Newsletter of the Conservation Paleobiology Network

Issue 2
July 2020

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.

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How is the CPN organized?

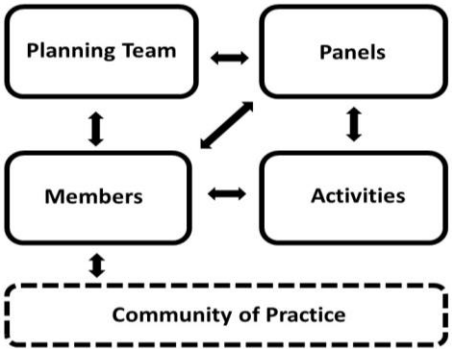
The Conservation Paleobiology Network is organized into groups of people who share responsibilities for organizing, developing, and advising various components of the network.

The core group overseeing the network development is the **Planning Team**, which includes the Steering Committee (nine members, including the Principal Investigator, Coordinator, and Student Representative) and the Advisory Group. The Planning Team assists in development and oversight of the CPN **Panels**.

Each CPN panel acts as a unit that oversees and organizes an aspect of the network (e.g. **Activities**), meeting on a regular basis and forming guidelines with oversight from other panels and the planning team. The panels are expected to seek participation from the general membership.

CPN **Members** are people from the **Community of Practice** who joined using the online network member form. We currently have over 400 members, all of whom are listed on our webpage member directory. The directory can be searched by discipline to allow members to network with each other.

New CPN members are added weekly. All members are encouraged to participate in activities, as well as serve in various leadership and organizational roles (e.g., serve on panels or ad hoc committees established by the panels). In future issues of the newsletter, we will introduce members of these groups.



For more detailed diagram, see our website: https://conservationpaleorcn.org/about/

More about CPN Panels

CPN panels are groups of people who oversee specific aspects of the network. Current panels are: Field Courses, Webinars, Student, Annual Meeting, Diversity/Equity/Inclusion, and Working Groups.

Each panel has two people who serve as chairs for a limited term, as well as additional panel members. Currently the largest panel has 13 people (the Annual Meeting Panel). Ideally, each panel will consist of a range of people across subdisciplines within the CPN, across multiple career stages including students, and from diverse backgrounds.

One of the core responsibilities of each panel in the beginning phases of the network is to assemble a guidelines document for that panel. These guidelines will make it clear to CPN members what the panel is responsible for, how the panel is organized and run, and how decisions are made within the panel for the activities that it oversees.

Guidelines documents are in the process of being made by each panel, and will be available to view on the CPN website once they are written. The general guidelines for the CPN network are being developed by the Planning Team. All CPN members will be given an opportunity to provide comments and suggestions on initial drafts of all guideline documents.

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Conservation Paleobiology Research Highlight

By Jenna Waldman

"This insular system has undergone intense cultural, economic, and demographic changes, which have triggered substantial ecological change."

Historical contingency and human niche construction shape the Caribbean's Anthropocene biota

While the demarcation of the Anthropocene is still debated, it is evident that human activity has altered ecosystems for millennia. Human-mediated species introductions, especially in conjunction with human-induced extinctions and land-use change, have contributed to the formation of the novel ecosystems and communities we see today. But understanding exactly how present-day biotas have been shaped by species introductions requires looking deeper in time.

Although there is a long legacy of human-mediated species introductions, the activities and impacts of earlier societies are often ignored. In particular, North American conservation practices typically use the year of 1492 as the baseline for restoration, disregarding the role that Indigenous communities had in engineering their ecosystems for millennia prior to European colonization. Reconstructing full introduction chronologies and acknowledging the impact of various groups over time is necessary to thoroughly understand the ecological consequences of sequential species introductions.

The Caribbean, a biodiversity hotspot, has experienced multiple distinct waves of colonization beginning around 7,000 years ago. As a result of human migration and extensive trade networks, this insular system has undergone intense cultural, economic, and demographic changes, which have, in turn, triggered substantial ecological change.

To assess ecological changes in the Caribbean across space and time, we synthesized paleontological, archaeological, and historical data to develop a database of terrestrial vertebrate species introduced to the Caribbean throughout human occupation. We defined three distinct time periods corresponding to the dominant societies of the region: the Indigenous period (pre-1492), colonial period (1492 - 1799), and modern period (1800 - present). We found that human-mediated species introductions accelerated approaching the present day in all vertebrate groups, with a wider range of biogeographic origins represented over time.

Each group that occupied the Caribbean had unique cultural, economic, and aesthetic motivations for translocating species. Species introductions – both intentional and accidental – serve as a type of human niche construction and create an altered landscape for subsequent colonizers. Additionally, the extinction of native species following initial human contact may have also influenced community structures by facilitating the establishment of species introduced later in time. Therefore, we conclude that the current Caribbean biota is historically contingent on the chronology of human colonization and species introduction.

What is the appropriate restoration target if the ecosystem has been modified by human activity for thousands of years? And what are the conservation implications of introduced species that have not become invasive, but instead have effectively replaced extinct native species and their ecosystem functions? Answering these questions and resolving ambiguities in the introduction chronology will help improve conservation practices in the Caribbean, ensuring sustainable protection of the ecologically significant but increasingly vulnerable insular system.

Figure Caption: Green Iguana (Iguana iguana) on Puerto Rico. (Photo Credit: Al Kordesch, iNaturalist observation: 55541817)

For more details please see article by Melissa Kemp and colleagues in Proceedings of the Royal Society B:
https://doi.org/10.1098/rspb.2020.0447

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Practitioner Perspective

Interview by Alexis Mychajliw

Featured practitioner: Ryan Mohammed

Ryan Mohammed received his PhD in 2019 from the University of the West Indies (UWI), St. Augustine, Trinidad & Tobago. His main interests are aquatic ecology and conservation, but his work with Pitch Lake and other aquatic asphaltic ecosystems led him to collaborate with scientists at the La Brea Tar Pits & Museum (Los Angeles, CA). He has co-authored articles in Oecologia, Conservation Biology, Aquatic Invasions, and other journals, including the local Trinidad & Tobago publication Living World. He was the Acting Curator of the UWI Zoology Museum from 2018-2019.

Dr. Ryan Mohammed

1. What organization do you work for and what is their mission?
I am the Cooperate Secretary for Environmental Research Institute Charlotteville (ERIC), located on Tobago, where I oversee and advise on their research program. ERIC's mission is to value and integrate diverse knowledge and experiences to manifest a mutually beneficial relationship between the coastal communities and ecosystems of North East Tobago. I am also a course coordinator for the M.Sc. Program in Biodiversity Conservation and Sustainable Development in the Caribbean at UWI. The program's main objective is to supply the region with qualified professionals who have a comprehensive knowledge of the concepts and principles of a wide range of science and environmental management issues related to tropical biodiversity.

2. What are some of the conservation challenges and opportunities where you work?
The major challenge for conservation at ERIC is working with citizens who do not share a willingness to support conservation. Whilst there is always the challenge to source funding for various projects, relating the findings from conservation projects to policy makers as well, citizen stakeholders bring a different range of issues as we battle with cultural differences. One such example is the poaching of sea turtles which is 'culturally acceptable' but is illegal as these are listed as sensitive species in Trinidad & Tobago.

3. How do you include local communities in your conservation research?
At ERIC we employ three strategies in conservation. First, our research always involves some element of community capacity building for data collection. Second, the main findings are publicized not only in international scientific journals but also local journals, newspapers and community outreach posters. Third, the data are used to influence policy decision for management of the environment.

4. What is a recent project you feel would have benefited from fossil data?
Recently a biodiversity checklist was created for North East Tobago as they moved towards applying for UNESCO Man and the Biosphere heritage status. Fossil data to show what once lived on the island would indeed be an asset to relate what was there to its current mammalian biodiversity.

5. Aside from providing data points, what do you think fossils add to the conversation about conservation where you work?
Typically, the existence of fossils was something local citizens felt was exotic to our country. The fossils add to the allure of science for members of our younger generations. This therefore helps educate the population about extinctions and habitat change.

6. What is the most urgent need in paleontological research where you work?
The most urgent support we need is funding for capacity building which would be a great asset for future excavations and also fossil preparation.

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7. Where do you look for information about past ecosystems? Are there ways paleontologists can better reach practitioners?
We have a working relationship with the La Brea Tar Pits & Museum, which greatly facilitates our inquiries regarding island biogeography and fossils. Recently I met a Venezuelan paleontologist through the B.R.E.A.S [Bridging Research & Education at Asphaltic Sites, https://tarpits.org/research-collections/our-expeditions] networking initiative, which is important as our fossil community seems to be very similar to Venezuela's Late Pleistocene fauna. This identification is the first step for then using these fossils as baselines of biodiversity.

8. What message would you have for potential collaborators?
Potential collaborators who want to work in Trinidad & Tobago and the wider Caribbean should be aware of the wide range of cultural differences among the islands. It would be beneficial if excavated fossils stayed in Trinidad & Tobago, and if collaborators would support us in developing protective legislation.

9. What is your favorite fossil?
My favorite fossil is a specimen consisting of six articulated *Glyptodon* scutes. Apart from being the single largest *Glyptodon* piece which currently resides at the UWI Zoology Museum, I have a particular affinity towards this species as fossils of have been found in both south Tobago as well as in Trinidad, which provides evidence for the potential Pleistocene land bridge between Trinidad and Tobago.

For Student Members

The CPN student community is now 116 members strong, spanning a wide range of career stages, institutions, and disciplines. Together, our members represent 80 institutions across 22 countries. The Student Panel was created to help students connect with other members in the network, represent student perspectives within the CPN leadership, and organize resources, training opportunities, and other community-building activities to help prepare students for future careers in conservation paleobiology. ***In line with these goals, we're very excited to announce TWO WAYS for student members to start engaging with the student community and interacting with other members in the network:***

1. **Participate in the Student Feedback Survey:** As we begin developing student activities and networking opportunities, we'd first like to hear from you so that we can tailor these activities to your needs and interests. ***Please fill out this short survey*** to tell us more about yourself and what you'd like to see created by the Student Panel in terms of resources, workshops, and ways to engage with the network at large. We plan to incorporate your feedback to help guide the Student Panel's priorities and goals over the coming year. Any and all feedback is welcome. You can also find a link to the survey on the Student Activities page of the CPN website.
2. **Join the CPN Student Slack Group:** We're pleased to invite all student members of the CPN to participate in our newly formed Slack community. The CPN Student Slack Group was created as a platform for you to connect with other students in the network, initiate and contribute to discussions on topics of interest, participate in activities led by the Student Panel, and share relevant resources and announcements. We've set up channels for you to highlight your work, share resources, and meet other students in the group. There are also thematic channels that span a variety of topics, ranging from historical ecology to analytical paleobiology to policy. You can subscribe to these existing channels or create new channels for others to join. We'll post regular updates so you can stay up to date with network news and student events. You can sign-up here to join the group. Prior to joining, you will be asked to read and agree to the Code of Conduct.

You can learn more about upcoming student opportunities and get involved in our community by visiting the Student Activities webpage. To get in contact with the Student Panel, please direct any emails to **students.cpn@gmail.com**. We look forward to your participation in our growing community.

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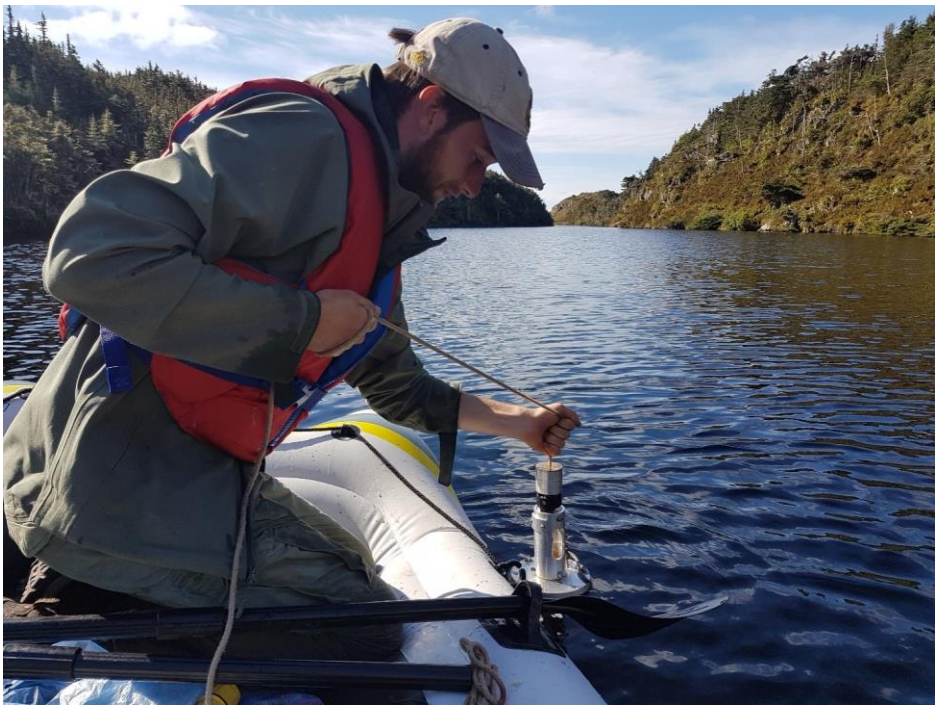
Postcards from the Field

Compiled by Fernanda Cabrera and Jaleigh Pier

In this new feature of our newsletter we showcase members' research in the field, lab, or other setting. Please submit your "postcards" with a photo and approximately 100 words of text to Fernanda Cabrera, fcabrera@fcien.edu.uy, and cc 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!



Matthew Duda (PhD candidate) Queen's University, Canada

This photo depicts me collecting a sediment core on Baccalieu Island, Newfoundland – home to over 4 million seabirds. My research objective is to use an assortment of these sediment cores from multiple ponds and islands to reconstruct the long-term population dynamics of the vulnerable and in decline Leach's Storm-petrel (*Hydrobates leucorhous*). Dated sediment cores can provide trends in the colony size before modern surveying, which is critically important to understand the cause of recent declines. My approach is called paleolimnology and works because seabirds (and other colonial organisms) leave distinct biological and chemical signals in the environment, which are then washed into lakes and preserved in the sediments. By examining changes in seabird-related proxies from dated sediment cores, such as nutrients and trace metals, it is possible to reconstruct a seabirds' population dynamics. My current work aims to address questions such as: When did the recent decline in Leach's Storm-petrel begin? Are declines related to natural population dynamics or are they human-induced? How naturally variable are large seabirds' colonies that are traditionally considered stable through time? These questions, and many others, can be answered using the data only available in lake sediment cores.

"Dated sediment cores can provide trends in the colony size before modern surveying, which is critically important to understand the cause of recent declines."

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Postcards from the Field (Continued)

Lauren Clark (MA Student) Simon Fraser University, Canada

Lauren Clark has just completed the first year of her master's in the Archaeology department at Simon Fraser University in Burnaby, British Columbia, Canada. She is broadly interested in the applications and methods employed in ancient sediment DNA (sedaDNA) studies in service of both archaeology and conservation paleobiology. To combine her interests, she has chosen to focus her thesis research on comparing the efficacy of various extraction methods of sedaDNA among stored sediment samples obtained from the Bridge River archaeological site in interior BC. In order to acquire primarily ancient genetic material, the extraction of DNA from sediment will take place in a positive pressure lab facility and will follow strict clean-room protocols as Lauren is demonstrating in this photo in Simon Fraser's ancient DNA lab.

Matthew Adeleye (PhD candidate) Australian National University, Australia

My research focuses on understanding landscape changes and drivers of change on the Bass Strait islands, southeast Australia, using sedimentary fossil pollen, non-pollen palynomorphs and charcoal records. Specifically, I am interested in understanding pattern and timing of indigenous land-use change, as well as changes in vegetation and fire regime in the area during the Holocene. The field photo features one of my coring sites and me labeling a surface moss sample, which is also being analyzed to better understand how modern pollen at each site represents present vegetation in order to better reconstruct past vegetation changes in the area.

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Postcards from the Field (Continued)

Alejandra Rojas (PhD, Assistant Professor)
Universidad de la República, Uruguay

Greetings from Uruguay! Here you find me shovel in hand while sampling a shelly death assemblage from the beach "El Caracol" ("The Snail"). I collect samples in different beaches from the Río de la Plata Estuary and the Atlantic Uruguayan coasts. I am interested in comparing the molluscan species and the taphonomic signatures recorded in different kinds of environmental and depositional settings. Data obtained in terms of molluscan diversity and preservational modes of the death assemblages will be correlated to intrinsic and extrinsic factors (i.e. salinity gradient, rocky and sandy substrate, etc.). This information is expected to provide important clues for the paleoecological and paleoenvironmental interpretation of the fossil counterparts found in the same study area. Photo taken by Martín Ubilla.

Featuring Oceans Past Initiative (OPI)

We write to introduce members of the Conservation Paleobiology Network to the Oceans Past Initiative (OPI), a grass-roots, not-for-profit, scholarly community focused on global research at the intersection of marine science and maritime environmental history. Evolving out of the History of Marine Animal Populations (HMAP) project within the Census for Marine Life (2000-2010), OPI welcomes anyone interested in the history of humankind's interactions with life in the oceans including paleo-ecologists and climatologists, archaeologists, marine environmental historians, economic historians, oral historians, historical ecologists, fisheries historians, and marine environmental and fisheries policy makers and managers, among others. With this aim, we hope marine and coastally oriented conservation paleobiologists interested in interdisciplinary explorations of past oceans will find common interests with OPI. Our goal is to enhance knowledge and understanding of how the diversity, distribution and abundance of marine life in the world's oceans has changed over the long term to better indicate future changes and possibilities. OPI hosts semi-annual conferences (the last one, OP VIII, was online and the next one will convene in May 2021, in-person if possible, in Ostende, Belgium), a web portal to the OBIS and HMAP data archives, as well as links to major research activities central to the OPI community (to be expanded). We also put forward a quarterly e-newsletter, the Oceans Past News, where we share announcements as well as resources and research on historical perspectives of marine social-ecological systems.

OPI invites you to check out the Oceans Past Initiative website (oceanspast.org) and consider attending an upcoming meeting. You can also find our current and archived Oceans Past News, and we welcome content that is relevant across our communities. Please do get in touch with any questions at info@oceanspast.org.

OCEANS PAST INITIATIVE

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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!

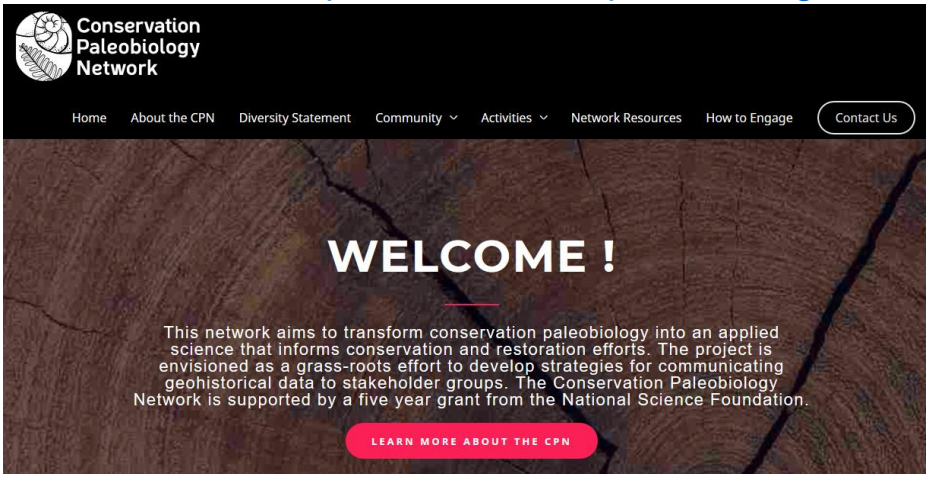
If you know people who might be interested in our network, please invite them to join. You can use the link below to extend your invitation on behalf of our network.

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 and online forum
2. Vote on future elections to CPN committees and panels
3. Nominate and self-nominate for committees and panels
4. Submit announcements for publication on the CPN website
5. Apply to participate in the CPN activities
6. Submit proposals for CPN field courses and CPN working groups
7. Submit proposals for webinar modules

To join please go to: https://conservationpaleorcn.org/contact/

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



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