits were assumed to all be from extinct species; this becomes evident from published species names such as *Helophorus pleistocenicus* and *Olophrum interglaciale*. In the first half of the 20th century, Scandinavian researchers presented evidence that likely, many fossil specimens were not from extinct species but rather difficult to identify. Post-mortem deformations were studied, and an important discovery was that the micro sculpture on the exoskeleton of beetles does not change and can survive after millennia, especially under anoxic conditions. With this micro sculpture, visible under 40--70x magnification, (sub)fossil remains can often be identified to the species level. Sub-fossil is the keyword here, as the exoskeleton of beetles is so sturdy that the shape, color and micro sculpture can be preserved for thousands of years under the right (anoxic) conditions.



In the second half of the 20th century, the British researcher Russell Coope laid the final foundations for Quaternary insect studies when he pursued the identification of beetle remains from British glacial and interglacial deposits with the help of the vast collection of insects of the Natural History Museum in London. He managed to link all his subfossil remains to extant species, but some of these species were currently living in completely different parts of the world; one species of dung beetle found in a British glacial deposit was of a species currently living in the Tibetan Plateau in the Himalayas. This discovery led to further investigation of the species assemblages that occurred in glacial and interglacial deposits and although not always the same species were found, typical cold-adapted species were found in British glacial deposits and less or no cold-adapted species in interglacial deposits. Coope's legacy, which stands up to the current day, is proof that beetle species, like many insect clades, do not adapt to local climate but rather migrate after their own climatic niche.

***Image caption**: Aphodius holdereri fossil remains and modern specimen (Coope, 1973).*

Paleo Proxy continued

Possibly because of this, many beetle species have been present since before the onset of the Quaternary. This process of migration after climatic niches often occurs rapidly, since beetle species reproduce new generations at least once per year or even several generations each year. In 1986, Coope teamed up with mathematicians and created a database of beetle species that are not tied to certain biotopes or food sources (such as phytophagous species), and their current distribution in Europe and North America. Based on the contemporary climate at all these localities, derived from meteorological stations, a temperature matrix was calculated for each of the circa 250 beetle species Coope found suitable. The Mutual Climatic Range (MCR) method was born (Atkinson et al., 1987) and applied to the great number of glacial and interglacial beetle records from Britain and North America. With the beetle MCR record, Coope and his co-authors could prove that climatic fluctuations at the end of the last glacial and at the beginning of the Holocene were much more rapid and intense than shows from pollen records, and this considerably improved our understanding of the paleoclimate.

The MCR database is still valid today and used to be accessible through the BugsCEP software developed by Philip Buckland (Buckland and Buckland, 2006), which is currently incorporated into the online database SEAD (sead.se). Besides the MCR database, this database contains the fossil records of most published data on Quaternary insect assemblages (e.g., Coleoptera, Trichoptera, Hymenoptera, Diptera), although certain groups such as chironomids have their own research community and database(s). Another merit of BugsCEP is the collection of literature available on the current distribution and ecology (biotope preferences, food sources etc.) for all species known from Quaternary deposits. Therefore, this software and databases provide all the information needed to make detailed reconstructions of Quaternary and Holocene paleoclimate, landscape and vegetation structure, and human influence on these landscapes. Insect remains have been studied intensively in archaeology in Britain, and many experimental approaches have been published to test how reliable beetle remains and other insect remains are as a tool to reconstruct past landscape features (for instance, the source area of species in a fossil assemblage; Smith et al., 2009). The challenge that the small community of Quaternary entomologists currently must face is to find opportunities to test how these approaches work with data from mainland Europe and other regions in the world.

In conclusion, beetle remains are an important proxy in paleoecology and archaeology and can be used to reconstruct climate, landscape and vegetation structure, human alterations of the landscape (such as pasturing or agriculture) and how people in settlements used their spaces. With some effort of the international community, we will be able to continue to use beetles for studies in paleoecology and conservation.

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Smith, D., Whitehouse, N., Bunting, J.M., & Chapman, H., (2009). Can we characterise ‘openness’ in the Holocene palaeoenvironmental record? Modern analogue studies of insect faunas and pollen spectra from Dunham Massey deer park and Epping Forest, England. The Holocene 20(2), 215–229.

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Postcards from the Field

In this feature of our newsletter, we showcase members' research in the field, lab, or other settings. Please submit your "postcards" with approximately 100 words of text to us at conservationpaleo@floridamuseum.ufl.edu

Alisha Barker - University of Exeter, UK

I am Alisha Barker, and I am a PhD candidate from the Universities of Exeter and Reading reconstructing Wild Boar (*Sus scrofa scrofa*) - human – environment interactions in the British Isles over the past 10,000 years. Through the use of 2D Geometric Morphometrics, Stable and strontium isotopic analysis, alongside analyses of historic texts and depictions, I am developing a deep-time dataset of confirmed wild boar from across the British Isles to reconstruct the history of the persistence, decline and extinction of the native population. This will provide needed context for the free-roaming feral populations that are now in Britain today.

Postcards from the Field continued

Gayatri Ramakrishnan – University of Reading, Reading, UK

I am Gayatri, a recent BSc Biological Sciences graduate from the University of Reading. In my final-year, I undertook an 8-week summer research project exploring the ecological feasibility of a Dalmatian pelican reintroduction to England. Archaeological evidence indicates their presence in England during the Holocene, but the species have since been extirpated. During my placement, I performed population viability analysis to estimate the minimum viable populations required to re-establish breeding populations at potential reintroduction sites and identify influential variables in the analysis and additional management requirements, in order to inform Dalmatian pelican reintroduction planning!

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International Network for Conservation Paleobiology

Are you interested in:

…contributing to **Postcards from the Field**?
…sharing a recent publication as a **Research Highlight**?
…being featured in a **Practitioner's Perspective** piece?
…providing other content suggestions for this newsletter?

If yes, please email us at conservationpaleo@floridamuseum.ufl.edu

Invite Your Colleagues to Join our Network!

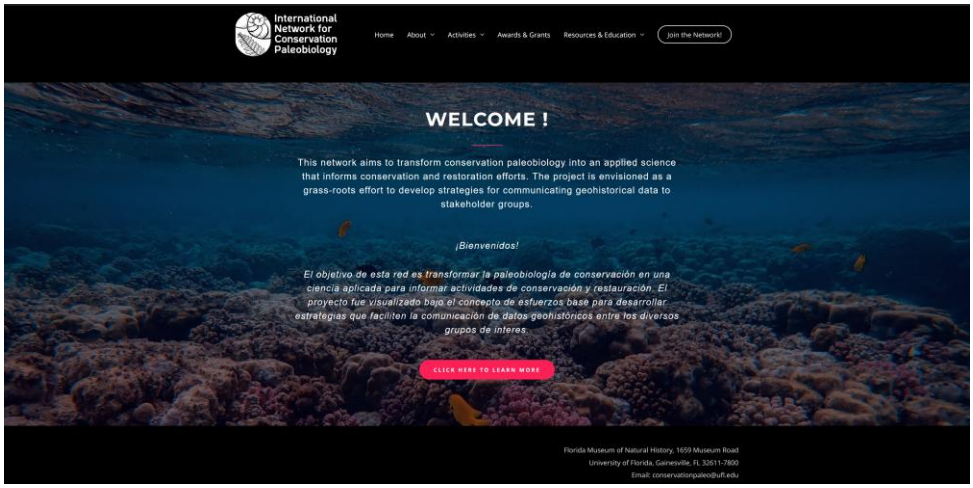
If you know people who might be interested in our network, please invite them to join. You can use the link below to extend your invitation on behalf of our network.

By joining the network, you become a member of our Community of Practice. The membership does not impose any obligations, but enables participants to engage fully in network activities. Members will be able to:

1. Participate in the CPN mailing list
2. Nominate and self-nominate for committees and panels
3. Submit announcements for publication in the CPN Newsletter
4. Apply to participate in the CPN activities
5. View CPN webinars and submit proposals for webinar modules

To join please go to our website and select "Join the Network"

Visit the website! https://conservationpaleorcn.org/



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