

# CPN Newsletter



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### Diversity, Equity, and Inclusion Statement:

The CPN upholds a commitment to diversity, equity, and inclusion as a core value. We seek to build on this commitment by striving to create an inclusive community whose members represent diverse cultures, backgrounds, career stages, and life experiences. This commitment is critical to strengthening our relevance, credibility, and effectiveness within the field of conservation paleobiology and broader STEM community. Through these efforts, we strive to transform the field in practice, while diversifying the face of conservation paleobiology for the future.



Supported by RCN-NSF  
Award: EAR-1922562

## Student/Postdoc Participation Grants are available for 12<sup>th</sup> North American Paleontological Convention in June

This is a reminder that there will be funding available to support several students and postdocs affiliated with US institutions who plan to present in the “Lessons learned and future visions for conservation paleobiology” symposium at the [12<sup>th</sup> North American Paleontological Convention \(NAPC\)](#) (June 17–June 21, 2024). This targeted funding opportunity aims to advance the CPN’s mission to transform conservation paleobiology into an applied science and strengthen its connections with conservation practice.

Awards will cover the cost of meeting registration and accommodation in the University of Michigan residential complex, to total no more than \$800 per applicant. We anticipate funding around ten applications. Selection will be based on the professional benefit to the applicant, their contributions to the symposium theme, and financial need.

**The deadline to apply is February 16, 2024.**

**See more detail from the student panel about how to apply [HERE](#).**



**12<sup>th</sup> NORTH AMERICAN  
PALEONTOLOGICAL CONVENTION**  
University of Michigan 17-21 June 2024

## Conservation Paleobiology Research Highlight

By Dr Cheng-Hsiu Tsai, Department of Life Science and Institute of Ecology and Evolutionary Biology, National Taiwan University

### **Taxonomic revision of *Chinemys pani* (Testudines: Geoemydidae) from the Pleistocene of Taiwan and its implications of conservation paleobiology**

“Research on a fossil turtle from Taiwan then demonstrates the importance of building up fossil records of extant species”

How fossils can suggest conservation policies on modern biodiversity often seems not very straightforward. However, fossils include extinct lineages and “ancestors” or records of extant species. Then, for example, having fossil records of extant species provides critical insights into the origin and evolution of modern biodiversity.

Vertebrate paleontology in Taiwan remains poorly explored, and the whereabouts of historical fossil materials are often unknown due to careless curation. We set out to relocate historical fossils in Taiwan. The actual fossil of *Chinemys pani*, which was named as a new Pleistocene turtle species from Taiwan in 1985, was not found, but we spotted the replica of the holotype of *C. pani* in two places: Chang Jung Senior High School (Tainan, Taiwan) and National Taiwan Museum (Taipei, Taiwan).

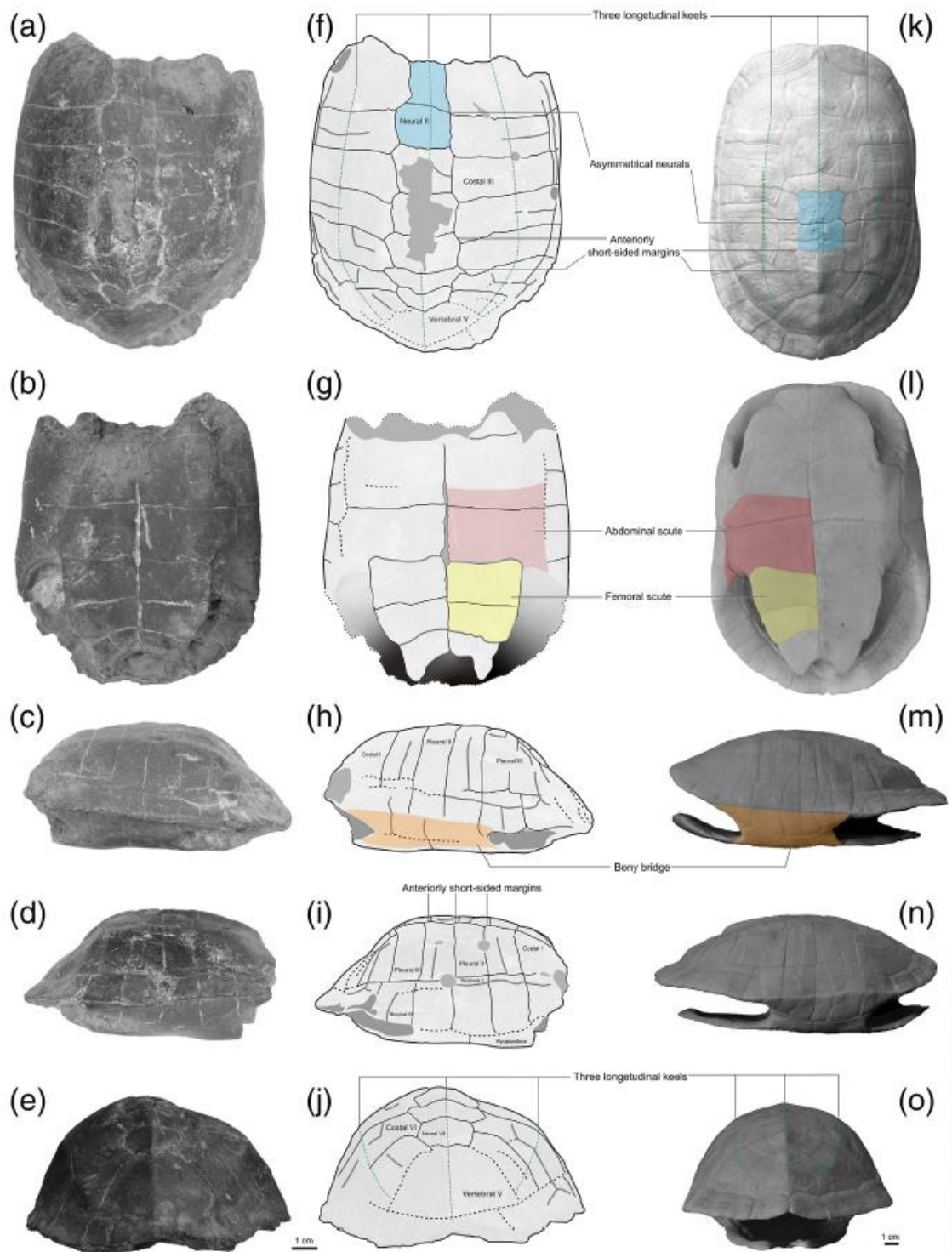
We examined the preserved morphology carefully, and the morphological analysis confirmed that *C. pani* is identical to the living Chinese pond turtle (*Mauremys reevesii*), instead of an extinct Pleistocene turtle species (see figure on next page).

This taxonomic revision and confirmation may seem trivial at first sight, but integrating this discovery into the background knowledge of modern biodiversity in Taiwan reveals profound implications. Recent molecular studies of extant *M. reevesii* suggested that *M. reevesii* should be revised as an introduced species, leading to the downgrading of its conservation status in Taiwan. But, by stark contrast, our results show the existence of *M. reevesii* in Taiwan at least way back to the Late Pleistocene or even Middle Pleistocene – indicating that *M. reevesii* in Taiwan is a native species prior to human arrival.

Our paleontological research on a fossil turtle from Taiwan then demonstrates the importance of building up fossil records of extant species that can provide the baseline of species composition and distribution in any given area. This straightforward example of conservation paleobiology should promote more paleontological studies with considerations for the origins of modern biodiversity and applications of conservation policymaking.

**For more information see the article by Liaw and Tsai 2023 in The Anatomical Record: <https://doi.org/10.1002/ar.25082>**

## Research Highlight continued



**Image caption:** (a-e) the replica of *Mauremys reevesii* from the Pleistocene of Taiwan; (f-j); anatomical interpretations of this fossil turtle; (k-o) extant *M. reevesii*.

## Reminders About Upcoming Conferences



12<sup>th</sup> North American Paleontological Convention, June 17–21, 2024

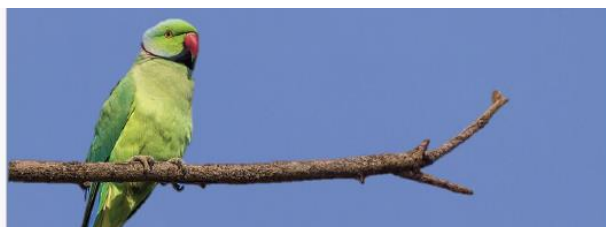
<https://sites.lsa.umich.edu/napc2024/>

Symposium: “**Lessons learned and future visions for conservation paleobiology**”

Information about the abstract submission process can be found at:

<https://sites.lsa.umich.edu/napc2024/prepare-and-submit-your-presentation-abstract/>

We are pleased to announce that **there will be funding available to support several students and postdocs** affiliated with US institutions who plan to present in the symposium. To learn more, please check out the link on the front page. Apply by February 16, 2024.



LEVERHULME  
TRUST



**Ecological uniformitarianism**  
— help or hindrance to palaeoecology,  
palaeoclimatology and conservation biology?

**Ecological uniformitarianism — help or hindrance to palaeoecology, palaeoclimatology and conservation biology? July 2–3, 2024**

Location: Online (by Zoom)

Hosted By: The Palaeontological Association

For more information, please see the event poster [HERE](#) and website for event [HERE](#).



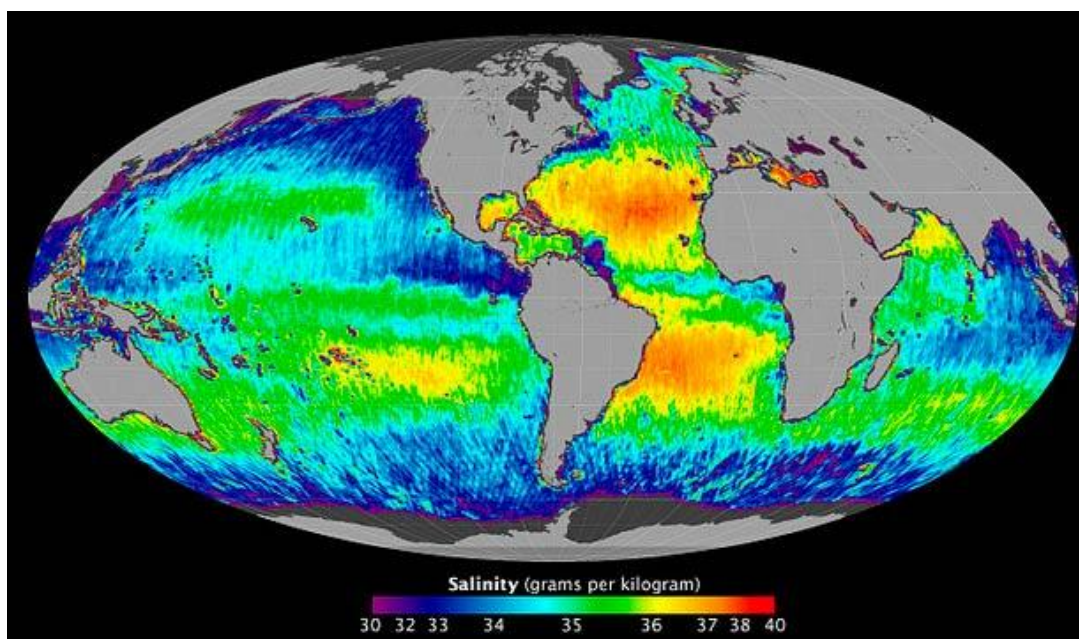
## Paleo Proxy Spotlight – Paleosalinity *by Darja Dankina*

**How is paleosalinity useful?** Reconstructing paleosalinity has long been an objective of paleoclimate research since ocean salinity is an essential component of ocean density and circulation. Moreover, it is a reliable indication of the local hydrology (LeGrande and Schmidt 2011). However, even though salinity is a basic characteristic of water masses, elemental paleosalinity proxies have not been well explored in terms of application and foundation. The few examples of such markers and their use will be considered further here.

**What are examples of paleosalinity being used for paleoclimate?** In one recent paper (Wei and Algeo 2020), a team of scientists investigated the application of three elemental ratios for the reconstruction of paleosalinity in the Bohai Bay Basin located in eastern China such as the ratios of sulphur to total organic carbon (S/TOC), strontium to barium (Sr/Ba), and boron to gallium (B/Ga).

On a salinity-normalized basis, some dissolved elements (like B and Sr) and/or freshwater (like Ga and Ba) have relatively larger concentrations in saltwater (compared to brackish or fresh waters), even though most dissolved elements are present in higher concentrations in seawater. Adsorption and desorption activities on (mostly) clay minerals for such non-redox-sensitive elements produce fine-grained sediments that accumulate an elemental inventory proportionate to the water column above. As a result, the chemistry of the watermass in which fine-grained siliciclastic sediments were deposited can be reflected in their bulk composition. It is significantly important because around 80% of the total mass of Phanerozoic sediments are fine-grained siliciclastic sediments (Mackenzie and Garrels, 1971).

Moreover, other research done by Remírez and Algeo (2020) demonstrates the fact that paleosalinity proxies can be used to analyze Mesozoic rocks from the Lower Jurassic period in addition to Cenozoic basins. The authors evaluated watermass dynamics of the Early Jurassic Cleveland Basin in United Kingdom during the Toarcian oceanic anoxic event (T-OAE) using the same combination of paleosalinity proxies (B/Ga, Sr/Ba, and S/TOC).



*Image caption: The modern ocean's sea surface salinity. Image source: NASA.*

## Paleo Proxy Spotlight continued

These proxies imply that brackish conditions predated the T-OAE and that during the T-OAE, conditions shifted to nearly freshwater conditions. This change in conditions was likely caused by a larger increase in terrestrial runoff as a result of a stronger hydrological cycle, possibly in conjunction with the Cleveland Basin's marginal sill becoming shallower due to sea level fall. Basin salinity conditions eventually changed back to brackish after the T-OAE and then to fully marine. Low molybdenum (Mo) levels in T-OAE sediments of the Cleveland Basin were explained by control of water mass restriction and local aqueous Mo drawdown. These results highlight the significance of regional hydrographic controls on the T-OAE's sedimentary expression. This study has broader implications as it emphasizes the importance of using coupled proxies for salinity and redox to accurately interpret paleoenvironmental fluctuations in marginal-marine basins. Thus, according to the short overview of two different types of research above, to sum up, paleosalinity is possibly one of the most beneficial proxies to the study environment in the past.

### References:

LeGrande, A.N. and Schmidt, G.A., 2011. Water isotopologues as a quantitative paleosalinity proxy. *Paleoceanography*, 26(3).

Mackenzie, F.T. and Garrels, R.M., 1971. *Evolution of sedimentary rocks*. New York: Norton.

Remírez, M.N. and Algeo, T.J., 2020. Paleosalinity determination in ancient epicontinental seas: A case study of the T-OAE in the Cleveland Basin (UK). *Earth-Science Reviews*, 201, p.103072.

Wei, W. and Algeo, T.J., 2020. Elemental proxies for paleosalinity analysis of ancient shales and mudrocks. *Geochimica et Cosmochimica Acta*, 287, pp.341-366.

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## Thank you, Laura!

We would like to thank Laura Hemmingham for her service to the CPN newsletter team. Laura is studying at the Royal Holloway University of London and the Natural History Museum, London. She will be stepping down from the newsletter after this issue. On behalf of the newsletter editorial team, thank you for all your help Laura!



## 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](mailto:conservationpaleo@floridamuseum.ufl.edu).*



**Image caption:** *Invertebrate Paleobiology Research in Curaçao (Left to right) Hyungjoo Jang, Danny Gouge, Cheryl Thacker, Heshan Liyanagedara, Brennen Sexton, Luis Torres*

### Curaçao: SCUBA Diving for Taphonomy Research

The marine fossil record has proven to be an excellent source of data which conservation paleobiologists can utilize to interpret past marine ecosystems. To improve interpretations of this resource, the Invertebrate Paleontology (IP) Division at the Florida Museum of Natural History (FLMNH) at the University of Florida, have been researching the taphonomic biases that affect the preservation of various biomineralizing marine invertebrates. Recently, a team composed of IP staff, students, and volunteers sought to further this research through a 10 day expedition to the island of Curaçao in the Netherlands Antilles. Staying at the CARAMBI Research Station, the team visited several local sites and collected sediment samples from shallow marine ecosystems via SCUBA diving. These sediment samples were sieved on-site to retain the skeletal material present and brought back to FLMNH where they are being processed to elucidate taphonomic patterns seen in the marine organisms present. While it was hard work, the team made sure to take full advantage of their beautiful surroundings during their downtime, making the expedition truly and wholly successful. This research is supported by NSF grant EAR-2127623 (PI: Michal Kowalewski, Florida Museum of Natural History)







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## 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](mailto:conservationpaleo@floridamuseum.ufl.edu)

## Invite Your Colleagues to Join our Network!

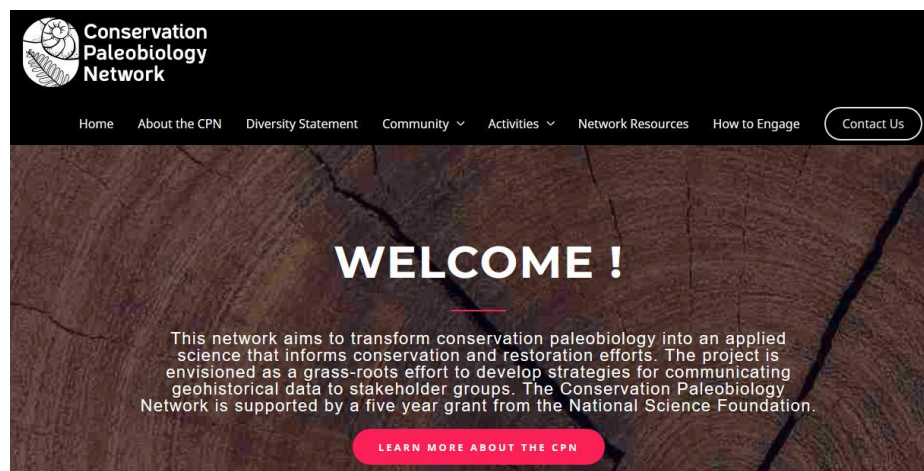
If you know people who might be interested in our network, please invite them to join. You can use the link below to extend your invitation on behalf of our network.

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/>



E-mail us at: [conservationpaleo@floridamuseum.ufl.edu](mailto:conservationpaleo@floridamuseum.ufl.edu)

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