

Index Herbariorum Kentuckiensis IV

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ABSTRACT

A survey conducted in August and September 2006 provides information on present herbarium collections at 12 Kentucky institutions. A total of 338,000 vascular and nonvascular specimens are reported. Of these, 324,700 are vascular specimens, and 13,400 are nonvascular. This number represents a 37% increase in specimens since the last survey in 1995. Updates are provided on current curators, databasing efforts, and other changes during the last decade.

KEY WORDS: Herbaria, curators, databases in Kentucky, vascular plants, nonvascular plants

INTRODUCTION

This paper is the fourth article dealing with the status of herbarium collections in Kentucky. Earlier papers in the series were published by Lassetter (1978), Jones (1987), and Jones et al. (1995). In these articles, the following numbers of specimens were reported, respectively, 119,000 at 12 institutions, 187,000 at 15 institutions, and 246,000 specimens at 13 institutions. The current survey was conducted by sending a survey form to all public and private institutions known to house herbarium collections. Private collections were excluded. The survey was conducted in August and September of 2006. In addition to the standard information requested in earlier surveys, i.e., names, addresses, phone numbers, and fax numbers, numbers of specimens, and special collections and interests, a number of additional items were added for this survey. These included types of databases being used, addresses for herbarium web sites, information on adhesives and insect repellents, use of freezing to prevent infestations, numbers of student workers and departmental funds available, numbers of cabinets and room sizes, and comments on recent or upcoming changes relating to the herbarium.

The results of the survey are provided by city for comparison with previous papers in

this series in the listing below, and by institution (for ready reference) in Table 1. The acronyms (in parentheses after the institution) based on Holmgren and Holmgren (1998) are included in the city listing.

Berea

Berea College Herbarium (BEREA). Established in 1961. 20,000 vascular plant specimens. Elmer's Glue-All® Multi-Purpose Glue; Prescription Treatment® Cy-Kick® Crack and Crevice Pressurized Residual® (active ingredient: Cyfluthrin, a pyrethroid insecticide) from Whitmire Micro-Gen Research Laboratories, Inc.; no freezing regime. One student worker per semester; departmental funds average \$500–1000/year. Herbarium cabinets number 24, no compactors; in 550 sq. ft. room. Special collections: Berea College Forest (Ralph Thompson, David Taylor); preliminary collections from Bell, Harlan, Laurel, Madison, and Rockcastle Counties (Thompson); floras of surface-mined areas, limestone quarries; Hancock Biological Station of Murray State University; Elk and Bison Prairie, Land Between The Lakes; Rock Creek Research Natural Area; John B. Stephenson Memorial Forest State Nature Preserve, Pine Mountain Settlement School (Thompson); Fort Boonesborough State Park and Hazeldell Sundew Meadow (Richard Abbott). On-going projects: flora of Berea College Forest; floras of Laurel, Madison County, and Rockcastle

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Table 1. Survey data for Kentucky herbaria.

Institution	Herbarium address/web site	Phone number	Fax Number	Curator/email address	Number of specimens: vascular plants (VP), nonvascular plants (NP), databased (DB)
Asbury College	Herbarium, Asbury College, Department of Biology, Wilmore, KY 40390	859-858-3511, ext. 2360	859-858-3921	Ann Witherington ann.witherington@asbury.edu	350 VP, 5 NP, 0 DB
Berea College	Herbarium, Berea College, Department of Biology, CPO Box 2121, Berea, KY 40404	859-985-3378	859-985-3303	Ralph L. Thompson ralph.thompson@berea.edu	20,000 VP, 0 NP, 0 DB
Campbellsville University	Biological Collection, Science Building Rm 101, Campbellsville University, 1 University Drive, Campbellsville, KY 42718	270-789-5043	270-789-5170	Brenda S. Tungate bstungate@campbellsville.edu	1480 VP, 0 NP, 0 DB
Eastern Kentucky University	Herbarium, Eastern Kentucky University, Department of Biological Sciences, 521 Lancaster Ave., Richmond, KY 40475 http://people.eku.edu/jonesron	859-622-6257 ext.	859-622-1399	Ronald L. Jones ron.jones@eku.edu	70,000 VP, 500 NP, 27,000 DB
Georgetown College	Herbarium, Georgetown College, Department of Biological Sciences, Georgetown, KY 40324.	502-863-8367	502-868-7744	Timothy Griffith tgriff0@georgetowncollege.edu	1000 VP, 0 NP, 0 DB
Morehead State University	Herbarium, Morehead State University, Department of Biological and Environmental Sciences, Morehead State University, Morehead, KY 40351	606-783-2587	606-783-5002	Allen C. Risk a.risk@morehead-st.edu	17,318 VP, 9400 NP, 0 DB
Murray State University	Herbarium, Murray State University, Department of Biological Sciences, Murray State University, Murray, KY 42071 www.murraystate.edu/qacd/cos/hbs/herbarium.htm	270-809-4896	270-809-2788	Dayle Sarr dayle.sarr@murraystate.edu	40,500 VP, 2000 NP, 24,447 DB
Murray State University	Hancock Biological Station, Murray State University, Murray, KY 42071 www.murraystate.edu/qacd/cos/hbs/Hancock_Herbarium_Search.cfm	270-474-2272	270-474-0120	Contact David White david.white@murraystate.edu	1200 VP, 0 NP, 1174 DB
Northern Kentucky University	John W. Thieret Herbarium, Department of Biological Sciences, DWH Natural Science Center 204D, Northern Kentucky University, Highland Heights, KY 41099	859-572-1411	859-572-5639	Maggie Whitson whitsonma@nku.edu	35,000+ VP, 0 NP, 100 DB
University of Kentucky	Herbarium, The University of Kentucky, 217b TP Cooper, Dept. of Forestry, Herbarium: Insectory/Conservatory Building, Washington Avenue, University of Kentucky, Lexington, KY 40546 http://www.ca.uky.edu/forestry/herbarium.php	859-257-3094	859-257-7611	Robert Paratley rparat@uky.edu	57,800 VP, 1500 NP, 0 DB

Table 1. Continued.

Institution	Herbarium address/web site	Phone number	Fax Number	Curator/email address	Number of specimens: vascular plants (VP), nonvascular plants (NP), databased (DB)
University of Kentucky College of Agriculture	Herbarium, College of Agriculture, Department of Plant and Soil Science, 117 Plant Science Building, University of Kentucky, Lexington, KY 40506	859-257-4898	859-257-7874	J. D. Green jdgreen@uky.edu	21,000 VP, 0 NP, 0 DB
University of the Cumberland	Herbarium, University of the Cumberland, Department of Biology, 7196 College Station Drive, Williamsburg, KY 40769	606-539-4399	606-539-4319	Todd Yetter tyetter@ucumberlands.edu	3500 VP, 9 NP, 2696 DB
Western Kentucky University	Herbarium, Western Kentucky University, Department of Biology, 1906 College Heights Blvd. #11080, Bowling Green, KY 42101-1080 http://biodiversity.wku.edu/search/plants.asp	270-745-8864	270-745-6856	Lawrence A. Alice lawrence.alice@wku.edu	55,646* VP, 0 NP, 21,644 DB

* Includes specimens to be transferred from the University of Louisville.

Counties (Thompson). Visitation with curator permission. Over 4100 Missouri, Oregon, and Tennessee mounted and labeled collections have been sent to respective state regional herbaria because of space factors.

Curator, Ralph L. Thompson (floristic surveys of specific natural areas of interest).

Bowling Green

Herbarium of Western Kentucky University (WKU). Established in 1967. 25,646 vascular plant specimens. Microsoft Access and Index Kentuckiensis used for databasing. Lineco Inc., Neutral pH Adhesive (99295 53072)[®]; solid bug strips insect repellent; no freezing regime. No student workers; departmental funds average \$200/year. Herbarium cabinets number 30 full-sized and 12 half-sized, no compactors; in 1292 sq. ft. room. Special collections: E. O. Beal, R. Athey, G. Johnson, Max E. Medley. On-going projects: mounting and databasing of Max Medley collection, ~43% complete; acquisition of University of Louisville Davies Herbarium (DHL), which will increase the specimen totals to about 55,000. Contact curator for loan and visitation policies.

Curator, Lawrence A. Alice (*Rubus*, worldwide). **Assistant Curator**, Robert Neidlinger.

Campbellsville

Biological Collection. Established in 1965. 1480 vascular plant specimens. One student worker per semester. On-going projects: Inventory of Clay Hill Memorial Forest. No loan or visitation policies established.

Curator, Brenda S. Tungate (*Trillium*, spring flora, Clay Hill Memorial Forest).

Georgetown

Herbarium of Georgetown College. Established in 1945. 1000 vascular plant specimens. Herbarium cabinets number 6, in a 300 sq. ft. room.

Curator, Timothy Griffith (plant geography, invasive species).

Highland Heights

John W. Thieret Herbarium (KNK). Established 1973. Over 35,000 vascular plant specimens. Elmer's Glue-All[®] Multi-Purpose Glue; ProZap Pest Guard Strips[®] insect repellent; minus 9°C for 2–5 days for freezing regime.

One student worker per semester; departmental funds average \$500/year. Herbarium cabinets number 50, on compactors, in a 972 sq. ft. room (shared with some zoological and phycological collections, and includes about 25% teaching/work space), with 431 sq. ft. prep room, a 197 sq. ft. work room with library and high quality dissecting scopes, and two faculty offices housed in the herbarium/museum complex. Special collections: Poaceae and Cyperaceae; John W. Thieret plant and book collections. On-going projects: barcoding and databasing of specimens. Contact the curator for loans and visitation. On 16 March, 2006, as part of a celebration of the life and works of John W. Thieret, the KNK was officially named the John W. Thieret Herbarium; Dr. Thieret left his invaluable book collection to the herbarium (about 600 botanical works with an excellent representation of floras for various areas), where it will be retained as a non-circulating reference collection, and will be available for use by visitors to the herbarium.

Curator, Maggie Whitson (Solanaceae, *Physalis*). **Research Associate**, Landon McKinney (*Carex*, *Viola*).

Lexington

Herbarium, College of Agriculture. Established about 1887. About 21,000 vascular plant specimens. Used primarily for Extension Weed Science activities that involve plant identification and control. Emphasis on agricultural weeds of Kentucky. Special collections: Harrison Garman, Mary Didlake, and Patricia Haragan.

Curator, J. D. Green.

Lexington

Herbarium of the University of Kentucky (KY). Reestablished in 1948 after fire destroyed the previous collection. 59,300 total plant specimens. Elmer's Glue-All® Multi-Purpose Glue; no insect repellent used; 0°F for 5 days for freezing regime. One student worker per semester; departmental funds average \$500/year. Herbarium cabinets number 45, no compactors, in 640 sq. ft. room. On-going projects: Floracliff; Griffith Woods; McCreary/Whitley Counties. One year loans, visitors welcome by appointment. The herbarium has recently been moved from the For-

estry Building to the Insectory/Conservatory Building, which has notable improvements, including a better roof, interior, and air conditioner/climate control.

Curator, Robert Paratley (secondary chemistry & medicinal plants; anthropogenic influences on forests).

Louisville

The University of Louisville has recently decided to transfer the Davies Herbarium (DHL) to the Western Kentucky University Herbarium. In 1995 it contained about 30,000 specimens (for the current survey these numbers are considered to be part of the WKU collection). A small set of specimens will be retained in 6 to 8 cabinets by the Biology Department for teaching purposes (W. S. Davis pers. comm.).

Morehead

Herbarium of Morehead State University (MDKY). Established in 1930s. 26,718 total plant specimens. White glue adhesive; naphthalene as insect repellent; no freezing regime. One student worker per semester (or year); departmental funds none. Herbarium cabinets number 22, no compactors, in a 646 sq. ft. room. On-going projects: pteridophytes, bryophytes, and lichens of Carter Caves. Open to qualified researchers.

Curator, Allen C. Risk (bryophytes and lichens).

Murray

Herbarium of Murray State University (MUR). Established in 1967. 43,647 total plant specimens. Microsoft Access and Index Kentuckiensis used for databasing. Elmer's Glue-All® Multi-Purpose Glue; naphthalene insect repellent; minus 20°C for 3 days for freezing regime. Two student workers per semester; departmental funds average \$150/year. Herbarium cabinets number 31, no compactors, in a 600 sq. ft. room. Special collections: Raymond Athey collections and herbarium collection at Hancock Biological Station, which is part of MUR. On-going projects: preparing to relocate to new biology building in 2008. Loans to recognized herbaria; visitation during business hours or by appointment.

Curator, Dayle Saar (systematics, population genetics of rare and endangered species,

and phylogeography); **Web Development**, Matthew Williamson.

Herbarium, Hancock Biological Station, Murray State University. As a part of MUR, the Hancock Biological Station has 1200 mounted specimens in 3 cabinets from the published floras of Hancock Biological Station and the Elk and Bison Prairie from the Land Between the Lakes National Recreation Area for teaching, research, and reference purposes. These specimens are databased in Microsoft Access and the complete list is available on the Hancock Biological Station website.

Information person, Ralph L. Thompson, Berea College.

Richmond

Herbarium of Eastern Kentucky University (EKY). Established in 1974. 70,500 total plant specimens. Microsoft Access and Index Kentuckiensis used for databasing. Elmer's Glue-All® Multi-Purpose Glue; no regular use of insect repellent; 3 days at minus 40°C for freezing regime. Three or four student workers per semester; departmental funds average \$1200/year. Herbarium cabinets number 45, no compactors; in a 950 sq. ft. room, plus a second room of similar size for processing activities and office space. Special collections: county floras (graduate student projects), collections of Mary Wharton, Raymond Athey, E. T. Browne, and the Kentucky State Nature Preserves Commission. On-going projects: floristic studies of selected sites from across Kentucky. Loan and visitation policies, standard procedures. A new science building is planned that will include expanded facilities for the EKY Herbarium, with compactors, better climate control, and offices for curators and staff.

Curator, Ronald L. Jones (floristics of Kentucky); **Associate Curators**, Ross C. Clark (floristics of Kentucky, woody plants, systematics of *Ilex*, biogeography), David A. Eakin (bryophytes), and Timothy J. Weckman (floristics of Kentucky, systematics of *Viburnum*).

Williamsburg

Herbarium of University of the Cumberland. Established in 1985. 3509 total plant specimens. Microsoft Access and Index Kentuckiensis used for databasing. White glue adhesive; naphthalene insect repellent; no freezing

regime. One student worker per semester; departmental funds average less than \$100/year. Herbarium cabinets number 6 full-size and 2 half-size, and one drying cabinet, no compactors, in a 320 sq. ft. room. Loans made with letter of request; visitors welcome but advance notice appreciated.

Curator, Todd Yetter (Lamiaceae, Bahamas, and wetland species).

Wilmore

Herbarium of Asbury College. Established in 1967. 3505 total plant specimens. Elmer's Glue-All® Multi-Purpose Glue and herbarium paste; naphthalene as insect repellent; no freezing regime. No student workers; some funds available for basic supplies. Herbarium cabinets number 2 full-sized and 1 half-sized, within a botany lab of about 900 sq. ft. Loan availability limited, but visitors welcome. Plans are underway for a major renovation of the building that presumably will provide better housing and climate control for the herbarium.

Curator, Ann Witherington.

RESULTS AND DISCUSSION

Total collections of vascular and nonvascular specimens in the state now number 338,100. Vascular plants number 324,700, while nonvascular plant specimens number about 13,400. Collections of vascular and nonvascular plants at the five regional universities total 231,500 (68% of the total), while collections at the private colleges (with the great majority at Berea College) totaled 26,300 (8%) and collections at the University of Kentucky total 80,300 (24%).

The current total of 338,100 herbarium specimens represents an increase of 92,000 or 37% since the article by Jones et al. (1995). Herbaria are reported for 12 institutions, while the 1995 article reported herbaria for 13 institutions (the missing institution is the Davies Herbarium at the University of Louisville). The University of Kentucky showed an increase in collecting activity, adding nearly 8,000 specimens in the last decade. The five regional universities nearly doubled their vascular plant collections, from 121,500 to 220,000, with the greatest increases at Eastern Kentucky University and Western Kentucky University. Nonvascular collections at the re-

gional universities rose from 1100 to 11,900, with the great majority of increase at Morehead State University. Collections at private institutions, with the exceptions of Berea College and the University of the Cumberlands, remain about the same as in the previous survey.

Botany professors with curatorial duties have been hired at seven of the twelve institutions since 1995, with veteran curators remaining only at Berea, Eastern Kentucky University, University of the Cumberlands, and the two University of Kentucky facilities. Another major change is the closing of the Davies Herbarium at the University of Louisville and the transfer of most collections to Western Kentucky University. This herbarium was founded in the 1930s by H. B. Lovell and associates and later became in the 1950s and early 1960s, under the direction of P. A. Davies, the most active botanical research facility in the state. This abandonment of natural history collections at major institutions has become, sadly, a nation-wide trend, as was noted in Jones (2005).

Other changes include an increased interest in databasing. In 1995, only two facilities were actively engaged in databasing, and now that number has increased to four (WKU, EKY, MUR, and University of the Cumberlands). A total of 75,900 specimens are now databased in Kentucky.

The total number of herbarium specimens in Kentucky is similar to that of West Virginia but is far below those reported for Tennessee and Ohio based on Holmgren and Holmgren (1998): Tennessee with 700,000 at 10 institutions, not including 300,000 more that have been transferred from Vanderbilt University (VDB) to the Botanical Research Institute of Texas (BRIT); Ohio with 1,600,000 at 14 institutions; and West Virginia with 300,000 at 9 institutions. The discrepancy is even greater for nonvascular plants, as previously reported in 1995.

It is apparent, that although significant strides have been made, Kentucky still has much work to be done in gathering sufficient

knowledge on the occurrence and distribution of plant species. New state records are still being found on a regular basis, and, more significantly, species occurring in Kentucky and new to science have been discovered at an average rate of one per year for the last 25 years (Jones 2005). Many areas of the state, in particular the counties in eastern and south-central Kentucky, have received little floristic attention. Many counties are known to be reservoirs of high botanical biodiversity, but remain largely unexplored. Furthermore, many of these areas are under severe threats from logging, mining, development, and other activities. Today in Kentucky over 130 acres of forested lands per day are being lost to urban areas and roads (Kentucky Division of Forestry 2004).

It is hoped that Kentuckians will recognize the value of preserving their rich botanical heritage, that our institutions will continue to hire field-oriented botanists and that they will work to maintain active herbarium collections to document and help preserve these diminishing resources.

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