

Partnering with Plants

by Dave Harrelson



This specimen of Pyne's ground-plum (*Astragalus bibullatus*) grown in a greenhouse at the Missouri Botanic Garden represents the first time the species has flowered in cultivation.

Photo by Kimberlie McCue

Once, clouds of a unique wildflower, the decurrent false aster (*Boltonia decurrens*), lined the banks of the Illinois River, but the construction of a system of locks and dams has nearly eliminated the plant's habitat. Loss of wetlands habitat also was a primary reason for the decline of the swamp pink (*Helonias bullata*), a plant endemic to freshwater wetlands along the eastern seaboard. In 1992, a single specimen of *Delissea undulata* was discovered in North Kona, Hawaii. Botanists were able to germinate seeds from this plant, which was thought to have been extinct since 1971, and today the species appears to have a chance for recovery. Elsewhere in Hawaii, at least 12 native plant species are represented by only a single known individual.

Faced with the expanding development of natural areas, competition from invasive non-native species, loss of pollinators, and over-collection for ornamental and other uses, many of our native plants face an uncertain future. Hawaii, California, Texas, Florida, and Puerto Rico have the greatest number of rare, imperiled, and federally listed plant species. Some plants, such as the endangered Tennessee coneflower (*Echinacea tennesseensis*), are known to contain substances that can be used

to treat human illness. Two-thirds of the native plants of conservation concern are closely related to cultivated species.

As of March 31, 2001, 736 native plant species were listed as endangered or threatened under the Endangered Species Act. According to the Center for Plant Conservation (CPC), over 4,000 species of U.S. plants, roughly 25 percent of our country's entire known native plant species, are at some degree of risk. Of these, many hundreds could vanish in the next few decades.

Since its founding in 1984, the CPC has been working with the Fish and Wildlife Service to conserve and recover America's imperiled plant species. The CPC is one of very few national organizations in the U.S. dedicated solely to the conservation of our native plants. Based at the Missouri Botanical Garden, the CPC's network of 30 botanical gardens, arboreta, and related institutions collectively maintain the best-curated and most secure collection of rare native plants and plant materials anywhere in the world. The CPC also maintains information on thousands of rare and endangered native plants. The status of these species in the wild, and especially those held in conservation collections, is constantly tracked. The CPC then provides this information to scientists, conservationists, land-management agencies, and many others.

The many rare and federally protected plants for which the CPC cares are maintained as security against extinction and as a pool of genetic material for use in restoration, research, recovery, and education. The CPC's participating institutions are currently reintroducing several endangered and threatened plant species to secure habitats in the wild. Just as important, the CPC undertakes efforts to conserve rare plants in their natural habitats. With

A botanist transplants *Astragalus bibullatus* into the wild

Missouri Botanic Garden photo





Mary Yurlina searches for a tiny threatened plant, *Geocarpon minimum*, in its glade habitat.

Missouri Botanic Garden photo



The swamp pink is an attractive wildflower threatened by the loss of wetland habitats.

Photo by David Snyder

this in mind, the CPC has been recognized by the Service for its technical and leadership qualities in the controlled propagation of rare native plants for recovery purposes. In July 2000, the CPC and the Service signed a memorandum of understanding at the World Botanic Congress in Asheville, North Carolina, establishing a framework for cooperation in plant conservation.

A cornerstone of the CPC's conservation programs is the National Collection of Endangered Plants. Currently at 575 species, it is one of the largest living

collections of rare plants in the world. Genetically diverse, live plant material is collected from nature and carefully maintained within the CPC garden network in the form of seeds, cuttings, and mature plants. This material is propagated as needed and closely monitored until it can be restored to natural habitats.

Seed storage is another component of the CPC's conservation strategy for native plants. For example, as a member of the CPC, the Berry Botanic Garden in Portland, Oregon, follows the standards and protocols for seed collection, storage, and maintenance developed by the CPC. The seeds of plants like the western lily (*Lilium occidentale*) are kept in a controlled environment at minus 18 degrees Celsius (0 degrees Fahrenheit). To reduce moisture in the seeds to the proper level, they are first dried with silica gel. They are then cleaned, packaged, and stored in freezers. Seeds preserved this way can remain viable for several decades, possibly for centuries.

Research into the ecology and management of rare species, including many of those on the federal list of

endangered and threatened plants, is an integral part of the conservation activities of the CPC network. From seed storage to pollination biology and population genetics, scientists from member institutions engage in all aspects of conservation research. Increasingly, participating institutions are applying their botanical expertise and their extensive collection to restoration efforts across the nation, often working in collaboration with other conservation organizations such as The Nature Conservancy, state Natural Heritage Programs, and the Service.

Education is also a major part of CPC activities. Each year, millions of people visit participating gardens and arboreta where they can view and learn about native plant resources that most will probably never see in the wild. Interpretation and other education-oriented experiences are constantly being developed with the goals of increasing public awareness and promoting the stewardship of these natural treasures.

Both the CPC and the Service anticipate increased mutual participation in the recovery process for endangered plant species. Likewise, we all hope that the new memorandum of understanding will lead to the establishment of new alliances (for example, local partnerships between CPC member institutions and national wildlife refuges) and other conservation efforts.

Over the next decade, there will surely be successes, and probably some failures, but the essential fact is that when we work together to develop coordinated conservation and recovery projects, both in cultivation and in the wild, the load is a little lighter, the work a little easier, and our common goals much more obtainable.

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