

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.



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Meet the Steering Committee

The Conservation Paleobiology Network is organized into groups of people who share responsibilities for organizing, developing, and advising various components of the network. We will be highlighting these groups in the coming issues of the newsletter.

The steering committee (pictured below in alphabetical order) has nine members, including the Principal Investigator, Program Coordinator, and Student Representative. These members have expertise in a wide range of disciplines related to Conservation Paleobiology, including paleoecology, vertebrate paleontology, invertebrate paleontology, conservation management, anthropology, environmental archaeology, and marine biology. They also come from various institution types, including universities, museums, governmental institutions, and non-profit organizations.

Steering committee members play a role in overseeing network activities, and some of them are also involved more directly in one of the network's panels or other activities. Their expertise helps guide the network in the direction that best serves the discipline's community and the network's current and future member base.

In addition to the steering committee, the network also has an advisory group, with specific areas of expertise valuable to the development of the network. Together, the advisory group and the steering committee make up the network's planning team. For more information about all individuals on the planning team, please visit our webpage.

<https://conservationpaleorn.org/planning-team/>



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Conservation Paleobiology Research Highlight By Stephen Hesterberg

Archaeological middens reveal decline in oyster size and reef resilience along a "pristine" Gulf of Mexico Coastline

Over the last two centuries, North American fisheries for the eastern oyster (*Crassostrea virginica*) have collapsed in sequence, beginning first in the Northeast and then spreading down the coast through the Mid-Atlantic and Southeast. Intense development and exploitation of oysters arrived much later to the Gulf of Mexico, which led to the view that this region might be relatively pristine and a "last remaining opportunity" for sustainable oyster fisheries.

Middens and burial mounds comprised mostly of *C. virginica* shells dot the coastline of the Gulf of Mexico. Many of these paleoarchives were built by indigenous peoples prior to European contact and provide opportunities to examine whether oyster reefs today are "natural" relative to baselines before intensive exploitation. We examined oysters collected from the Crystal River Archaeological Site (AD 50–1050), one of the largest prehistoric sites along Florida's Gulf Coast.

Throughout the middens' layers, which represent nearly 1000 years of harvest, we find a size class of "colossal" oysters (up to 180 mm shell length) that exists nowhere in Florida today. On modern reefs in the Crystal River area, oysters reach a maximum size class of 120 mm, with most individuals being much smaller (50 mm). Isotope sclerochronology data reveal that size decline resulted from both reduced growth rates and a contracted life history. Although the timing of loss is still unknown, accounts from the late 1800s document sporadic occurrences of massive *C. virginica* in New England (>350 mm) and in the northern Gulf of Mexico (>200 mm). Yet, these colossal oysters are not captured in the first ecological assessments of the Gulf Coast, which began after 1950.

Our work corroborates a growing number of studies that document the loss of larger, older oysters across North America. Since large oysters contribute disproportionately to ecosystem function and population resilience compared to smaller size classes, large-scale ecosystem collapse has probably already occurred. If management practices continue to focus on easily gathered metrics of habitat area and do not begin to prioritize oyster size and life history, what habitat remains will be at high risk of further, rapid decline. The on-going collapse of the historic Apalachicola fishery supports this view. Even if past size structures cannot be fully realized in the Anthropocene, even modest steps toward size and demographic recovery could be critical in preventing remaining habitat from future collapse.

Figure Caption: Largest prehistoric (right) and modern (left) oysters sampled from Crystal River, Florida. Size classes ranging up to 180 mm are no longer found along Florida's Gulf Coast.



For more details please see article by Hesterberg and colleagues in *Biology Letters*:
<https://doi.org/10.1098/rsbl.2019.0865>

"Our work corroborates a growing number of studies that document the loss of larger, older oysters across North America."

Practitioner Perspective

Interview by Alexis Mychajliw

Featured practitioner: Elizabeth Hiroyasu

Elizabeth Hiroyasu received her PhD from UC Santa Barbara's Bren School of Environmental Science & Management in 2020. Her research addresses the human dimensions of wildlife management across a range of ecological contexts and organisms, such as attitudes towards the eradication of feral pigs and the reintroduction of California grizzly bears. She has co-authored articles in academic journals such as *Human Dimensions of Wildlife* and *Trends in Ecology & Evolution* as well as delivered reports for non-governmental groups such as the Tejon Ranch Conservancy. She now works for The Nature Conservancy [TNC]'s California Chapter as a landscape scientist, where she supports the cities team, which works to make cities more resilient and sustainable using nature-based solutions. One of the specific projects she works on is developing an interactive conservation map – a “Greenprint” in partnership with the Southern California Association of Governments to guide decision-making for a region of more than 19 million people.



Dr. Elizabeth Hiroyasu

1. In your PhD you studied the ecological and human dimensions of feral pig management. What did you study and what opportunities do you see for archaeological records to contribute to the discussion?

I conducted a global synthesis of wild pig (*Sus scrofa*) populations, comparing their dynamics in their native versus invasive ranges. In many places today, wild pig populations are a mixture of released domestic farm pigs or escaped Russian boars from hunting reserves. In this regard, it is pretty obvious that the populations are non-native, given their known Eurasian origin. However, some gaps I found were in Polynesia and Hawaii, places where pigs may descend from populations brought by people hundreds of years ago. A temporal perspective could help us quantify the ecological impacts of pig diet and behavior and address how they change over time. This is important when dealing with complex management questions. For example, in Guam, the recent introduction of the brown tree snake has resulted in the loss of numerous frugivorous birds, such that pigs may be playing the role of seed dispersers. If we want to keep “natural” vegetation, do we keep the pigs?

2. How do you include local communities in your conservation research?

At TNC, we have staff members whose job it is to go out and talk to constituents, and our projects that touch down in specific places typically have steering committees with representation from local community groups. For example, on the Greenprint I am working on, we are spending all this time and effort to create a tool, so we want to make sure it is actually usable! We need to ask ourselves: Where are the decision points? How can we provide information to inform decision-making in favor of conservation in equitable ways?

3. Where do you look for information about the past? Are there ways paleontologists can better reach practitioners?

I rely on spatially explicit datasets available in the literature, and these are rarer for historical time periods. Having data be available and freely accessible is really critical to my work. If I was looking for something specific, I would probably reach out to the local natural history museum, in this case, the Natural History Museum of Los Angeles County. I would also tap my professional network – but this depends on me having colleagues who work outside of my discipline, which I recognize that not everyone has if they did not have an interdisciplinary graduate program.

4. What is a recent project that could have benefitted from historical/ fossil data?

It would be cool to incorporate fossil and historical data into the work I am doing on the Southern California Greenprint. Agriculture is an important component of people's identity in Southern California, yet we are losing agricultural lands to development. Right now, we are asking “how do we leverage that sense of identity and place to protect these historical landscapes?” I can see going even further into the past using fossils to create this sense of identity. It would be great to map Southern California fossil locations in a way that protects resources but also shows people that these clues from the past are right in their backyard. How do we connect people to the past to help think about our desired future?



Photo caption: Feral pig (image is in public domain)

5. Aside from providing data points, what do you think fossils add to the conversation about conservation where you work?

Fossils create a sense of place and are a way for people to tangibly engage with the past. Because fossils are physical objects, it is much easier for the general public to appreciate them as facts about the past, and we can use fossils to help people understand why things are the way they are today.

6. What message would you have for potential collaborators interested in contributing to conservation work?

Do not be afraid to reach out and market yourself and what your discipline can bring to the table. It can be helpful to give a specific example up front of how your data is really relevant to conservation. We can all benefit from getting out of our disciplinary silos and should embrace innovation in conservation thinking.

7. What is your favorite fossil?

I really, really love the dinosaur hall at the Natural History Museum of Los Angeles County!

List of some upcoming conferences relevant to CPN members

12-16 Oct 2020	Society of Vertebrate Paleontology (SVP) Annual Meeting	(Virtual)
26-30 Oct 2020	Geological Society of America Annual Meeting 2020	(Virtual)
11-12 Nov 2020	Micropalaeontological Society Annual General Meeting 2020	University College London, UK
1-17 Dec 2020	American Geophysical Union (AGU) Fall Meeting	(Virtual)
4 Dec 2020	1st Meeting of the ICAZ Zooarchaeology of the Modern Era Working Group	Newcastle University, UK
13-16 Dec 2020	5th World Conference on Marine Biodiversity	Auckland, NZ
16-18 Dec 2020	The Palaeontological Association Annual Meeting	(Virtual)
3-7 Jan 2021	Society for Integrative and Comparative Biology	Washington DC, USA (Virtual/Hybrid)
7-15 Jan 2021	International Union for Conservation of Nature (IUCN) World Conservation Congress	Marseille, France
14-18 Apr 2021	Society for American Archaeology	San Francisco, CA, USA
25-30 Apr 2021	European Geosciences Union (EGU): General Assembly 2021	Vienna, Austria
8-23 Jul 2021	14th International Coral Reef Symposium (ICRS 2021)	Bremen, Germany (Virtual/Hybrid)
18-22 Jul 2021	International Congress for Conservation Biology	Kigali, Rwanda
1-6 Aug 2021	ESA (Ecological Society of America) Annual Meeting	Long Beach, CA
5-8 Sep 2021	Crossing the Palaeontological-Ecological Gap (CPEG)	Berlin, Germany
10-13 Oct 2021	Geological Society of America Annual Meeting 2021	Portland, OR, USA

For Student Members Compiled by Jaleigh Pier

With another semester underway, we thought it would be useful to share advice for our student members. Advice was generously provided by CPN members and we hope to create several additional resources to help students in every aspect of their academic journey. If you have not yet contributed and would like to do so, you can access the student advice survey here: <https://forms.gle/GRL0DMYuSLR8fydj8> or email conservationpaleo@floridamuseum.ufl.edu. Thank you to all who have contributed!

Eight Bits of Valuable Advice for Students:

1. “Your peers and fellow researchers are not your competitors, but your comrades. Only together you can reach the biggest goals!” *~Anonymous PhD Student*
 2. “Stay healthy above all, including mental wellbeing, do not let stress overwhelm you.” *~Anonymous Faculty*
 3. “A kind supervisor is crucial not only for your professional success, but also for your personal wellbeing. Ask students of your potential supervisor about the atmosphere in the working group before joining it.” *~Anonymous PhD Student*
 4. “Establish support networks, not just for work and research, but for mental health and well-being. School can be challenging and these are unprecedented times. It's okay to feel scared, isolated, or overwhelmed. Establishing support networks early on can help you navigate these feelings and make adjustments to your life as needed. Lastly, do not be afraid to seek professional help. Most schools have dedicated psychologists and therapists who's sole purpose is to help you, and they can make a difference.” *~Anonymous PhD Student*
 5. “Work-life balance is critical. Grad school is a marathon, so celebrate your accomplishments - however small - along the way, find activities outside of work that you enjoy, and let yourself relax from time to time (hopefully without feeling guilty!). A wise graduate student once told me that she wouldn't stay up past midnight working unless she had a deadline. There is always more work to do, but you'll likely find yourself to be more productive and happier if you take breaks and get enough sleep.” *~Anonymous PhD Student*
 6. “Make SMART goals - Specific, Measurable, Achievable, Relevant, Time bound. Finding an organization system early on that works for you will help break large tasks down into actionable, bite-sized chunks.” *~Anonymous PhD Student*
 7. “Your grades do not define you or your worth.” *~Anonymous PhD Student*
 8. “Be enthusiastic: I am constantly impressed that enthusiasm will carry you places you cannot imagine. Everyone can be caught by enthusiasm, and if you are genuine about yours', you can drag an amazing collection of people along into your world and vision. People who are too serious or too reserved cannot pull this off and have to get by on the strength of their ideas (or having the fortune to have a popularizer pick up the ball).” *~Richard Norris, Scripps Institution of Oceanography*
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Conservation Paleo in the Time of COVID

Compiled by Jaleigh Pier

Many of us around the world have been impacted by the current pandemic. We were curious how people in the field of conservation paleobiology are getting creative with both productivity and their work/research methods. Here we would like to share how some of you have adapted as scientists, students, practitioners, etc. in this new environment.

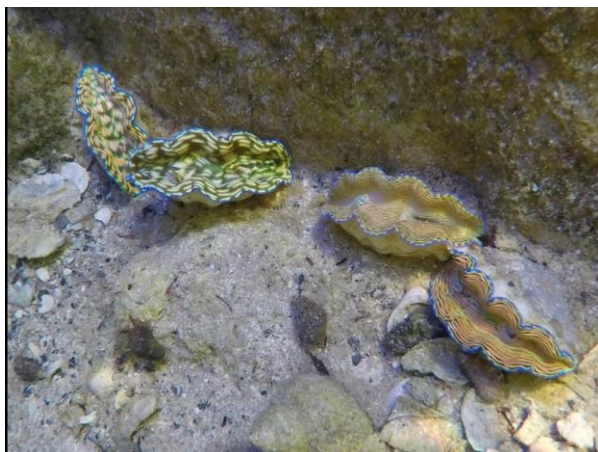
Hazel Gordon, Western Interior Paleontological Society

My paleo group had a recent field excursion for part of a day to visit a Pennsylvanian site in Colorado that showcased lycopsid fragments. We could not collect on this site, wore masks and mostly kept our distance from others, although that was difficult to do when transmitting information orally. The diversity of this small group of about a dozen folks included practitioners and volunteers in wildlife research, petroleum geology, paleontology, science and geology education, geologic mapping, ecology, and more. The sharing of ideas and problem-solving between us couldn't have been better!



Daniel Killam, Postdoctoral Researcher, Biosphere 2

I started a postdoc at University of Arizona Biosphere 2 in May, but because the Biosphere has been closed, I thought my project would have to wait several months to begin. But because a small group of essential staff including aquarist Katie Morgan continued operations during that time, we were able to start up our planned project to culture giant clams in the giant ocean reef tank inside the Biosphere. It felt like science fiction, to help oversee the two-week quarantine period and introduction of the clams to the main tank via Zoom from outside the structure, hundreds of miles away. It might as well have been another planet! I just moved to Tucson and the clams are now sitting waiting for me during my own quarantine period. In a few days, I will begin my work observing their biomineralization and fluctuations in their shell geochemistry within the highly monitored reef environment of the ocean tank, coupled with comparison to geochemical records from wild fossil and modern clams. My research would not be happening without the help of heroic essential workers, and I am eternally grateful!

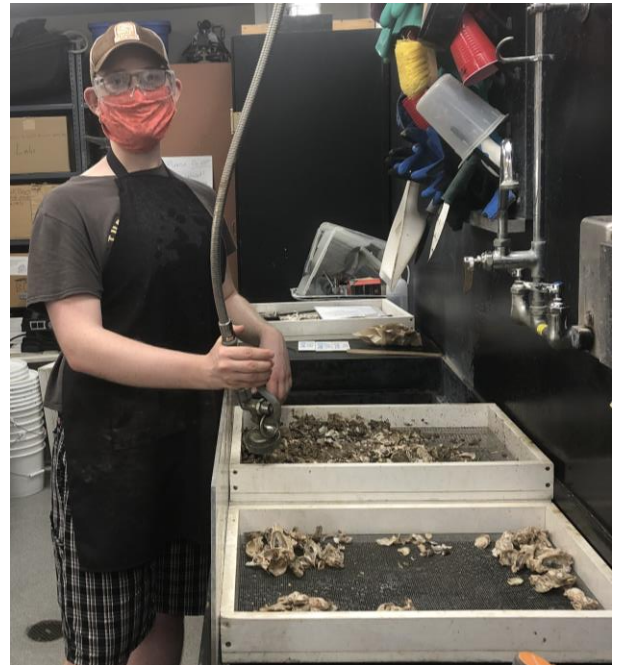


Specimens of *Tridacna derasa*.

Conservation Paleo in the Time of COVID (Cont'd)

Jaleigh Pier, Paleontological Research Institution, HOBS II Project Manager

At the Paleontological Research Institution (PRI) in Ithaca, NY, Dr. Greg Dietl is collaborating on a conservation paleobiology project with the Office of Resilience and Coastal Protection (Florida Department of Environmental Protection). The historical oyster body size (HOBS) project is using dead oyster shells collected from reefs around Florida to gather historical oyster body size data to guide habitat management and public policy decisions. The labs at PRI are back up and running from their three-month pandemic closure with social distancing and sanitizing protocols in place.



PhD student Matthew Pruden in the Paleo Lab at PRI.



Dr. Tricia Kelley

I have been in Seattle since the start of the pandemic, having stopped off here as I returned to the US from the Association for Women Geoscientists (AWG) field trip to New Zealand. All my responsibilities on the east coast (e.g., SENEGSA) got canceled and so I have stayed on to help my daughter with her two young children while she and her husband try to work from home while daycare is closed. When I am not helping with the family, I am keeping up with Paleontological Society and AWG responsibilities and trying to squeeze in some research – currently working on three papers, two of which are CPB related. I spend a lot of time in Zoom meetings with AWG and PS committee members and talking to coauthors, often while holding a baby.

Postcards from the Field

Compiled by Fernanda Cabrera and Jaleigh Pier

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 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!

Marta Perez Fernandez (PhD) Royal Holloway University of London, England

This year I did some investigation in honey and pollen as part of the 3rd module that introduces students to the drivers of Biodiversity changes on Earth. We have some apiaries here at the university so I got some honey from the beekeeper and compare the pollen found in the honey with the vegetation in the campus. I analyzed the pollen content of the honey under the microscope. It was very interesting; most of the bee-hives went for the trees near their homes, especially the horsechestnut trees. Although one of the bee-hives ventured into town and went for the lavender plants. I have found it so interesting that now I tend to different honey samples and check the pollen content. I have found out that most of the supermarket honey does not really have the pollen that they advertise in the jar.



Scott M. Fitzpatrick (PhD) University of Oregon, United States

Recent archaeological research at the Fort Point site (35-CU-11), a small promontory situated along the southern Oregon Coast, has focused on examining early Native American use of marine resources and an important historical event that occurred on a nearby sea stack known as Battle Rock. On June 9th, 1851, William Tichenor, captain of the steamship *Sea Gull*, entered present-day Port Orford with the intent of establishing a trading outpost for gold miners in the region. He left nine men with small arms and a cannon and continued up the coast, promising to return in a few weeks' time. As expected, the sailors were attacked and repelled several attempts to overtake them, killing more than 10 local Native Americans and injuring many others. Discoveries include dense midden deposits, projectile points, musket balls, and remnants of a hearth, some of which may directly relate to the events that transpired as part of these skirmishes.



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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!

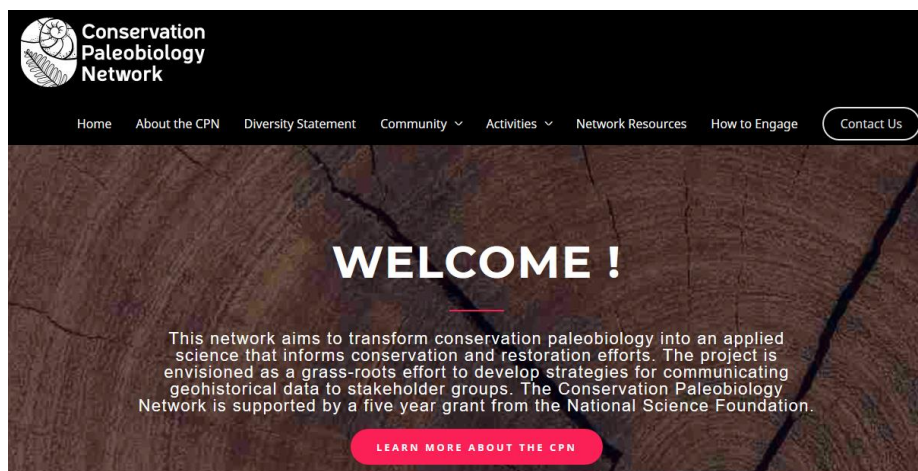
If you know people who might be interested in our network, please invite them to join. You can use the link below to extend your invitation on behalf of our network.

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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