Newsletter of the Conservation Paleobiology Network

Issue #26
November 2024

CPN Newsletter

Conservation Paleobiology Network

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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

Working Group "Synthesis" Meeting in Gainesville, Florida

***Image caption**: CPN Synthesis meeting participants included working group leaders, students, and steering committee members.*

Leaders of the ten Conservation Paleobiology Network working groups, in addition to students and members of the steering committee, recently assembled for an in-person meeting in Gainesville, Florida. This event was the first opportunity for a joint meeting of our steering committee and working group leaders.

The meeting participants synthesized common threads (challenges, successes, pitfalls) and provided highlights of stakeholder-researcher partnerships exemplified by the working groups. Most of the discussion centered around topics such as whether groups successfully created meaningful, long-term partnerships between academic scientists and practitioners, integrated different data and knowledge sources, and demonstrated utility of paleodata in answering proposed conservation question(s) that other data cannot. The results of these discussions will be summarized in a forthcoming manuscript.

The group also had discussions about the best ways to sustain the network into the future, including creating a new international organization to bring together conservation paleobiologists and its practitioners, and identifying funding sources.

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Conservation Paleobiology Research Highlight

By Zhuo Wang, Institute of Tibetan Plateau Research, Chinese Academy of Sciences

"Tibetan antelope population in Lake Zonag region fluctuated significantly during the past 9000 years"

New proxy to reconstruct past changes in Tibetan antelope population

Tibetan antelope (Chiru, *Pantholops hodgsonii*) is an endemic species of the Tibetan Plateau. Its population declined sharply from 1950 to 1990s due to the massive illegal hunting for shahtoosh (wool) and in 2008 it was listed as an endangered species. Since the late 1980s, rigorous measures to restrict illegal hunting, as well as laws and policies for the protection and establishment of natural reserves, have allowed the population to recover significantly in past decades.

Various techniques have been devoted to monitor antelope population changes and study their habitat, but these are limited to the past several decades and can only provide limited information on past changes in antelope population. We recently published a pilot study to reconstruct antelope population changes during the Holocene using sediment cores at Lake Zonag, one of the most important calving grounds for Tibetan antelope. Antelopes left a large quantity of fecal residues within the lake catchment, making it an ideal site to study population changes. We measured the content of 24-ethyl-coprostanol and 24-ethyl-epicoprostanol, signature fecal sterols of herbivores, as a proxy for the antelope population. The fecal sterols captured the sudden decrease in antelope population due to illegal hunting in 1980s, as well as the recent recovery because of protection, giving us confidence in using fecal sterol as the proxy for population changes of the Tibetan antelope.

The results show the antelope population in Lake Zonag region fluctuated significantly during the past 9000 years, with clearly low population at 5.1-4.5 and 4.1-3.7 ka. Fluctuation of antelope in the Lake Zonag catchment show strong response to environment changes during the Holocene. When the environment was relatively humid with dense vegetation cover, the antelope population increased, and vice versa. Over the past 400 years, the changes in the population size of Tibetan antelope have been affected by human activities.

This study was the first to identify the signature fecal sterols to represent the population changes of the Tibetan antelope. Understanding how the population size of Tibetan antelopes responded to environment changes in the past would provide scientific basis for long-term conservation policies for Tibetan antelopes.

***Image caption**: Tibetan antelope in The book of antelopes (1894), Image in the public domain.*

For more information see the article by Wang et al., 2024 in Palaeogeography, Palaeoclimatology, Palaeoecology: https://doi.org/10.1016/j.palaeo.2024.112132

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Practitioner Perspective *By Lucia Snyderman*

Dr. Alison Debney – *Conservation lead for wetland ecosystem restoration at the Zoological Society of London (ZSL).*

Image caption: Dr. Alison Debney

1. How would you introduce yourself to our readers?

I am a conservation lead at the Zoological Society of London and my team works on aquatic ecosystem recovery primarily in the UK. We work on riverine and coastal habitats for biodiversity and ecosystem benefits as well as to support both humans and nature.

2. Tell us about your current work on wetland restoration. How does it intersect with conservation palaeobiology?

I've been working now for over twenty years in this field and I very much believe in driving ecosystem recovery of coastal, estuarine, and riverine habitats. In more recent years, we've been delivering very active restoration which is quite novel for coastal environments. We're working on active restoration of sea beds as well as pressure removal in rivers so that nature can ultimately recover itself. We are trying to understand connectivity between ecosystems and ecosystem types in regions (for example, between saltmarsh and seagrass oysters). We also look at this within the context of communities. Because we've basically trashed our coastal environment and have no reference systems, we do not know what was here. Historical ecology informs the direction of recovery. For example, we're about to publish a paper on IUCN red listing of the European flat oyster (*Ostrea edulis*) in which we assessed the state of the ecosystem as collapsed. We've had to do a lot of historical ecology work to understand the previous state of oyster reefs.

Earlier this year, another paper we published compiled historical records for oysters from fisheries data showing that there are 170,000 hectares of oyster reef lost within European waters. Alongside this loss of oyster reef, you also lose all ecosystem services, fish provisioning, and fish habitat. This is gone from human memory as well. Without historical ecology, we could not have known what we had before. With historical ecology, we were able to describe the oyster reef as an ecosystem whereas previously they were always thought of as individual oysters and as a fishery. By looking back, we've been able to describe the complex structure of the ecosystem including the vertebrates, fish species, and predators which form the whole ecosystem. We've had to look back to really inform going forward. Now we've set conservation objectives highlighting the need to conserve oyster reef ecosystems and not just individual oysters, which could not have been realized without historical data.

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Practitioner Perspective continued

3. What would you say to scientists who are hoping to apply their research directly to conservation?

Researchers need to consider: How do we target our research questions to make better decisions going forward? Today, I am at a European eel (*Anguilla anguilla*) action plan to recover this critically endangered fish. The Number 1 objective is to monitor eel distribution in the Greater Thames estuary, and whilst that is really interesting, that's not going to cause change. Instead, we can use that data to inform effective decision making. What are our actions doing? How are our research questions going to drive change? We have a lot of work to do to recover the environment and support sustainable living between people and the environment. By using evidence in research and pushing the boundaries, we can inform evidence-based decisions which are good for all.

Relevant links:

https://www.zsl.org/about-zsl/our-people/alison-debney

https://digital.csic.es/handle/10261/366949

https://archimer.ifremer.fr/doc/00869/98131/

Student Section

My name is Habiba Moshfeka, and I am a PhD student in Fisheries at the University of Alaska Fairbanks. With the generous support of a travel grant from the Conservation Paleobiology Network, I had the privilege of attending the 154th Annual Meeting of the American Fisheries Society in Hawaii. The conference was a remarkable experience, bringing together leading fisheries professionals and researchers from across the globe. During the event, I presented my research, "Atlantic Cod and Human Connections in Iceland: A Long-Term Perspective" which sparked engaging discussions and provided invaluable feedback to refine my work. Beyond my presentation, I had the opportunity to learn about cutting-edge research, forge meaningful connections, and exchange ideas with some of the brightest minds in fisheries science. This experience was not only enriching but also a pivotal step in my academic journey, helping me to further develop my research and career.

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

Image caption: Collecting parasite from thylacine at the National Museum of Ireland

Gaia Mortier – PhD Candidate, University of Reading

Hi everyone, my name is Gaia, and I'm a postgraduate researcher at the University of Reading (England). I work on the biochemical analysis of external parasites (lice, fleas, ticks) to learn more about the hosts they once lived on. My primary focus is on stable isotope ratios, but I've also undertaken ancient DNA work on an (as yet unknown) parasite species I discovered, which was likely closely associated with the Tasmanian tiger. The Tasmanian tiger was a carnivorous marsupial that went extinct relatively recently (1936) after being portrayed as a ruthless sheep-killer by European settlers in Tasmania in the early 1800s. We hope this new parasite finding, combined with stable isotope analysis, will help us uncover unique information about this iconic animal. This discovery has been an incredible journey, and since parasites are often overlooked in natural history collections, I believe there is still much more out there just waiting to be found!

Conservation Paleobiology Network

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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

Invite Your Colleagues to Join our Network!

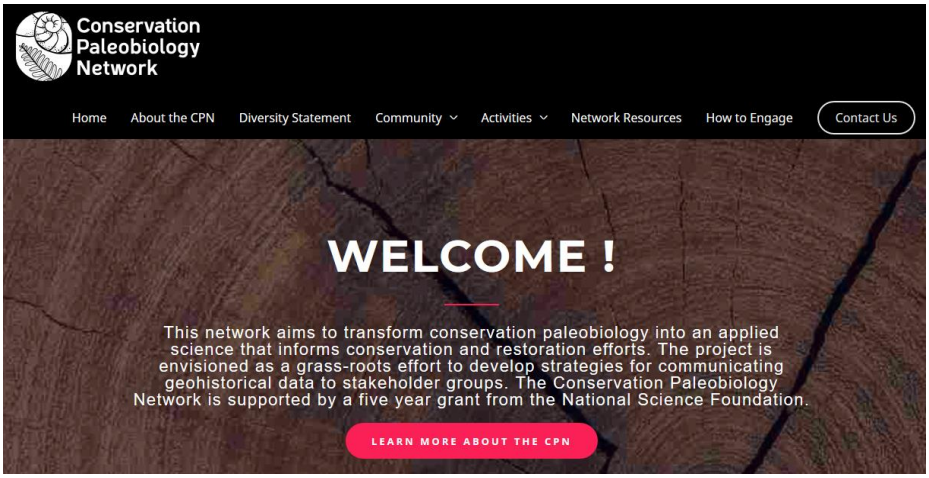
If you know people who might be interested in our network, please invite them to join. You can use the link below to extend your invitation on behalf of our network.

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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