March 1, 2021

The Honorable Eddie Bernice Johnson
Chairwoman, House Committee on Science, Space, & Technology
2321 Rayburn House Office Building
Washington, DC 20515

The Honorable Frank Lucas
Ranking Member, House Committee on Science, Space, & Technology
2321 Rayburn House Office Building
Washington, DC 20515

RE: Community-Driven Efforts to Mobilize Biodiversity Data

Dear Chairwoman Johnson and Ranking Member Lucas:

The Biodiversity Collections Network (BCoN) is a national initiative led by the American Institute of Biological Sciences (AIBS), Natural Science Collections Alliance (NSC Alliance), and Society for the Preservation of Natural History Collections (SPNHC). We are writing to bring to your attention recent reports that highlight the value of mobilizing biodiversity specimens and data in spurring new scientific discoveries that grow our economy, improve our public health and well-being, and increase our national security.

Through the membership of its founding organizations, BCoN represents the diversity of biological science societies, natural history museums and herbaria, living collections, and other research centers and organizations. We represent the scientists, administrators, curators and collection managers, and other professionals who work in or use scientific collections and their associated data in research and education. Our member institutions and their expert staffs build, maintain, study, and make accessible the vast biological collections that provide critical specimens and data for documenting, monitoring, and preserving biodiversity now and into the future.

During the COVID-19 pandemic, collections-based institutions have continued to suffer economic losses as a result of the need to cancel scientific meetings and workshops, and to reduce, postpone or cancel public programs, including educational programs associated with schools and other civic organizations. Recent surveys by the American Association of Museums, and BCoN have clearly documented the issues facing this community. These

devastating effects of the COVID-19 crisis are concerning, in part because of the importance of biological collections-enabled research to our nation and the world.

The term “biodiversity” covers all life on earth, from oceanic plankton to dinosaurs. Biodiversity collections, including living, preserved, and fossilized biological and geological specimens, enable the documentation of species and their distributions and continue with new and better tools to serve as repositories for biodiversity specimens and data. These collections are a critical resource for advancing the knowledge needed to address global challenges such as climate change, biodiversity loss, and pandemics. The COVID-19 crisis has illustrated how inextricably linked humans are to the natural world. Biological collections, their extended data, and the experts that build and study them are globally important for understanding where viruses such as SARS-CoV-2 exist in nature or when they cross from their current hosts to humans.

In 2019, BCoN developed a community-informed blueprint for future research and education using biodiversity specimens and their data. This plan, the Extended Specimen Network (ESN, see https://bcon.aibs.org/wp-content/uploads/2019/04/BCoN_March2019_FINAL.pdf), builds on the advances we have made as a nation as a result of the National Science Foundation's (NSF) investments in the Advancing Digitization of Biodiversity Collections program. The ESN seeks to mobilize data and develop new linkages within the scientific community to associate and integrate myriad data sources with physical specimens in our natural science collections. Mobilizing these data allows us to understand how species interact with each other, humans, and the environment. This understanding is key to our efforts to better model the potential spread of pathogens and parasites, to monitor and forecast changing distributions of economically significant invasive species, and to more efficiently identify significant genes or chemical compounds that offer promise for new pharmaceutical applications. Efforts to digitize specimens and to integrate their data with other sources will stimulate advances in computer and information science that can improve logistical management of products — a challenge we now see routinely reported in the news as public health and emergency managers are endeavoring to ensure that appropriate resources are identified and positioned where they are needed.

More recently, a 2020 report by the National Academies of Science, Engineering and Medicine (NASEM), Biological Collections: Ensuring Critical Research and Education for the 21st Century (https://www.nap.edu/catalog/25592/biological-collections-ensuring-critical-research-and-education-for-the-21st), provided guidance to the NSF regarding the sustainability of living stock and natural history collections. The report argued that collections are a critical part of our nation’s science and innovation infrastructure and a fundamental resource for understanding the natural world.

Both the NASEM report and the community-informed BCoN report, have articulated a shared vision of the future of biological collections and define a need to broaden and deepen the collections and associated data to actualize the potential for biodiversity collections to inform 21st century science.

Since the release of these reports, BCoN has coordinated a number of efforts to engage the broader collections community in discussions about the future of biological collections, including:

- A webinar, Forward-Thinking Discussion on Biological Collections, organized earlier this year by AIBS, NSC Alliance, and SPNHC, with panelists from both the BCoN and NASEM reports (see recording at https://www.aibs.org/news/2020/201221-collections-webinar.html#subheader). The program received strong engagement from the community, with more than 500 participants joining from 33 countries.
- A global consultation led by the Alliance for Biodiversity Knowledge (https://discourse.gbif.org/t/converging-digital-specimens-and-extended-specimens-towards-a-global-specification-for-data-integration/2394), to integrate the Extended Specimen concept with the Digital Specimen concept (https://dissco.tech/2020/03/31/what-is-a-digital-specimen/)—an effort that developed in parallel in Europe. BCoN, AIBS, NSC Alliance, and SPNHC contributed to the planning and coordination of this initiative.

Looking to the future, BCoN plans to organize a series of workshops and community consultations this fall that will guide the development of an implementation plan to build the ESN. The goal is to create a community-derived implementation plan for the future of digital biodiversity data and science that can drive innovation and integration of open environmental data.

The rapid development of an Extended Specimen Network is in our nation's interest, because it will help biodiversity science inform and guide future actions to improve public health, economic well-being, and national security. It is time to make critical investments in biodiversity collections and the research and education they enable.

We welcome an opportunity to provide you with updated information about our efforts and to discuss these issues with you in more detail. Please do not hesitate to contact Jyotsna Pandey at jpandey@aibs.org for more information.

Sincerely,

Jyotsna Pandey, Ph.D.
Director of Public Policy
American Institute of
Biological Sciences

John Bates, Ph.D.
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