What is an Herbarium?

Stephen G. Saupe
College of St. Benedict | St. John's University
Biology Department
Collegeville, MN 56321

The Herbarium is a Collection of Preserved Plants
The Herbarium is a Research Institution
The Herbarium is an Educational Institution

The term "herbarium" refers to a collection of pressed, dried, identified and labeled plants (Figure 1). In others, an herbarium is a plant morgue. Perhaps a less morbid analogy is that an herbarium is a reference library of plant specimens. Just like the books in a library, herbarium specimens represent a vast wealth of information that is invaluable for teaching and research. Thus, in the broader and modern sense, an herbarium is not just a ***collection*** of dead plants, but it is a valuable ***educational*** and ***research*** resource.

The Herbarium as a Collection of Preserved Plants

The collections of most herbaria include seed plants (angiosperms and gymnosperms), ferns and their allies, and bryophytes (mosses, liverworts). Many herbaria also include fungi, lichens, and algae. In addition, an herbarium may specialize in certain groups (such as palms) or plants from a specific geographic region. Herbaria range in size from small personal collections to massive ones such as at the New York Botanical Garden with more than 7 million specimens.

In addition to plant specimens, many herbaria have collections of wood, seeds, botanical art, taxonomic literature and other materials. As an aside, the term 'herbarium' didn't always refer to collections of plants; it originally was used to describe books about medicinal plants. However, by the mid-eighteenth century, during the reign of the great Swedish taxonomist, Carl Linnaeus, the term acquired its present meaning.

Figure 1. A typical herbarium specimen in which a dried plant is glued to an 11.5 x 16.5 sheet of archival paper. The label provides important information including the name of the plant and where and when it was collected. This specimen was collected by MN DNR botanist, Welby Smith.

The process of pressing and drying plants for storage works great. Properly prepared and maintained, herbarium specimens will last indefinitely. Specimens prepared by Linnaeus in the 1700's still look much as they did in his day. This means that herbarium specimens also provide an historical record of both plants and botanical activities through time.

Herbarium collections are typically arranged by plant family in a manner that reflects their evolutionary ancestry (phylogeny). Other herbaria are arranged alphabetically by family. Although this latter arrangement makes it easier for a novice to locate specimens, it suffers from the disadvantage that if the name of plant family changes (*which is not uncommon*), then the entire herbarium must be

rearranged. With a phylogenetic arrangement, essentially only the label for the family name would need to change.

The Herbarium as a Research Institution

Since each specimen is accompanied by a label with an assortment of information, an herbarium represents a vast warehouse of raw data. Specimens document: (a) the appearance of a plant in a particular locality at a particular time of year; (b) the range of variation that can exist within a species; (c) the nature of evolutionary processes and the evolutionary relationships among plants; (d) the phenology (life cycle in relation to season such as when it flowers or ripens fruit) of a plant; (e) vegetative changes that may occur at a site over time; and (f) uses of the plant if the collector provides that information.

Herbarium specimens also provide material that can be studied away from the field or during another season (*i.e.,* winter). Researchers often deposited specimens in a herbarium as vouchers. These specimens serve as a reference, or as a proof of the identity of a plant that was used in a particular scientific study.

Herbarium specimens can also be used as a reference to check the tentative identification of an unknown plant.

In short, an herbarium is an invaluable scientific repository for information about plants. Herbarium specimens are often used in studies that were probably never even dreamed about at the time the collection made. Since the specimens in the herbarium represent an irreplaceable source of data, access to these collections is usually closely monitored, as is the access to rare books in the library, to prevent damage.

Since herbarium specimens are unique, one-of-a-kind, irreplaceable resources, most botanists consider them to be priceless. Though skeptics might say they are nearly worthless ("if you've seen one redwood you've seen 'em all"), the currently accepted value by the American Systematics Collections is approximately $10/specimen. This figure includes the value of the collector's time, the curator's time, electricity and other costs inherent in storing the collection. Thus, a herbarium is a significant institutional resource.

The Herbarium as an Educational Institution

A major role of any herbarium is that of education. Most herbaria have collections specifically for use by students. These collections are typically kept separate to prevent unnecessary damage to the permanent collections.

The teaching collections, in conjunction with the permanent reference collections, provide materials that are essential for teaching courses such as Plant Systematics, Plant Ecology, and Vascular Plant Diversity. Learning characteristics of plants, studying relationships between plants, and identifying unknown plants are just a few of the many educational uses for herbarium specimens.

Just like a museum or library that offers educational programs and other services to the public, so does the herbarium. An herbarium may host lectures, organize field trips, prepare botanical displays, provide tours, or identify plants, among other activities. In many instances, the herbarium serves as the focal point for botanical activities in an institution.

BAILEY HERBARIUM

College of Saint Benedict and Saint John's University

Updated: October 2020