

# INCP Newsletter



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## Become a Member of the INCP

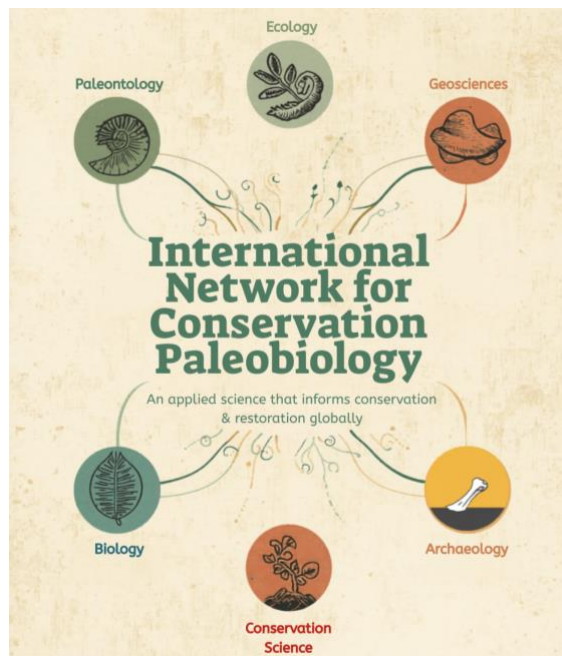
We are excited to announce that you can now sign up for membership in the International Network for Conservation Paleobiology (INCP)!

The INCP is a 501(c)(3) non-profit organization created for the purposes of advancing the science and application of Conservation Paleobiology internationally, building on the foundation of the Conservation Paleobiology Network (CPN). Visit our webpage to learn more and join:

<https://conservationpaleorcn.org/>

Member benefits include:

- First to hear about professional awards and student grants
- Opportunities to network with conservation paleobiologists
- Eligibility to lead a professional working group
- Nominating and voting for elected network officers on the executive committee
- Joining the INCP mailing list to send and receive info related to conservation paleobiology
- Promoting K-12 educational outreach
- Supporting Conservation Paleobiology efforts worldwide



Membership fees start at \$20/year for student membership and \$40/year for regular membership. Membership fees can be waived based on financial need.

**Image caption:** INCP interfaces with many different disciplines.

## Conservation Paleobiology Research Highlight

By John Wendt, New Mexico State University, USA

### Drought and the abandonment of a Montana bison kill site

In spring 2026, drought gripped much of the Great Plains, and the U.S. recorded its driest January–March in the 131-year instrumental record. Roughly 1,700–700 years ago, Indigenous hunters and bison herds on the Northern Great Plains faced severe multidecadal droughts. How bison and hunters adapted to those droughts, and how those systems worked over centuries, offer clues to persistence in drought-prone ecosystems today.

The Bergstrom site in central Montana was used intermittently by bison hunters for roughly seven centuries before archaeologically visible use ceased near 1,100 cal yr BP. To understand its abandonment, we combined archaeological excavation and radiocarbon chronology with multiproxy riparian paleoecology (pollen, macroscopic charcoal, and coprophilous fungal spores from sediment cores in the adjacent creekside wetland), together with regional drought reconstructions and a synthesis of radiocarbon-dated bison occurrences across the region.

Proxies showed stable vegetation, low fire activity, and persistent large-herbivore presence through and after abandonment, but severe drought repeatedly disrupted the site's marginal water supply. Regionally, archaeological bison occurrences rose 5.5-fold through the Holocene while paleontological occurrences (bison remains from non-cultural contexts) remained relatively stable. This widening gap reflects intensified hunting and an expanding human presence, not merely more bison.

*“Strategies that promote landscape heterogeneity, maintain habitat connectivity, and tolerate variability in herd size may help contemporary systems weather future drought.”*

The abandonment of the Bergstrom kill site was likely due to a convergence of constraints: drought reduced water for processing carcasses, just as hunters in the region shifted toward larger, coordinated communal hunting that required more water, space, and infrastructure.

For millennia, persistence of bison–human systems was supported by spatial heterogeneity, episodic site use, and the capacity to reorganize as drought changed resource distributions. Modern bison management within fixed boundaries often lacks that flexibility. Strategies that promote landscape heterogeneity, maintain habitat connectivity, and tolerate variability in herd size may help contemporary systems weather future drought.



**Image caption:** Students uncovering bison bones at the Bergstrom kill site (photo: Michael Neeley).

For more information, see: Wendt, J. A. F., Neeley, M., Alt, M., Ewing, S. A., Fischer, G. S., & McWethy, D. B. (2026). American bison kill site use and abandonment amid drought and cultural shifts in late Holocene Montana. *Frontiers in Conservation Science*, 6, 1688950.

<https://doi.org/10.3389/fcosc.2025.1688950>

## Practitioner Perspective *By Lucia Snyderman*

**Dr. Joacim Näslund – Fish biologist at the Institute of Freshwater Research, Sweden**



**Image caption:** *Dr. Joacim Näslund.*

### **1. How would you introduce yourself to our readers?**

I am a fish biologist working at the Institute of Freshwater Research (Swedish University of Agricultural Sciences) at Drottningholm, near Stockholm. I have been working with virtually all aspects of fish biology at one point or another, but recently the focus is monitoring and assessment of Swedish rivers, and riverine restoration questions.

### **2. Tell us about your work on species reintroductions in Sweden.**

With respect to the sturgeon work, I am mainly a desk jockey (I have not even seen a live Atlantic sturgeon, although I hope that changes soon). I have surveyed the historical literature; mainly newspapers and other catch reports, but also digging a bit more into some cultural details concerning sturgeon in Sweden.

Furthermore, I have helped writing permit applications and try to give some advice regarding study design and release strategy. My work within environmental assessment helps when it comes to arguing to recreate original ecosystems, since “reference state” is a major feature within environmental aims set by the European Union Water Framework Directive. My work and collaborations around rearing and stocking of fishes have also been very useful when giving advice to the core sturgeon team in Gothenburg.

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

Historical knowledge about species is very important to understand what we have today and what we have lost. Spreading the information, both within the academic community, the general public, and to stakeholders and decision makers, can likely improve conditions for conservation efforts. Interesting stories always help to sell an issue, but exaggerations may end up biting you in the back. Usually, though, there are enough interesting details to present without any need to “oversell” a story. People are often very interested, even if they may not know it themselves at the start of a conversation. Generally, I would encourage all biologists (regardless of sub-field) to find and read the old documents concerning their study species – lots of previous knowledge gets lost over time, but it can be retrieved and reintroduced into the current knowledge base.

## Paleo Proxy Spotlight – Shark Teeth

By Sahale Casebolt

### Shark teeth as fossils

Sharks have existed for hundreds of millions of years in marine habitats, where they are diverse and abundant. Although their cartilaginous skeleton does not fossilize well, the teeth and dermal denticles embedded in their skin that they shed throughout their lives are well preserved in the fossil record. Shark teeth are composed of extremely durable materials, consisting of enameloid covering dentine, and shed or break away when sharks eat and regrow continuously throughout their lifespan. A single shark can shed thousands of teeth during its lifespan.

Because of this continuous tooth shedding, the durable material of the teeth, and the high preservation potential of the marine depositional environment where sharks live, shark teeth are common fossils, and can serve as valuable paleo-proxies (geochemical archives) due to their durability and the presence of strontium.

### Strontium in shark teeth

Fossil shark teeth contain the strontium. Strontium is an element that is present in the ocean and is stable in sea water at any given time. The ratio of isotopes Strontium-87 to strontium-86 shifts over millions of years due to climate, tectonics, and magnetism. This change allows it to be used to date calcium carbonate shells and teeth of marine organisms (DePaolo and Ingram 1985). The outer layer (enameloid, which is like the enamel of human teeth plus collagen fibers) of shark teeth may be more resistant to alteration than other tooth material (e.g. dentine). This method of dating has many applications, including for conservation paleobiology of marine organisms such as sharks (Barrat et al. 2000) and even land mammals (Killingsworth et al. 2025).



*Image caption: Fossilized shark teeth are abundant in the fossil record.*

## Paleo Proxy Continued

### **Shark teeth/ strontium as a paleo proxy**

The use of shark teeth as a paleo proxy to date Neogene (23.5 to 2.6 Ma) terrestrial fossils is important, because there are fewer options for dating land mammals (Killingsworth et al. 2025). For example, these authors demonstrated that two terrestrial fossil sites in Florida, the Montbrook Fossil Site and the Palemetto Fauna of the Bone Valley Region, and found that fossil shark teeth were a way to use strontium isotopes to date fossil sites when carbonate material was unavailable or unsuitable for dating due to alteration (diagenesis). This led to important implications for the timing of animal migrations from South America to North America, and for better understanding mammal dispersal patterns in the past.

### **Shark teeth and conservation paleobiology**

Sharks face many conservation challenges in the modern world, including habitat loss, overfishing, and climate change. Conservation paleobiology has the potential to improve shark conservation efforts by increasing our understanding of sharks in the past, from before modern records on shark abundance and distribution became available. Furthermore, the information obtained from shark teeth can help other conservation efforts, even those not in the marine environment, making them a useful paleo proxy and a valuable tool for conservation paleobiologists.

### **References**

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- DePaolo, D. J., and B. L. Ingram. "High-resolution stratigraphy with strontium isotopes." *Science* 227, no. 4689 (1985): 938-941.
- Killingsworth, S. R., S. M. Moran, B. J. MacFadden, V. J. Perez, J. Pirlo, and M. J. Ziegler. "Marine strontium isotopes preserved in fossil shark teeth calibrate Neogene land mammal evolution." *Palaeogeography, Palaeoclimatology, Palaeoecology* 661 (2025): 112698.
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**Instagram**  
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## 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 [incp@conservationpaleorcn.org](mailto:incp@conservationpaleorcn.org)*



**Image caption:** *Collection of a modern surface sediment sample for pollen analysis from a muddy vegetated wetland.*

### **Sangram Sahoo - Birbal Sahni Institution of Palaeosciences Lucknow, India**

I am Sangram Sahoo, a Fellow and PhD Research Scholar at the Birbal Sahni Institute of Palaeosciences, Lucknow, enrolled under the AcSIR India. My research, focus to unravel how natural processes and human pressures together control the growth, decline, and shifting patterns of mangroves in the Sundarbans over time, uses a conservation palaeobiology outline to reconstruct long-term mangrove ecosystem responses to climate shifts, sea-level change, and human activities over the past several millennia. By integrating multi-proxy approaches, including palynology, sediment geochemistry, and radiocarbon dating, this work establishes deep-time ecological baselines to understand regional environmental change within a global paleoclimate context. These data will enable robust paleoclimate reconstructions and help identify past drivers of change, ecosystem shift, and long-term persistence in tropical coastal ecosystems facing accelerating climate change, thereby improving future predictions.



**International  
Network for  
Conservation  
Paleobiology**

## 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 [incp@conservationpaleorcn.org](mailto:incp@conservationpaleorcn.org)

## 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 mailing list
2. Nominate and self-nominate for committees and panels
3. Submit announcements for publication in the INCP Newsletter
4. Apply to participate in the network activities
5. View webinars and submit proposals for webinar modules

To join please go to our website and select "Join the Network"

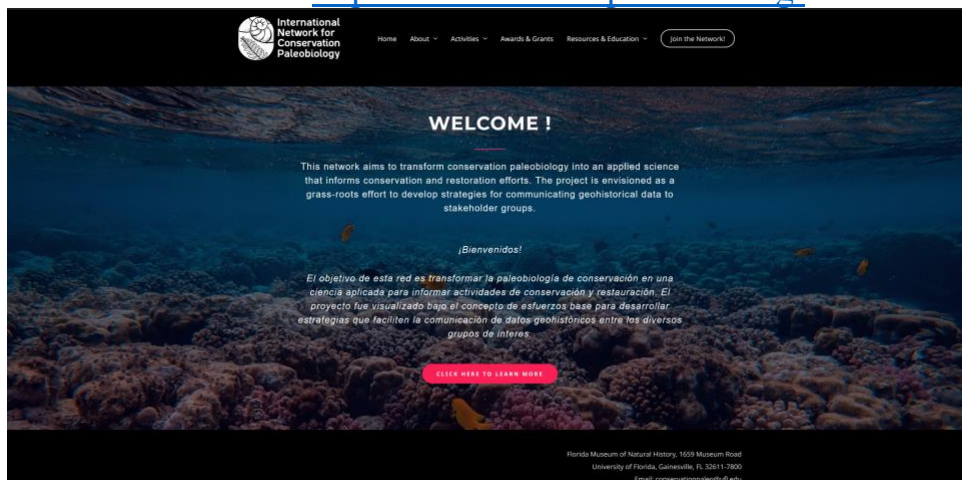
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