OCEANS PAST NEWS No.15

2020

OCEANS PAST INITIATIVE

Entering a new decade - together

Photo: At sunrise, Native guides ready a skiff (from Editor's recent trip salmon fishing in Kodiak, Alaska (Alutiiq lands).

2020. A new decade. When we think back over what has been achieved – and what has changed – since 2010, I encourage us all to look forward with hope at what we might do in the coming years. I strongly believe a critical aspect of that progress – and that hope – is what we can achieve **together**. In this first issue of Oceans Past News for the 2020s, I was struck and heartened by the emerging collaborations we are highlighting this month – collaborations that cross disciplines and institutional boundaries, to create new resources and better protect our oceans and our communities. This sentiment is echoed in by **Dr. Matt McKenzie**, a maritime historian, in his Spotlight, given his work with the New England Fishery Management Council, and his interest in ecosystem-based fishery management.

Here's to 2020, and what we do in the next decade – together.

Emily S. Klein

Frederick S. Pardee Center for the Study of the Longer-Range Future, Boston University / OPN Editor

Dr. McKenzie (Photo: SUNY Maritime)

OCEANS PAST SPOTLIGHT*

***Dr. Matthew McKenzie**, Professor of History & American Studies Program Coordinator, University of Connecticut; Connecticut Obligatory Delegate, New England Fisheries Management Council.*

***Q1**. First – a brief introduction: can you describe your research in two sentences or less?*

I explore the changing long-term relationship between New England fish, fishermen, fisheries scientists, fisheries managers, and New England society writ large. In particular, I have been interested in how cultural systems shape the use, abuse, and management of marine resources, and how, in turn, changing marine ecosystems shape human culture.

***Q2**. Why do you find research on the past important?*

As a fisheries manager [with the New England Fishery Management Council], I'm struck with how shortsighted our decisions tend to be. Not only does the New England Fishery Management Council look only three years or so into the future, we generally ignore anything five years old or older. A longer-term perspective, I believe, will only help us understand how our marine ecosystem has changed, better inform stock assessment and modelling for ecosystem-based fisheries management, and offer a clearer visage of what might be possible in the future.

Each issue of Oceans Past News includes a feature article, as either an **Oceans Past Spotlight or as **10 Questions**. If you would like be considered for either, or to nominate a colleague or mentee, please contact Emily Klein at emily.klein04@gmail.com.*

***Q3**. Was there a person or event that had a particular influence on your commitment to studying history and historical ecosystems?*

In 1986, as a high school student in Wood Hole, Massachusetts, I heard from my father's co-workers about a failure in the cod fishery. For the first time anyone could remember, New Englanders landed on 55,000mt (a biomass I would kill to have available on Georges Bank today). Within days, I saw local fishing vessels leave; fearless adults in my life show visible signs of worry and distress, and a community-wide concern that our working waterfront was in danger. That summer got me thinking about how human communities and fish communities are inextricably linked, even if we don't wish to see it that way.

***Q4.** What advice would you give those who want to engage in historical work or collaborate with our community?*

This may be a stretch, but I think the more training in historical methods and what historians call "source criticism" a scientist has, the better. This is more than just metadata for a dataset: such training allows a researcher to better interrogate a sources' origins and inclinations, allowing for a better assessment of those sources' utility and analytical heft.

***Q5**. Do you believe the past can help with solving contemporary environmental/social problems, and if so, what is one area we can provide insight on?*

I think the most promising emerging field for historical marine ecology is the turn to ecosystem-based fisheries management. Long-term historical data can allow us to better model fluctuations in ecosystem function, better understand how systems responded to a variety of perturbations, and identify past tipping points, when systems underwent permanent change. Ignoring the past blinds us to the future.

***Q6**. When you do assess our current environmental and societal challenges, what gives you hope?*

I see a growing acceptance of the need for better stewardship of marine resources across a wider spectrum of stake-holders than before. More locally, I see these folks accepting the need for better science, better data, and better-informed management. Whether we can see past the politics, well, that's another issue.

***Q7**. What knowledge would you like to pass on to the next generation, of the public or of scientists?*

I would like both to understand the fears and uncertainties that compelled people to take staunch and inflexible positions—ones that ultimately impeded constructive discussions between scientists, industry, decision-makers, and the public. Being able to avoid those dark areas will only help us better manage for today's needs.

***Q8**. What field of research – besides the one you are working in – do you consider most exciting?*

Again, the EBFM work is simply fascinating. Additionally, and this may be somewhat pedestrian, I'm intrigued by some modelling work testing how much missing catch reporting would be needed to "fix" out region's analytical stock assessment models. If those analyses hold up, we can get an idea of at least of order of magnitude of how much biomass our data collection system is missing.

***Q9**. What are you reading at the moment?*

Kim Stanly Robinson's *2312*, and Jonathan Scott's *How the Old World Ended: The Anglo-Dutch-American Revolution, 1500-1800*.

***Q10**. What is a critical but perhaps under-acknowledged question we as a community should be asking?*

I ask my New England Environment History course if they can identify a time when humanity was truly existing in both ecologically and socially sustainable ways. What if we've never been sustainable? If we look at our work in that way, then we recognize the magnitude of our task before us: far more demanding than putting humanity on the, moon, finding a way to balance modern life with global resources could be the biggest challenge we have ever faced. We should see it that way.

Dr. McKenzie at the helm (Photo: Nicholas Alley)

Rounding Cape Horn on an Antarctic exploration trip, 2002

FAREWELL

Dinah Molloy, Associate Fellow, Trinity Centre for Environmental Humanities. With her diverse life experiences as historical researcher and Polar explorer, lunar mechanical technician and NASA experimentation scanner, classical violinist and patron of the Arts, data analyst and data manager, computer programmer and developer, Dinah Molloy brought an array of skills and knowledge to Arctic history and science. Whaling and seal hunting, ships' voyages and crews, weather and climate, geospatial referencing and calculation all formed the academic study she produced.

As an Associate Research Fellow at Trinity College and a member of the Oceans Past Initiative community, Dr. Molloy leaves a legacy of research information for the future. One of her lasting works is the **British Arctic Whaling Database**, a project that encompassed her academic life and originated from the **British Arctic Whaling project** (*https://oceanspast.org/baw/*). The Database boasts a dataset of high-quality information that aid in understanding the ecological and economic aspects of whaling and seal hunting from the 17th Century CE up to the end of the "bounty" period, around 1850 CE, and later. This dataset lays a foundation crucial for establishing baselines on the volume and effort of whaling and seal hunting in the early modern period and for future research. As part of this work, Dr. Molloy developed a creative and ground-breaking methodology for categorising and organising multiple source records for assessment and verification. A further contribution of Dr. Molloy's British Arctic Whaling work is the valuable **British Sea Ice Index** (*https://oceanspast.org/baw/documents/ Sea%20Ice%20Index2.pdf*). Developed with **Matthew Ayre** (University of Calgary, Canada), this index explains descriptive prose surrounding sea ice, with historically accurate terminology definitions. ~ *John Nicholls (Trinity College, Dublin, Ireland)*

RESEARCH NEWS

North Sea oysters demonstrate the value of museum collections for understanding ecological patterns. Authors of a new study argue that, as archives of life on earth, natural history collections are critical for understanding biodiversity through time and can shed light on contemporarily relevant scientific questions, including connections between biodiversity, the environment, and people, on decadal to geological timescales. The authors provide their research as an example, using collections to study the decline of the European flat oyster, *Ostrea edulis*, in the North Sea and the concomitant invasion of the common limpet slipper, *Crepidula fornicata* - whose arrival may have had negative effects on *O. edulis*. The study employed museum collections to explore how populations of both species evolved over time in the North Sea, combining recorded temporal and spatial information from specimens in European natural history collections to reconstruct distribution and diversity over the past 200 years.

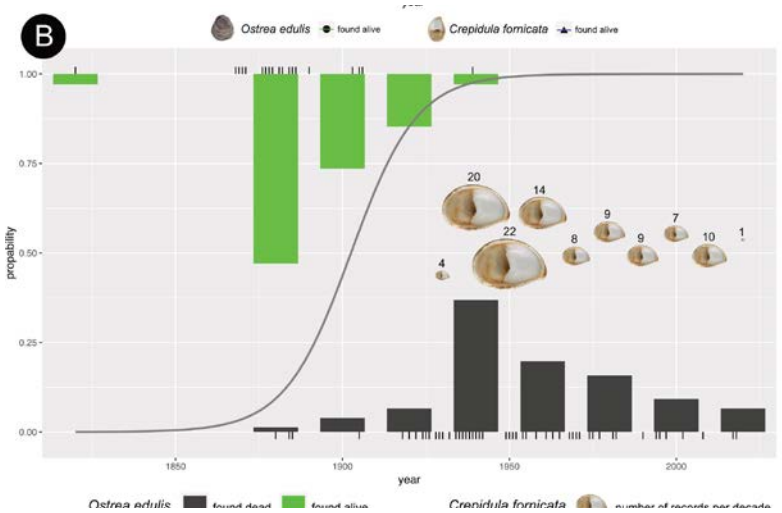
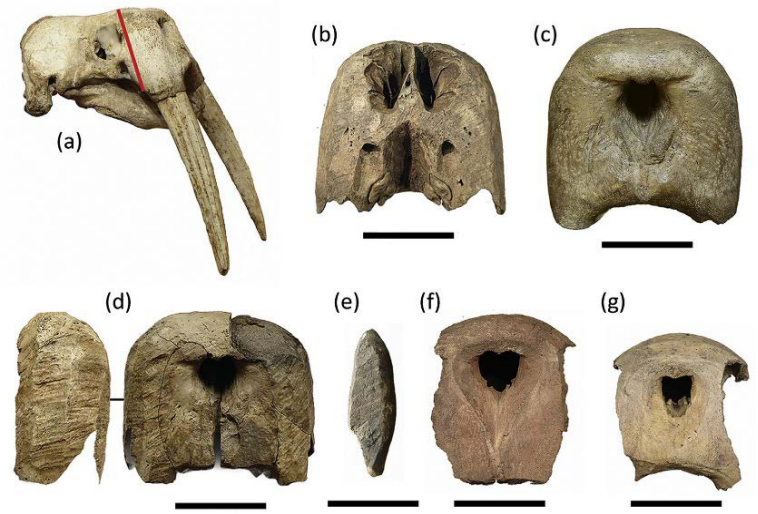


Fig 4B in the text. Logistic regression of the collection records of O. edulis *in the North Sea over time, showing the decreasing probability of oysters found alive over the years, alongside the number of* C. fornicata *museum records per decade. The y-axis denotes the conditional density of oysters found alive (= 1) or dead (= 0), and the x-axis the year of sampling.*

Results revealed the decline of *O. edulis* and the invasion of *C. fornicata* from the 19th century to the present in the North Sea – and that *O. edulis* were nearly gone before *C. fornicata* appeared. This latter finding suggests that *C. fornicata* may not have contributed to the local extinction of *O. edulis* in the North Sea. The work demonstrates how natural history collections can clarify patterns in ecosystems not possible with current data, and challenge current assumptions about ecological processes such as extirpation and invasion. *Publication: Hayer S et al. 2019. Coming and going – Historical distributions of the European oyster* Ostrea edulis *Linnaeus, 1758 and the introduced slipper limpet* Crepidula fornicata *Linnaeus, 1758 in the North Sea.* PLOS ONE *doi.org/10.1371/journal.pone.0224249.*



Subsection of Fig. 3 in the text. Modified walrus rostra: (a) modern skull for comparison; red line indicating plane of rostrum removal; (b) posterior view of R4 showing parallel chop marks (Trondheim); (c) R28 of Type 1 (Dublin); (d) R49 of Type 2 (Schleswig); (e) tusk-socket fragment with parallel chop marks from V51 Sandnes, Greenland; (f) control sample of Type 3 from Igaliku/Gardar, Greenland; (g) R12 of Type 4 (Bergen). Scale bars c.10 cm. Photographs by J.H. Barrett.

Interdisciplinary methods illuminate medieval walrus trade. Researchers investigated the medieval trade of walrus (*Odobenus rosmarus rosmarus*) ivory, aiming to explore outcomes for both people and ecosystems of early globalization using an interdisciplinary approach including *chaîne operatoire*, ancient DNA (aDNA), stable isotope and zooarchaeological analysis of walrus rostra (skull sections). The approach complemented and improved the spatial resolution of earlier aDNA observations, and the authors used it to identify the biological source and subsequent trade of walrus rostra through Indigenous and urban networks. They found Greenland as the likely sources of almost all medieval European finds of walrus rostra, and that these were redistributed via shifting urban trade nodes. The work sheds light on early human communities and trade, and suggests further ecological implications of emerging globalization: later medieval rostra were from smaller, often female, walruses of a distinctive DNA clade prevalent in northern Greenland. This result indicates more and smaller animals were increasingly targeted, and at longer distances from trade centers, providing strong evidence of resource depletion resulting from growing global demand. Finally, the work considered the intersections of walrus and elephant ivory trade, and the extent to which globalisation and the "resource curse" contributed to the abandonment of Norse Greenland. *Publication: Barrett et al. 2020, Ecological globalisation, serial depletion and the medieval trade of walrus rostra.* Quaternary Science Reviews. *doi.org/10.1016/j.quascirev.2019.106122.*

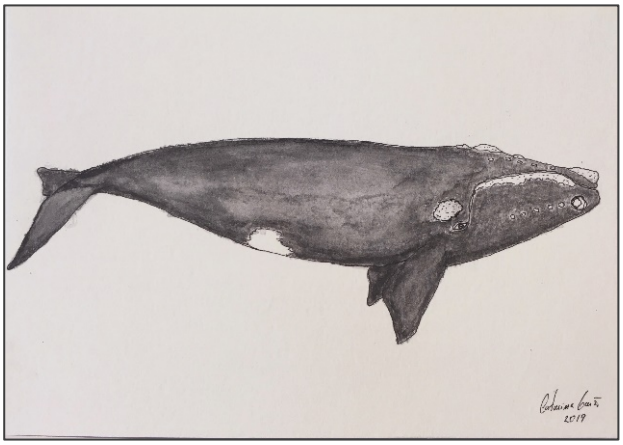
New study increases confidence in paleoecological approach for shark abundance over time. Understanding the population trends and declines of mobile, long-lived, and relatively rare species, like sharks, is critical for their sustainable management – especially given ongoing declines in many coastal shark populations. Despite this need, understanding previous abundances and trends in sharks over time is challenging. An emerging paleoecological approach to address this gap uses dermal denticle assemblages preserved in sediments to investigating shark abundance on coral reefs, but this approach assumes denticle accumulation rates correlate with shark abundances. In this work, the authors tested this assumption by comparing the denticle record in surface sediments to three conventional shark survey methods at Palmyra Atoll, Line Islands, central Pacific Ocean, where shark density is high and spatially heterogeneous. The authors found a significant positive correlation between denticle accumulation rates and shark abundances derived from underwater visual census, baited remote underwater video, and hook and line surveys, and that the accumulation rates did reflect shark abundances. This indicates the denticle assemblages can signal time-averaged shark abundance in low-energy coral reef environments, increasing confidence for its use as a paleoecological tool. Given this, the authors also suggest ways the tool can be used in other contexts. *Publication: Dillon et al. 2020. Dermal denticle assemblages in coral reef sediments correlate with conventional shark surveys.* Methods in Ecology & Evolution. *doi.org/10.1111/2041-210X.13346*.

COLLABORATIONS

Getting to the (sea) bottom of ammunition's dangers - The North Sea Wrecks Project (NSW-Project). The North Sea is littered with thousands of ship and aircraft wrecks from the two world wars, as well as millions of tons of conventional waste, ammunition, and chemical warfare agents. Additionally, bunker oil and hazardous cargo in sunken ships pose a threat to human beings, the environment, and blue growth operations, such as commercial and leisure navigation, tourism, mariculture, and offshore wind. The NSW-Project, supported by the European Union and with a budget of around four million euros, will set up a network, including a decision support database based on case studies, a risk assessment methodology, and policy recommendations. Scientific results from the Project (such as the location of environmentally harmful and potentially dangerous objects, the assessment and prioritisation of their risks, and the identification of wrecks of historical value) will be shared within the scientific research community as well as with public and political authorities. A key output will be a travelling exhibition, mainly compiled by the German Maritime Museum, to help raise public and political awareness of the security risks and contamination posed by wrecks and hazardous munitions in the North Sea for the environment, coasts, safety of shipping routes and for marine species and food chains. Partners include the German Maritime Museum Leibniz Institute for Maritime History (Germany), the Alfred-Wegener-Institute Helmholtz Centre for Polar and Marine Research (Germany), the Flanders Marine Institute (Belgium), Aarhus University - Department of Geoscience (Denmark), NHL Stenden University of Applied Sciences, Maritime Institute Willem Barentsz (Netherlands), EGEOS GmbH (Germany), Periplus Consultancy BV (Netherlands), the Norwegian Defence Research Establishment (Norway) and the University Medical School Schleswig-Holstein, Institute of Toxicology and Pharmacology (Germany). Sven Bergmann (German Maritime Museum, Bremerhaven, Germany), Philipp Grassel (University of Bremen and German Maritime Museum, Bremerhaven, Germany), Felix Otte (German Maritime Museum, Bremerhaven, Germany). More information at *www.dsm.museum/forschung/forschungsprojekte/north-sea-wrecks/* and *https://northsearegion.eu/nsw/about/*
~ Philipp Grassel (German Maritime Museum).

Marine Lexicon: a cross-European thesaurus about early modern marine mammals. A cooperative initiative between Portugal and Norway and funded by EEA Grants (Fund for Bilateral Relations), Marine Lexicon aims to construct a thesaurus of European common names for marine mammals (cetaceans, seals and sea lions, and sirenian) and symbolic elements (sea monsters, hybrid beings, folklore creatures) represented in the early modern age (15th-18th centuries). This project will establish and reinforce Portuguese-Norwegian networking research on historical whaling, sealing, and marine mammals' appropriation, trade, and use from medieval and the early modern period. Documentary and visual sources for the European and Transatlantic Natural History, including saga literature, diaries, treaties, leaflets, maps and travel literatures will be explored for past information about local species and names. Artifacts made of parts (bones and other) of the animals, and material from collections of zooarchaeology/quaternary zoology will be considered too. Words associated with activities of use and extraction, and animal distribution (products, objects, artefacts, toponomy) are also part of the study. Our aim is to construct an online database - **the Marine Lexicon** – which will be open access and will unite information in Portuguese, English, Spanish, Norwegian, Dutch, German, modern Greek, French, Cape Verde Creoule and São Tomé and Príncipe Creoule.

Our team is composed by researchers of Centre of the Humanities (CHAM) from the NOVA University of Lisbon, University of Bergen (UiB) and the Nordic Institute for Studies in Innovation, Research and Education (NIFU), and led by Principal Investigators Professor **Cristina Brito** (CHAM/NOVA-FCSH) and **Anne Karin Hufthammer** (UiB). On the Portuguese side, we have the team from the research Thematic Line on Environmental History and the Sea: **Catarina**



Author of the illustration: Catarina Garcia.

Garcia, Joana Baço, Nina Vieira and **Patrícia Carvalho** (CHAM/NOVA-FCSH), and on the Norwegian side, from the Depar tmant of Natural History of UiB, **Liselotte Takken Beijersbergen** and **Vera Schwach** (NIFU).

We have chosen the **North Atlantic Right Whale** (*Eubalaena glacialis*) to represent this initiative, as this species travels between Norway and Portugal and unites our project. We hope that this initiative grows as a new and future tool on the field of marine environmental history, providing a better understanding of the significance of these animals for different societies during these periods. ~ *Joana Baço (CHAM/NOVA-FCSH)*

RECENT PUBLICATIONS

Barrett JH, Boessenkool S, Kneale CJ, O'Connell TC, Star B (2020). **Ecological globalisation, serial depletion and the medieval trade of walrus rostra.** *Quaternary Science Reviews*. 229:1061022. *https://doi.org/10.1016/j.quascirev.2019.106122*

Dillon EM, Lafferty KD, McCauley DJ, Bradley D, Norris RD, Caselle JE, DiRenzo GV, Gardner JPA, O'Dea A (2020). **Dermal denticle assemblages in coral reef sediments correlate with conventional shark surveys**. *Methods in Ecology & Evolution*. *https://doi.org/10.1111/2041-210X.13346*.

Hayer S, Bick A, Brandt A, Ewers-Saucedo C, Fiege D, Füting S, Krause-Kyora B, Michalik P, Reinicke G-B, Brandis D (2019). **Coming and going – Historical distributions of the European oyster, *Ostrea edulis* Linnaeus 1758, and the introduced slipper limpet, *Crepidula fornicata* Linnaeus 1758, in the North Sea**. *PLOS ONE*. e0224249. *doi.org/10.1371/ journal.pone.0224249*.

ANNOUNCEMENTS

United Nations unveils new initiative on ocean heritage. The **UN Decade of Ocean Science for Sustainable Development 2021-2030**, or the #OceanDecade, is currently in its planning phase, within which a new international network has been set up to boost the role of heritage: the **Ocean Decade Heritage Network (ODHN)**. ODHN is seeking to ensure that the #OceanDecade fully recognises the connections between cultural heritage, marine science and sustainable development, and will provide a focus for building these connections into international, regional and national marine science programmes during the implementation phase. By 2030 we hope to see much closer integration of cultural heritage, marine science and sustainable development, and for the marine historic environment to benefit – and be recognised for its own benefits – as a result. ODHN can be found online and is free to join at *www.oceandecadeheritage.org*. News about cultural heritage and #OceanDecade is on Twitter at @DecadeHeritage. The background to #OceanDecade and the aspirations of ODHN have also been set out in an Open Access article at *https://link.springer.com/article/10.1007/s11457-019-09241-0*.

ODHN intends to be a fully global network, working alongside and between existing NGOs and institutions to facilitate engagement between the cultural heritage community and this major UN programme. If you have interests that include topics such as marine archaeology, maritime history or coastal heritage – and their relationship to science and sustainable development – please get involved! ~ *Antony Firth (Co-chair, ODHN Organising Committee)*

ANNOUNCEMENTS: CONFERENCES

Oceans Past Conference 2020 to focus on early career researchers and interdisciplinary research. Convening in Oostende, Belgium, 10-13 May 2020, the Oceans Past conference will be a full and exciting program, and we are looking forward to bringing attendees a diverse range of talks from across the humanities and sciences, all concerned with the interactions between oceans and people, past, present and future. In addition to presentations, we are planning a particular focus on mentorship provision, networking opportunities, and publishing advice for early career researchers. We will also explore – via breakout groups and a speaker panel – the opportunities and challenges that working across disciplines can bring. This will be targeted at all disciplines and all career stages. If you have yet to submit an abstract, you are very welcome to attend the conference and take part in these activities**. Early bird registration closes February 15th**, and we have discounted rates available for students and researchers hailing from lower income countries. We are particularly interested to hear from early career researchers about what types of advice or activities would be of particular interest, so we can tailor the sessions for maximum benefit to all. Check out our website at *www.oceanspast.org* for further details, or contact us at *info@oceanspast.org*.

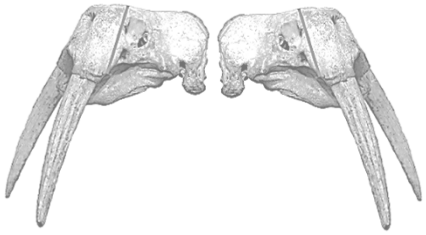
The Ecosystem Studies of Subarctic and Arctic Seas's (ESSAS) will hold its annual science meeting, "**Linking past and present marine ecosystems to inform future fisheries and aquaculture**", at Hokkaido University in Sapporo Japan, 1–3 June, 2020. ESSAS is the incubator for the PESAS working group on subarctic and arctic paleoecology, and aims to understand how climate change will impact these systems. Abstracts are due **January 31, 2020**, and registration ends **30 April, 2020**. More at *https://essas.arc.hokudai.ac.jp/what_s_new/2020-essas-annual-science-meeting/.*

Call for papers: Two important panels at Iberian Congress on African Studies, "**History, Animals and Environment**". The deadline for both is **24 February 2020**.

Panel 39 - Nature And Human Societies In The African Anthropocene (Organizers: Cecilia Veracini; Rui Miguel Moutinho Sá - Universidade de Lisboa). This panel aims to discuss in a broad context the interactions between human activities, environments and non-human animals in the African continent, taking into account the general intensification of global and local human impacts on natural habitats of the last centuries. *For more contact: cveracini2011@gmail.com; ruimoutinhosa@gmail.com.*

Panel 41 – Nature, Sea And Climate. Environmental Approaches To African History (Organizers: Ana Cristina Roque - ULisboa. FLUL. Universidade de Lisboa; Cristina Brito - CHAM – Centro de Humanidades, NOVA FCSH). This panel discusses how environmental history can allow a more global and complex reading of African past. The significance of approaching African history from a more-thanhuman perspective considering how environmental and climate factors shaped the history of the continent and how Africans interacted with those factors will be addressed. *Contact: anaroque1@campus.ul.pt; cbrito@fcsh.unl.pt*

American Fisheries Society 150th Annual Meeting, "**Learning From The Past, Meeting Challenges Of The Present, Advancing To A Sustainable Future**", to be held in Columbus, Ohio, United States, 30 August – 3 September 2020. Oral presentations and posters are due **20 March 2020**. *https://afsannualmeeting.fisheries.org/*.



CONTACT

Oceans Past News is a quarterly newsletter that aspires to both unite and inform the worldwide community interested in historical perspectives of marine social-ecological systems by providing insight into the wide-ranging and excellent work being done and the resources available. If you would like to propose work for OPN in the future, please contact **Emily Klein** (emily.klein04@gmail.com).

*The next Oceans Past News will be out mid-April 2020. We **warmly welcome submissions** through mid-March.*

RESOURCES

The Oceans Past News Archive is available online: **https://oceanspast.org/newsletter.php**
More on the Oceans Past Initiative: **http://oceanspast.org**
OPI on Facebook: **https://www.facebook.com/groups/122288493384/**
OPI on Twitter: **@oceans_past**