



Cereus pentagonus collected by G. Engelmann, Missouri Botanical Garden Herbarium

Drawing on Ideas Generated by:

- Dumbarton Oaks/JSTOR Workshop, 2017
- *Extending US Biodiversity Collections to Promote Research and Education*
- Digital Humanities Projects
- Field Notes Project and Field Book Project

While the ESN is specimen-focused, once a network is formed, its interconnections could make other elements central for the user.

Then the focus can be moved to:

- Expedition
- Geographic Area
- Taxon
- Collector, Explorer, or Taxonomist

Possible Projects:

- Lewis and Clark Expedition
- Wilkes Expedition
- Gray and Torrey Partnership
- Railroad Surveys
- Plants of the Intermountain West

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Extending the ESN to History

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Elements of a Historical Extended Specimen Network

- Specimen
- Fieldnotes
- Letters
- Maps
- Field sketches and nature prints
- Publications
- Illustrations and photographs
- Commentaries
- Contemporary art



Catesby specimen of *Carya tomentosa* with his illustration and description, NHM and BHL; as presented on *Botanica Caroliniana*

The Extended Specimen Network (ESN) is a powerful idea growing out of digital frameworks in several areas of biology—systematics, genetics, ecology. However, it is not just in science that the power of digital systems is being exploited. The humanities, too, are creating online repositories for many types of archival material, some of which have relevance to plans for the ESN.

Natural history specimen collections were created at least from the 16th century onward. While the accompanying data is often scant by today's standards, in many cases it can be linked to published materials, some already available through the Biodiversity Heritage Library, and to archival sources that are also being digitized. It would be negligent to omit such assets from the ESN because they often contain important information on phenology and habitat as well as on medicinal, agricultural, and cultural practices.

One of the aims of the ESN is to broaden use of biodiversity collections. Here is a means to open doors to the humanities community and provide the opportunity to explore how we can benefit from each other's work.

Historical Projects beyond Specimens 18th-Century

- Mark Catesby: *Botanica Caroliniana*
- Botanical Exploration in the Long 18th Century
- Poetic Botany

19th-Century

- Ravenel: *Plants and Planter*
- The George Engelmann Papers
- Livingstone's Zambezi Expedition

While these are useful and interesting efforts, they are not nearly as comprehensive as what is envisioned with the ESN. However, they are important sources of inspiration for future endeavors because of their focus on history and art as well as botany.

Though it is exciting to conceive of creative new projects, fundamentally they all involve increased ability to integrate different systems. Therefore, uniformity and interoperability are at the core of what must happen for the ESN in all its forms to develop.



Lespedeza angustifolia collected by H. Ravenel, A.C. Moore Herbarium, University of South Carolina