Studies call for expansion and digitization of Arctic museum collections

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As sea ice continues to disappear, scientists are rushing to gather data on Arctic taxa. How should the collected plant and animal specimens be stored? As Indigenous communities age, traditional knowledge and cultural history is at risk of being lost. Can we use multimedia to preserve these impermanent records? Published this month in the open access journal *Arctic Science*, a special volume of studies describes how natural history museums are more than "cabinets of curiosities." Arctic museum collections in particular are biodiversity and cultural repositories that help monitor rapidly changing ecosystems, preserve cultural heritage, and enhance public engagement in science and culture.

"The Arctic is at the forefront of experiencing the effects of climate change," explains Dr. Stefanie Ickert-Bond, editor of the special volume and Curator of the Herbarium at the University of Alaska Museum of the North (UAMN). "Effective management and conservation of high-latitude biological and cultural diversity in the face of unprecedented rates of climate change requires information on past and current patterns of diversity and their evolution."

Arctic museum collections "provide many diverse scientific benefits, helping us understand not only individual species or populations but also the environments in which they live(d)," write Kevin Winker and Jack Withrow of the UAMN Department of Ornithology. But current collections are not complete as "most Arctic taxa are poorly documented," Ickert-Bond adds.

Multiple studies in the special volume call for expedited sampling and digitizing of Arctic specimens on an international scale. "Many museum collections are working together to fill temporal, spatial, and taxonomic gaps to develop and wield the science that will make us better stewards of Arctic environments and [their] cultural legacy," Ickert-Bond says.

With more comprehensive and accessible collections, not only can the Arctic research community use the data to tackle conservation problems, but museums can also expand education programs to include digital explorations and online learning modules to increase understanding of STEM.

Museums have also partnered with an integral facet of the changing Arctic—its people. Collaborating with Indigenous communities, UAMN is capturing the Arctic's cultural narratives through multimedia. "Film and audio collections allow us to observe, experience, and study singular, irreproducible moments of a culture's past," writes Leonard Kamerling, UAMN Curator of Film. Kamerling, a filmmaker himself, oversees a collection of film, video, and audio tape that documents Alaska Native life dating back to the 1970s.

As these physical materials can deteriorate over time and are also confined to the museum itself, Kamerling notes that future archives need to "deliver materials in innovative ways that transcend the distance between the physical archive and the most remote communities and schools." Digitizing museum collections and sharing the resources on web-based streaming platforms such as IsumaTV are bringing Indigenous culture to new audiences.

Contributions to this special volume brought together multi-national teams of researchers including anthropologists, ecologists, archaeologists, biodiversity informaticians, educators, and filmmakers from the United States, the United Kingdom, Russia, Norway, Finland,

Denmark, Germany, the Netherlands, Australia, and Canada.

More information: "Arctic Museum Collections: Documenting and understanding changes in biological and cultural diversity though time and space": www.nrcresearchpress.com/toc/as/3/3

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