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BOTANISTS CALL FOR A NEW GLOBAL BIODIVERSITY CYBERBANK

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In a recent issue of *Journal of Systematics and Evolution*, botanists from Smithsonian's National Museum of Natural History, the University of Alaska Fairbanks, and the University of Göttingen Germany published the paper "Collections-based systematics: Opportunities and outlook for 2050" (*J. Syst. Evol.* 53: 477-488). Jun Wen and her colleagues evaluated the current state of systematics and natural history collections and provided an outlook for the discipline for the upcoming decades. The paper highlights the important role of natural history collections as the core of biodiversity studies and calls for actions that need to be taken to ensure a robust future for the discipline, as well as the sustainability of herbarium and museum collections.

The paper proposes that the systematics community needs to reorganize to form a World Organization of Systematic Biology in order to formulate and execute a strategic plan for systematics and natural history collections. In a time with major advances in areas of bioinformatics and genomics, the field of systematics also changes rapidly. In order to make use of these advances and to make the studies highly integrative and accessible for the public and other scientific fields, the authors propose a global cyberinfrastructure, the Biodiversity CyberBank, that brings together all data for a specific taxon, i.e. genetic, ecological, paleontological, morphological and conservation data, but with the collections data as the core. They argue that collections are no longer the objects of specimens; they represent vitally important big data in the 21st century biodiversity science.

The envisioned CyberBank is comparable to GenBank for genetic data, and is crucial for the future of biodiversity sciences. Similarly, floras, monographs and revisions should make use of all the available data in the bioinformatics and genomic era. Specifically these treatments should not only contain interactive keys, descriptions and notes on ecology and distribution, but also make full use of (1) the increasing amount of digitized collections to model distributions

(past, current and future); (2) the vast genetic data to test species delimitations and phylogenetic relationships; and (3) the wide array of digitized literature and herbarium type specimens to link all information related to original species descriptions. A new framework of taxonomic monographs is outlined.

As the future of the discipline is largely dependent on a next generation of systematists as well as the general public, the paper also highlights that collections-based systematists must teach systematics as a stimulating and integrative discipline with collections as its core. Systematists must also try to engage and excite the general public whenever possible with cutting-edge technology in biology, and involve them in various citizen-science projects.

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