

Conservation Paleobiology Network

Issue #9

Sept 2021

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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

### Announcing CPN Working Groups

We are excited to announce the Working Groups that the network anticipates sponsoring. These working groups are focused on research questions that integrate conservation paleobiologists, academic partners, wildlife managers, and stakeholders. Working groups submitted proposals in the Spring of 2021 and underwent a competitive selection and peer review process.

The CPN Working Groups will contribute to establishing conservation paleobiology as both a basic and applied discipline. Outcomes include publications, tutorials and lectures contributed to webinars, and/or proposals to funding agencies to support further activities. Working Groups will have additional information on our webpage in the coming months.

Titles of Working Groups and their principal investigators are listed below in no particular order:

- Integrating Paleo and Historical Data into Coral Reef Management and Policy Principal Investigators: Katie Cramer, Loren McClenachan
- An Interdisciplinary Working Group to Catalyze the Science of Species' Pre-impact Distributions Principal Investigators: Molly Grace, Resit Akçakaya
- Leveraging Lessons of the North American Fur Trade: Integrated Cultural and Biological Legacies Principal Investigators: Courtney Hofman, Alexis Mychajliw, Torben Rick, Bonnie Newsom, Arthur Spiess
- Conservation Decision-making in the Insular Anthropocene: Finding and Restoring the Bahama Archipelago's Lost Ecosystems Principal Investigators: Michelle LeFebvre, Alexis Mychajliw, Samuel Turvey
- Conservation Paleobiology in Cities: Integrating Geohistorical Data into Urban Greening Principal Investigators: Emily Lindsey, Regan Dunn, Jesse George, John Randall, M. Allison Stegner
- Integrating Conservation Paleobiology into Caribou Management Principal Investigators: Josh Miller, Jeff Rasic, Kyle Joly
- Integrating Historical Data and Approaches into Oyster Management Principal Investigators: Greg Dietl, Stephen Durham
- Manoomin Psin Zizania (Wild Rice) Principal Investigators: Amy Myrbo, Darren Vogt, Nancy Schuldt, Tom Howes, Ron Schirmer

### **Conservation Paleobiology Research Highlight**

By Dr. Chris Stimpson (Sundasia Project - Queen's University Belfast/Oxford University Museum of Natural History)

# Confirmed archaeological evidence of water deer in Vietnam: relics of the Pleistocene or a shifting baseline?

"Perhaps the fossils indicate there was once a longer standing, but now forgotten, southerly population of water deer?"

Studies of archaeological and palaeontological bone assemblages increasingly show that the historical distributions of many mammal species are not representative of their longerterm geographical ranges in the Quaternary. Consequently, the geographical and ecological scope of potential conservation efforts may be inappropriately narrow. In a recent paper, my co-authors and I consider a small Vulnerable cervid, the water deer Hydropotes inermis, as a case in point. Water deer have historical native distributions, which are becoming increasingly restricted, in eastern China and the Korean peninsula. Introduced populations in Europe now account for around 40% of the global population. We report confirmed and dated archaeological evidence of these small cervids in northern Vietnam. We describe and diagnose late Pleistocene-age jaws and teeth recovered from Hang Thung Binh 1 cave in the Tràng An World Heritage Site, dated to between 13,000 and 16,000 years before present. The new specimens are valuable contributions for a species with a very sparse fossil record and complement regional studies as further evidence of a much wider Quaternary distribution in East Asia. But are these new Vietnamese fossils relicts of extirpated Pleistocene populations?

Or perhaps the fossils indicate there was once a longer standing, but now forgotten, southerly population of water deer? It is certainly true that, today, water deer are associated with more temperate climates. Perhaps climatic changes and the onset of the sub-tropical conditions of the Holocene were not amenable to the survival of these small cervids in Vietnam? Holocene archaeological finds in Southern China and Taiwan, however, would dispute this and this raises the intriguing question that water deer may have survived into Holocene Vietnam: a hypothesis to be tested.

Photo captions: (Upper) Mandible and canine fragments of Hydropotes inermis recovered from Hang Thung Binh 1 in Tràng An World Heritage Site, Northern Vietnam. (Image: C. Stimpson).

(Lower) The entrance of Hang Thung Binh 1 (left) and aerial view of the location of the cave (red marker) in Tràng An World Heritage Site (right). (Images: C. Stimpson/T. Kahlert, respectively).



For more details see article by Stimpson et al. (2021) in Royal Society Open Science: https://doi.org/10.1098/rsos.210529

#### Practitioner Perspective Interview by Sahale Casebolt

#### Featuring: Dr. Alexis Mychajliw

In this special installment of our regular "Practitioner Perspective" feature, we flip the spotlight to Alexis Mychajliw, who normally conducts our practitioner interviews!

Alexis is an Assistant Professor of Biology and Environmental Studies at Middlebury College. She has a Ph.D. from Stanford University, and is trained as both a conservation biologist and a paleontologist. She is also a National Geographic explorer and a Research Associate at the Natural History Museum of Los Angeles County.

Here she provides her insight into how her academic work applies to conservation and management, as well as advice on how academics can make connections with practitioners and stakeholders.



Photo caption: Alexis with Monarch at the California Academy of Sciences taking hair samples from his armpits.

#### 1. Can you briefly describe your research approach (or one of your research areas)?

Conservation biologists assess why certain species are threatened today, while paleoecologists evaluate why certain species went extinct; both seek to understand extinction in the context of environmental and anthropogenic changes, but on different timescales. I bridge these time points by combining modern surveys, historic museum specimens, and Late Pleistocene/Holocene (~25,000 to 500 year old) fossil records to evaluate the ecological mechanisms underpinning species extinction or survival, providing high-resolution datasets that span major periods of change. I have established field and collections-based research programs that address tropical mammal conservation on the Caribbean islands of Hispaniola and Trinidad, mesocarnivore management on Hokkaido (Japan), and the reintroduction of bears to California. For example, in response to the proposed reintroduction of California grizzly bears, the <u>California Grizzly Research Network</u> and I used stable isotopes to show that pre-European grizzlies were herbivores, and the introduction of livestock prompted an anthropogenically-induced shift in diet – one that ultimately led to hunting bounties and extinction.

# 2. Are historical data increasingly used to make conservation decisions? Are these data still underutilized by conservation practitioners?

Historical data have always been used to a certain extent to make conservation decisions (hello, 1492) – but it has been more about who gets to make those decisions and what datasets are involved. Whose past is relevant? Who decided what past we should return to? What is exciting about historical data in conservation now, to me, is the plurality of data types and thus viewpoints that can be brought to the table to better meet community needs when we incorporate paleontology, archaeology, and historical ecology.

### Practitioner Perspective continued...

# 3. As an academic researcher, how does your work contribute to applied conservation and management questions?

I come from the standpoint that not all paleontological data are useful in addressing conservation problems. Paleontology is just one set of tools we can bring to the table as part of a collaborative research group that centers communities rather than centers our desire to use a particular technique or deposit and find an application for it. I begin by asking people in that region or system what they actually want and what their needs are. My applications are typically species-specific, relating to mammal management and conservation (e.g., identifying habitat to preserve, detecting drivers of decline, creating genetic baselines). I find that the most applicable research I do combines paleontological data with neontological data in a single moving picture.

# 4. In what contexts/settings do you encounter conservation practitioners and wildlife managers (e.g. how do you form these working connections)?

I write a lot of cold emails introducing myself to people I have never met before! If these potential collaborators are in your local region, I recommend attending community events when possible to make a personal connection and show your commitment to the research program – for example, I recently attended fur trapper meetings in New England. You might also consider applying to serve on a state conservation advisory group, volunteering as part of a local land conservation organization, or joining a local conservation chapter like the Audubon Society – see yourself as part of the community.

# 5. What advice would you give to students who are specifically interested in management, conservation, or applied work (rather than academia)?

I would say it is best to ask advice from someone who is outside of academia! Talk to many people early and often. The <u>Student Conference on Conservation Science</u> is a great venue for this. One piece of advice I do tell my students is to identify the ultimate impact they wish to have in conservation and what methods/activities they actually enjoy. Sometimes these are congruent already, but sometimes, the careers students think they want may not truly align with what types of tasks they would prefer to do for a 40-hour work week, or the data they generate with their preferred techniques may not actually be needed for the conservation problem they find interesting.



Photo caption: A California grizzly skull, typical of the historic specimens I work with. Often, most of the information is actually written onto the skull itself, though dates and specific locations must be addressed through a combination of archival and radiocarbon analysis. Here, this bear is clearly in a "post-European" category as it has bullet holes in its skull.

# 6. What is your favorite fossil or historic specimen?

My favorite historic specimen is an individual grizzly bear named Monarch, who was the model for the bear on the California state flag. He was caught in the wild in Southern California in 1889 as part of a publicity stunt by the newspaper magnate William Hearst. He lived in a zoo in what is now Golden Gate Park for 22 years, dying in 1911. Throughout his life, he was kept in a tiny cage and - our isotopic data suggests - fed a diet that did not align with the typical wild grizzly diet. In death he remains in the Bay Area though split across two institutions: his skeleton is at the Museum of Vertebrate Zoology at UC Berkeley, while his taxidermied skin is at the California Academy of Sciences. His skull, however, is unaccounted for. I had the incredible privilege to sample Monarch – bones and hair - as part of my work with the California Grizzly Research Network.

#### **Student Section**

### **Open Call for Student Panel Applications**



#### Interested in getting more involved in the CPN?

#### Want to gain leadership experience and meet students in the network?

Apply to join the CPN Student Panel! We have just opened the call for applications and will be recruiting **<u>six</u>** new members at this time.

<u>Open positions:</u> \*Co-chair \*Working group student representative \*Webinar student representative \*Student networking & conference activities chairs (2) \*Science communication chair

<u>Eligibility:</u> All enrolled students, including undergraduate (juniors and seniors), Master's, and PhD students, are eligible to join the Student Panel. Positions can last for up to 1 year after graduation and can begin up to 1 year before matriculation. Those transitioning to a Postdoctoral Fellowship are encouraged to apply, as long as you are currently a graduate student at the time you submit your application.

More information about the student panel, positions, and expectations can be found here. To apply, please fill out this form. **Applications are due by November 1, 2021.** 

Any questions can be directed to students.cpn@gmail.com.

### Check out the CPN Video Library



Lynn Wingard is a research geologist at the United State Geological Survey. Here she discusses how her work in paleoecology can help restore Florida's evergaldes ecosystem.



Susan Kidwell discusses the challenge in conservation biology of discovering 'what was natural' before human impacts. Here she talks about the transformation of seafloor communities in response to shifting land-use in the Los Angeles watershed. This is a UCLA La Kretz Center's 9th Annual Lecture.



Historical collections of plants. Natural History Museum plant expert Neil Brummitt explains how the research relied on the extensive historical plant collections at the Museum and the Royal Botanic Gardens, Kew.



Geology curator Peter Roopnarine discusses research on food webs, fossils, and the resiliency of life through time in this video Fossil Forward from the California Academy of Sciences.



Information on restoration efforts of the Colorado River Delta. Video produced by the Arizona Public Media.



Paleoceanographer Nathalie Goodkin, at the American Museum of Natural History, explains how she uses corals to look back in time at marine conditions and why this research is critically important for protecting our oceans in the future.



Gabi Serrato Marks talks about New speleothem-derived insights into northern Mexican paleoclimate during the first millennium of the Common Era as part of the PalaeoPERCS seminar series.

Are you interested in learning more about the diverse topics that people in the conservation paleobiology community are working on? Perhaps you are looking for teaching resources, exploring what exactly conservation paleobiology is, or curious to see a realworld application? Check out our video library! Our video library is a compilation of presentations and other video content related to conservation paleobiology, historical ecology, and related topics.

The video library is intended as a learning resource and a location where people can share content with the conservation paleobiology community. Content here is based on member submissions. To submit a video link, please contact us by email.



Alexis Mychajliw discusses historical and paleontological data to better understand California Grizzlies, California Academy of Sciences.



Institute is about how fossil corals can be used to help understand and conserve modern corals.

PalaeoPERCS seminar series.

### https://conservationpaleorcn.org/video-library-resources/

## Thank You Jaleigh!

We would like to thank Jaleigh Pier for her service to the CPN newsletter team. Jaleigh is a graduate student in the Earth & Atmospheric Sciences Department at Cornell University (USA), and was with the newsletter team for over a year and helped us develop the first nine issues. On behalf of the newsletter editorial team, thank you for all of your help Jaleigh!



### Postcards from the Field

In this feature of our newsletter, we showcase members' research in the field, lab, or other setting. Please submit your "postcards" with approximately 100 words of text to us at conservationpaleo@floridamuseum.ufl.edu. Note that if we run out of space to fit your postcard into the upcoming newsletter, it will be included in a subsequent newsletter. Submissions might also be featured as blog and social media posts. Thank you in advance for your contributions!

(RIGHT) Dr. Mairin Balisi, Laura Tewksbury, Cornelia Clarke, Karin Rice, and Sean Campbell (pictured left to right). Rancho La Brea, La Brea Tar Pits and Museum, Los Angeles, CA, USA

As a part of our B.R.E.A.S. program (Bridging Research & Education at Asphaltic Sites), the team at Rancho La Brea recently participated in a workshop hosted by the National Trust of Trinidad and Tobago. In preparation, some of us visited other asphaltic fossil sites in Southern California to film pieces of a virtual field trip. Here, we are taking a photo with the historical marker at the McKittrick Brea Pit.





#### (LEFT) Carmi Thompson, Lazaro W. Viñola, and Mitchell Riegler, from the Florida Museum of Natural History collecting fossils at Furnias de Gurabo in the northwest of Dominican Republic

The island of Hispaniola in the Caribbean is well-known by conservation biologists and paleobiologists for its high biodiversity, endemism, and extinction rates, which have caused the disappearance of numerous species of vertebrates. However, the origin and evolution of this biota is poorly understood, in part because the lack of deep time fossils. With the goal of collecting remains of vertebrates and invertebrates from the last 7 million years, members of the Florida Museum of Natural History and the Museo Nacional de Historia Natural in Santo Domingo explored several localities across Dominican Republic in July and August of 2021. Photo by Juan Almonte.

### Postcards from the Field continued...

#### Mollie Mills (MSc graduate) University of Sussex, England, UK - (PhD institution TBC)

I'm Mollie, a recent Masters graduate from the University of Sussex, England. I am interested in how mammalian fossil records can be utilised within modern conservation. For my Masters thesis, I incorporated the Late Pleistocene fossil record of saiga antelope into global habitat suitability models to inform the species future conservation actions. This involved collecting and verifying saiga fossil records from museum records, academic literature and online global databases. Overall, the results highlighted the importance of including a species' fossil record into suitability projections, which usually only incorporate modern and historic records. Fossil records can provide an insight into a species' full environmental range and ecological niche prior to extensive human pressures and habitat modification. This summer I was also part of the research team led by Professor Danielle Schreve (Royal Holloway, Univ. of London) that excavated Late Pleistocene fossil remains from Gully Cave, Somerset. Here I am excavating a section of the cave which contained remains of reindeer and hyaena. Later this month I am starting a PhD with the London Natural Environment Research Council Doctoral Training Partnership, where I hope to develop more complex models with multiple species fossil records.

"Fossil records can provide an insight into a species' full environmental range and ecological niche prior to extensive human pressures and habitat modification."



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Conservation Paleobiology Network

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Supported by RCN-NSF Award: EAR-1922562

#### 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 such as Field Courses
- 5. Submit proposals for CPN field courses and CPN working groups
- 6. 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