



PLANT SCIENCE AND CONSERVATION

The Missouri Botanical Garden seeks to engage its visitors not only to delight in its serene beauty and enjoy a variety of special events, but also on a profound level to “preserve and enrich life” by illuminating the importance of plants to the balance of life on Earth. While most visitors discover a heightened appreciation and understanding of the world’s rich botanical heritage, few realize that beyond the floral panoramas and exhibits there exists another realm: our internationally renowned plant science and conservation enterprise.

The Garden’s plant science program was begun by Dr. George Engelmann, with the direction of Henry Shaw, the Garden’s founder. In 1857, Shaw purchased a comprehensive herbarium collection from the estate of German botanist Johann Jakob Bernhardt. This 62,000-specimen collection became the basis for today’s 5.8 million-specimen herbarium.

With scientists on six continents and 35 countries around the globe, the Missouri Botanical Garden is one of the three largest plant science enterprises in the world, along with the New York Botanical Garden and the Royal Botanic Gardens, Kew (outside London).

In 1971, there were just three Ph.D. botanists at the Garden. Today, there are nearly 50. With assistance from 75 technical and support personnel, over two dozen graduate students and 70 volunteers, Garden scientists conduct the essential work of plant identification, classification, and conservation in locations the world over.

Why on Earth?

Plants produce the essentials of life: food, clothing, shelter, medicine, oxygen. Botanists estimate there are 400,000 species of plants on Earth, but fewer than one in eight have been evaluated for human use. Meanwhile, in nations where people often live in extreme poverty, humans are destroying tropical forests at a rapid pace, clearing timber, using the land for cattle or slash-and-burn subsistence agriculture.

The Garden has targeted these areas for help. Its scientists collaborate with local institutions, schools, and indigenous peoples to create awareness, offer alternatives, and craft conservation strategies. We are striving for a world that can sustain us without sacrificing prosperity for future generations, a world where people share a commitment to manage biological diversity for the common benefit.

St. Louis, Research Hub

While the Missouri Botanical Garden maintains science and conservation operations around the world, in St. Louis it offers tremendous resources as a hub of plant science. The Garden publishes two of the world’s most important botanical journals—*Annals* and *Novon*—in addition to dozens of books annually. It maintains one of the world’s best botanical libraries and one of the world’s largest herbaria (a library of plant specimens, currently numbering 5.8 million). The Garden also maintains strong ties with local St. Louis universities, sponsoring graduate students each year.

Meanwhile, Garden staff members work to share these resources by placing them on the Internet. It has developed and now maintains TROPICOS, the world’s largest online database of botanical information. Thanks to grants from the Andrew W. Mellon Foundation, the W.M. Keck Foundation, the Institute of Museum and Library Services, and the U.S. Department of Agriculture, the Garden is adding entire volumes of rare or inaccessible primary research literature and documented images of herbarium specimens to its online holdings. Work is ongoing, but is considered a tremendous boon to scientists in the developing world, which would not otherwise have access to these rare works and collections.

Under contract with the National Cancer Institute, Garden botanists collect plants that are screened for anti-cancer activity and for pharmaceutical evaluation in programs with other governmental and

corporate research groups. Field researchers work with local scientists to strengthen local botanical institutions and train new botanists.

Around the Globe

The Missouri Botanical Garden operates the world's most active research program in tropical botany. Scientific study at the Garden focuses on exploration of the tropics, which encompass the earth's least known, most diverse, and most rapidly vanishing ecosystems. Because of the speed with which irreversible changes occur in tropical regions, the Garden has made a long-term commitment and assumed a leadership role in the study and conservation of these imperiled habitats.

North America

- The Garden is the editorial center for the *Flora of North America*, a catalog of all 21,000 plant species on the continent and a collaboration of 30 U.S. and Canadian institutions.
- Closer to home, the *Flora of Missouri* project is jointly sponsored by the Missouri Botanical Garden and the Missouri Department of Conservation. The project's goal is to produce a revised edition of former Garden curator Julian A. Steyermark's *Flora of Missouri*, first published in 1963. *Steyermark's Flora of Missouri, Second Edition: Volume 2*, published in 2006 in cooperation with the Missouri Department of Conservation, is an up-to-date treatment of about two-thirds of the state's botanical riches.
- The Garden collaborates with the University of Missouri to develop standards for accurate identification of medicinal herbs used in dietary supplements.
- The Garden collaborates on a new checklist of the plants of Mexico.

Mesoamerica

The rugged region from southern Mexico through Panama joins two great continental land masses. The region is of exceptional biological diversity.

- Costa Rica has a Garden botanist-in-country, who collaborates on the Spanish-language manual of Costa Rican plants.
- In Nicaragua, Garden researchers conduct conservation assessments of endangered species utilizing the Garden-published *Flora de Nicaragua*. The fern volume of the *Flora de Nicaragua* is nearing completion in 2007.
- Panama was home to the Garden's first field research, begun in 1926.

South America

The neotropics of South America has the richest biological diversity in the world, with more than one-third of all plant species. One-sixth of the world's species occur in just three countries—Colombia, Ecuador, and Peru—an area one-third the size of the U.S.

- In Colombia, Garden researchers are working on a checklist of plants from the Antioquia region.
- Ecuador has had an in-country Garden curator for over 25 years. Recently, the Taylor Fund for Ecological Research has funded research into the previously unexplored Cordillera del Cóndor. In addition to helping develop the National Herbarium in Quito, the Garden provides ongoing support for Ecuadorian botanists and conservation.
- In Peru, the Garden curator-in-residence works extensively with local botanists, universities, and indigenous people in multi-tiered programs for more than 30 years. New programs include sustainable community agriculture and conservation initiatives.
- In Bolivia, the Garden's resident curator leads research and conservation training programs, and collaborates with Bolivian botanists to compile an inventory of the Madidi National Park.
- In Brazil, the Garden is offering assistance on a newly begun checklist of Brazil.
- Garden scientists are collaborating with colleagues in Chile, Argentina, Paraguay, and Uruguay to compile a checklist of temperate South America, popularly referred to as the "Southern Cone."

Africa

With nearly 800,000 specimens from Africa in the herbarium, the Garden is the recognized U.S. center for the study of African botany. Recently, the Garden has completed digitization of the entire type collection of African plant specimens.

- Madagascar is a biologically rich island nation off the east coast of Africa, where the Garden has sustained a research program for decades. Two resident botanists are stationed in the capital; they work with a talented staff of 50 local Malagasy botanists and botanists-in-training. The Garden has

supported the expansion of the herbarium there, a multi-tiered botanical training program, and development of conservation initiatives and publications. Garden scientists are involved in the creation of a rain forest preserve on the Masoala Peninsula. People who live near the preserve are being taught sustainable agricultural techniques so that they can survive without destroying the forest.

- In Tanzania, the Garden's program has been modeled on the very successful program in Madagascar. Collecting and preparation of inventories continues.
- The Garden's resident botanist in Gabon, in Central Africa, has completed a checklist of plants in the Lopé-Okanda Reserve.
- Garden researcher Corneille Ewango, of the Democratic Republic of Congo, was awarded the Goldman Prize in 2005, considered the "Nobel Prize for the environment."
- In Ghana, Kenya, Zambia, Cameroon, Malawi, and South Africa, Garden researchers lead training, research, and field work projects, as well as botanical inventories to help guide conservation decisions.

Asia & Pacific

The Garden plays a pivotal role in opening the rich biological diversity of China to Western scientists.

- In China, the Garden is part of a monumental multi-national project to produce the first English-language edition of the *Flora of China*.
- Researchers in Korea and Thailand have produced a checklist of all the mosses in these moss-rich nations.
- Vietnam hosts a resident Garden botanist in Hanoi, who collaborates with local universities, peoples, and schools to provide conservation training and compile an inventory of endangered plants and animals.
- On the island of New Caledonia in the South Pacific, Garden researchers have discovered several new species and are helping to organize a conservation strategy.
- Garden scientists in recent years have gone on collecting expeditions to Turkey, and as one of the first Western science groups admitted in decades, to Iran.
- A catalog of rare and endangered plants of Central Asia was published after researchers inventoried Kazakhstan.
- Permanent collaboration is established in the Republic of Georgia, and the Garden is helping to screen plants for chemicals of pharmaceutical interest in Tbilisi.

Read more about plant science and conservation at www.mobot.org.

For more information, contact the Public Relations Department at (314) 577-0254 or (314) 577-5141 or check the Garden's Web site at www.mobot.org. For 24-hour recorded visitor information, call (314) 577-9400 or 1-800-642-8842 toll free.

The Missouri Botanical Garden's mission is "to discover and share knowledge about plants and their environment, in order to preserve and enrich life." Today, 148 years after opening, the Missouri Botanical Garden is a National Historic Landmark; and a center for research, education and horticultural display.

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