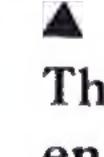
A national organization headquartered at the Missouri Botanical Garden

A national organization headquartered at the Missouri Botanical Garden and governed by an independent Board of Trustees.





Endemic Plants: Many plants are endemic, restricted in habitat and geographic region. Forty-eight percent of California's 8,000 native plant species are endemic, found nowhere else. California's Tiburon mariposa lily, Calochortus tiburonensis (right), grows only in serpentine soils, which are restricted in distribution. [20]



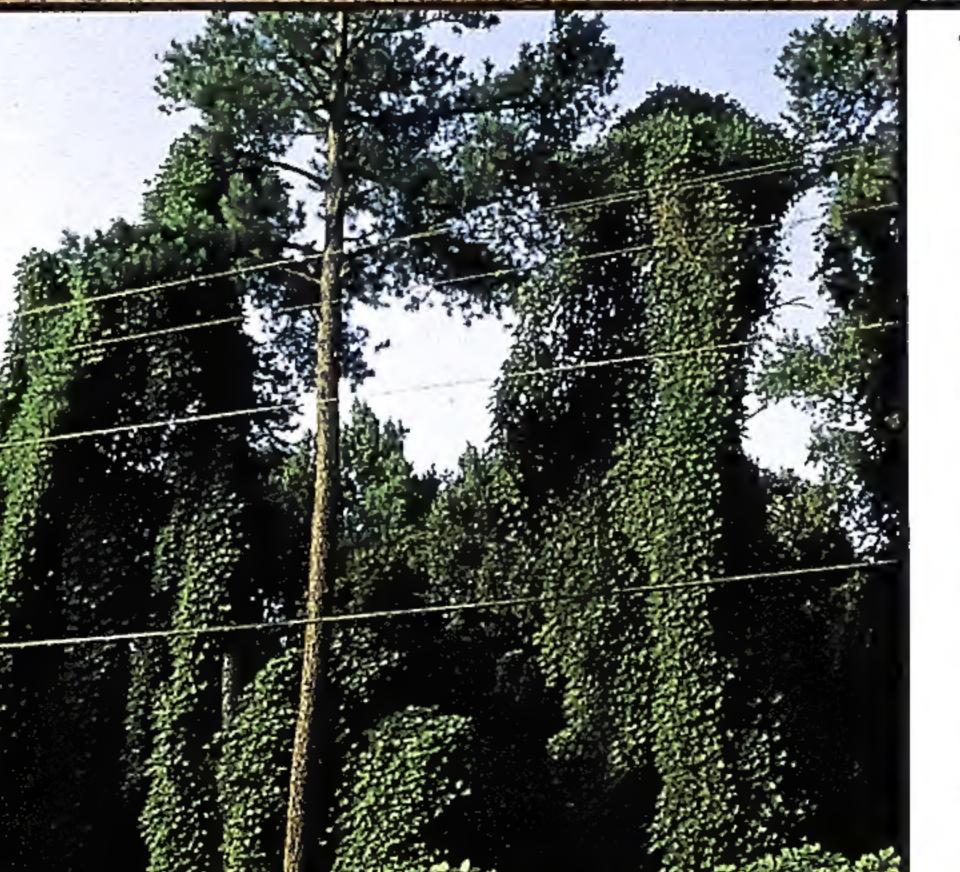
The Center for Plant Conservation's (CPC) mission is to conserve endangered native plants of the U.S. The first organization of its kind in the world, CPC was founded in 1984 and moved its headquarters to the Missouri Botanical Garden (MBG) in 1990. The collaboration with MBG's worldwide research and conservation programs, especially the Flora of North America project, make CPC a powerful model for many conservation programs. Texas snowbells, Styrax texana, above, is an excellent example of CPC's cooperative efforts. Reduced to 40 individuals in the wild, the plant is in protective cultivation at San Antonio Botanical Garden, a CPC affiliate. Seeds collected from the wild have been propagated at San Antonio and reintroduced at a protected site within the species' historic range, in cooperation with the U.S. Fish and Wildlife Service. [9]



Threatened ecosystems—Wetlands regulate water systems and provide essential habitat for one-third of all threatened and endangered species in the U.S. In the last 200 years, 47% of U.S. wetlands have been destroyed by development. Ten states have lost 70% or more of their original wetlands. Swamppink, Helonias bullata (left), a wetland species, is part of the CPC National Collection at The New York Botanical Garden. [12]

Primary Threats—Population growth, habitat loss: World population could double within 50 years, placing increasing pressure on all natural resources. Clearing land for roads, agriculture, grazing, buildings or recreation destroys habitats and the plants and animals associated with them (far right). Off-road vehicle use (right) endangers fragile habitats, such as these California sand dunes, which are home to a dozen endemic species. Invasive exotic species: Kudzu, Pueraria lobata (below, right), introduced along highways to reduce erosion, has spread beyond control in the South, climbing and smothering plants and buildings in its path. Often the threat from invasive or introduced, species is not apparent because hillsides appear green and lush. Habitats are complex constellations of associated species. Once they are destroyed or damaged, the risk of extinction increases. [1] [6] [22]





Horticultural Exploitation: The Western lily, Lilium occidentale (below), grows only near a few bogs in California and Oregon. Heavily collected in the wild, many populations have been nearly wiped out. The Berry Botanic Garden is propagating plants, storing its seeds, studying its growing and germination requirements, and working with concerned nurseries to provide cultivated supplies to growers and breeders. [19]



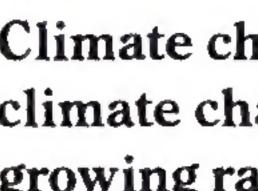
Biodiversity is the basic architecture of all ecosystems on earth. About 20,000 species occur in the U.S. including Hawaii, the Virgin Islands and Puerto Rico; over 4,400 are of conservation concern as defined by CPC, The Nature Conservancy, or U.S. Fish and Wildlife Service. California's coastal region (left) exemplifies areas of high endemism and biodiversity severely threatened by development. [10]

Genetic variation within and among populations is the basis for evolutionary change and species' ability to survive climate change, disease, drought or disturbance. As rare plants lose populations, their genetic flexibility to adapt to future changing environments is reduced. The Plymouth gentian, Sabatia kennedyana (below), is a rare plant with a range of small populations scattered from Nova Scotia to South Carolina. [6]



Specialized habitat: Vernal pools are small temporary ponds that fill with rain in winter and evaporate in spring. Many endemic species are found in these ephemeral habitats and nowhere else. Because vernal pools often are situated on level ground in mountainous regions, urban construction projects are the primary threat to them and the unique plants that inhabit them. Left: A vernal pool in the Chico region of California. [17]





Climate change: As global climate changes, the optimal growing range for many plants will shift, possibly faster than plant populations can "move" across the landscape. The effects will be most severe for species that are restricted in their distribution and adaptations. The bristlecone pine, Pinus longaeva (below), with specimens more than 8,000 years old, is a reminder of the time scale on which species adapt and migrate. [6]



Extinction in the Wild: The Franklin tree, Franklinia alatamaha (right), was among the first endangered plants of North America. Discovered in 1765 in Georgia, it was heavily timbered and has not been seen in the wild since 1790. Although the species has been saved from extinction through cultivation in gardens, its story will be complete only when it has been successfully reestablished in **nature**. [26]



Coevolution—Pollination: The iiwi bird, Vestiaria coccinea, has co-evolved its long, curved beak with the long, curved flower of Trematolobelia macrostachys in montane wet forests on the Hawaiian islands. Many plants and animals have evolved similar interdependent relationships. If either disappears from an area, the other species may not





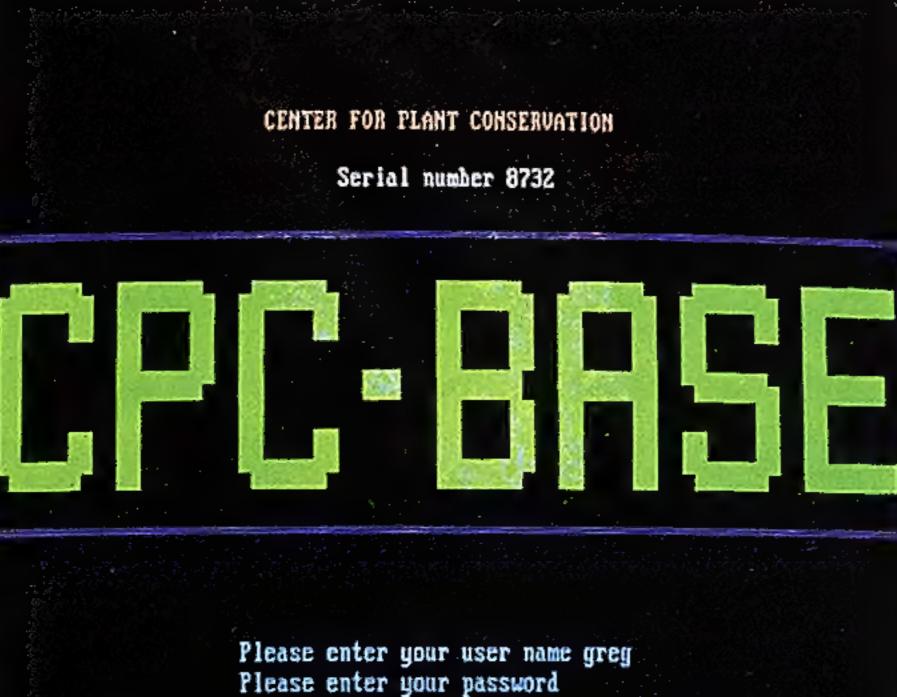
Threat—Development: The 6" dwarf lake iris, Iris lacustris, survives only along the northern shores of Lake Michigan and Lake Huron, with a few sites in Ontario. Most colonies of the iris are on private land, where it is threatened by residential development and a potential demand in the horticultural trade. It is being grown at the CPC affiliate Holden Arboretum in Mentor, Ohio. [23]

Endangered Species Act: Furbish lousewort, Pedicularis furbishiae (right), was believed to be extinct until populations were discovered along the St. John River of northern Maine. It was the first plant to be protected under the Endangered Species Act of 1973. The Act, the strongest piece of conservation legislation in the world, protects threatened plants, animals, and the habitats on which they depend. [21]

Seed storage: Seed banks (left) are a tool that can be used to preserve genetic diversity in some plant species in case of catastrophic loss in the wild. The ultimate goal of conservation is to allow plants and animals to survive and evolve in their natural habitats. CPC National Collection seeds are kept under state-of-the-art conditions at the USDA National Seed Storage Laboratory (NSSL) in Fort Collins, Colorado. [13]

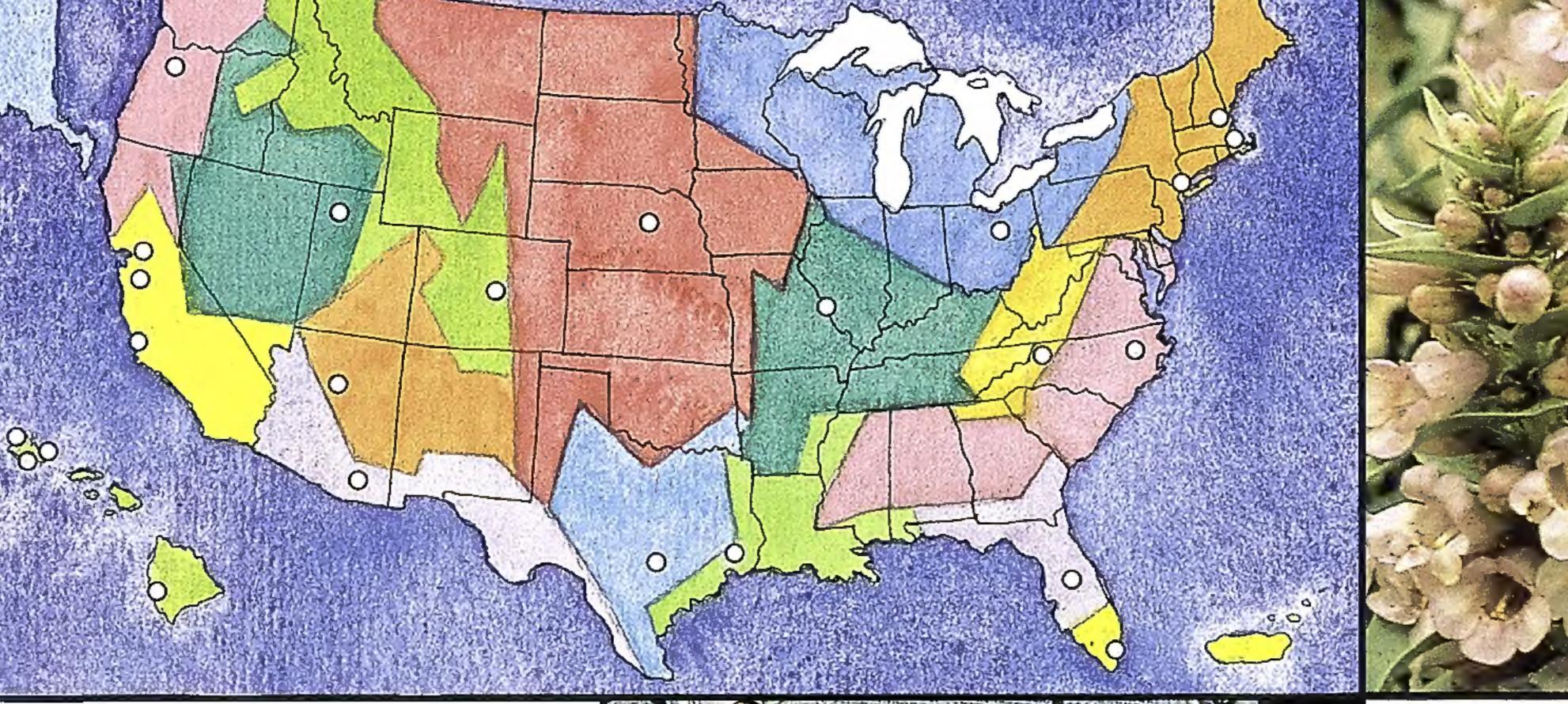


Collaboration—Computerization: MBG and CPC are world leaders in establishing botanical databases, accumulating scientific information on plants. CPC-BASE is being linked with MBG's TROPICOS database and the Flora of North America, creating a central resource for mapping geographic ranges and providing basic data needed to plan conservation strategies. [25]



Are you using a Color or a Monochrome monitor (C/M) ____

Participating Institutions: The heart of the CPC is its network of 25 leading botanical gardens and arboreta throughout the U.S. Each is responsible for rare and endangered plants in its region. The institutions maintain seed collections, grow plants, complement and work with researchers, land managers, federal, state and local agencies in developing integrated conservation strategies.



Coevolution—Fragrance: The blowout penstemon, Penstemon haydenii, occurs only within the specialized habitat of the Sandhills region of Nebraska. The species thrives in the eroding and shifting sands of "blowouts," depressions caused by wind erosion. This species is one of only two North American penstemons to develop fragrance, needed to attract pollinators to its transient and widely dispersed sites. [11]



Reintroduction and Restoration: The large-flowered fiddleneck, Amsinckia grandiflora, is one of the nation's most threatened plants. Known from only two sites, the large-flowered fiddleneck has been the subject of a model reintroduction program involving documented baseline genetic data. In addition, the University of California Botanical Garden is preserving plant material in the form of thousands of seeds. [24]



The National Collection of **Endangered Plants consists of** living plant material collected from the wild, attempting to represent the genetic diversity found in natural populations. The National Collection is maintained at the CPC Participating Institutions. The Mexican flannelbush, Fremontodendron mexicanum (left), is part of the National Collection at Rancho Santa Ana Botanic Garden. [10]

Priority Regions: Of the 700 American plants facing imminent extinction, 73% are found in Hawaii, California, Texas, Florida and Puerto Rico. Nationwide, over 90% of plants of conservation concern grow in just 12 states of high biodiversity and habitat loss. CPC convenes **Regional Endangered Species Task** Force meetings to develop integrated conservation plans for priority plants. [3]



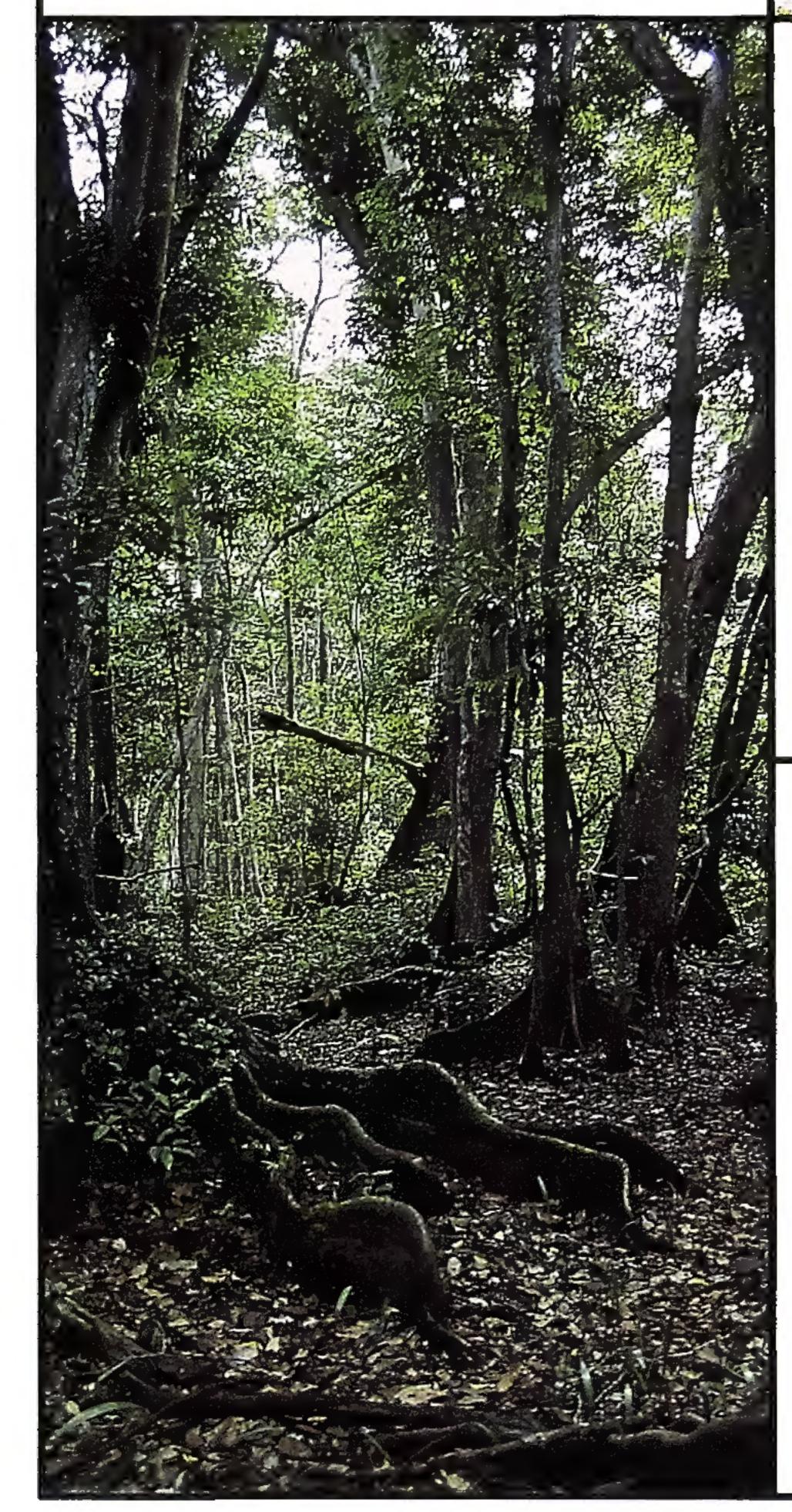
Wide distribution: The running buffalo clover, Trifolium stoloniferum, was once widespread, but it is now known from only a few sites scattered from Ohio to Virginia. Thought to have benefited by the presence of bison, the plant is endangered despite its wide range. MBG is working on a cooperative project to reintroduce the plant into Missouri, where it once flourished. [16]



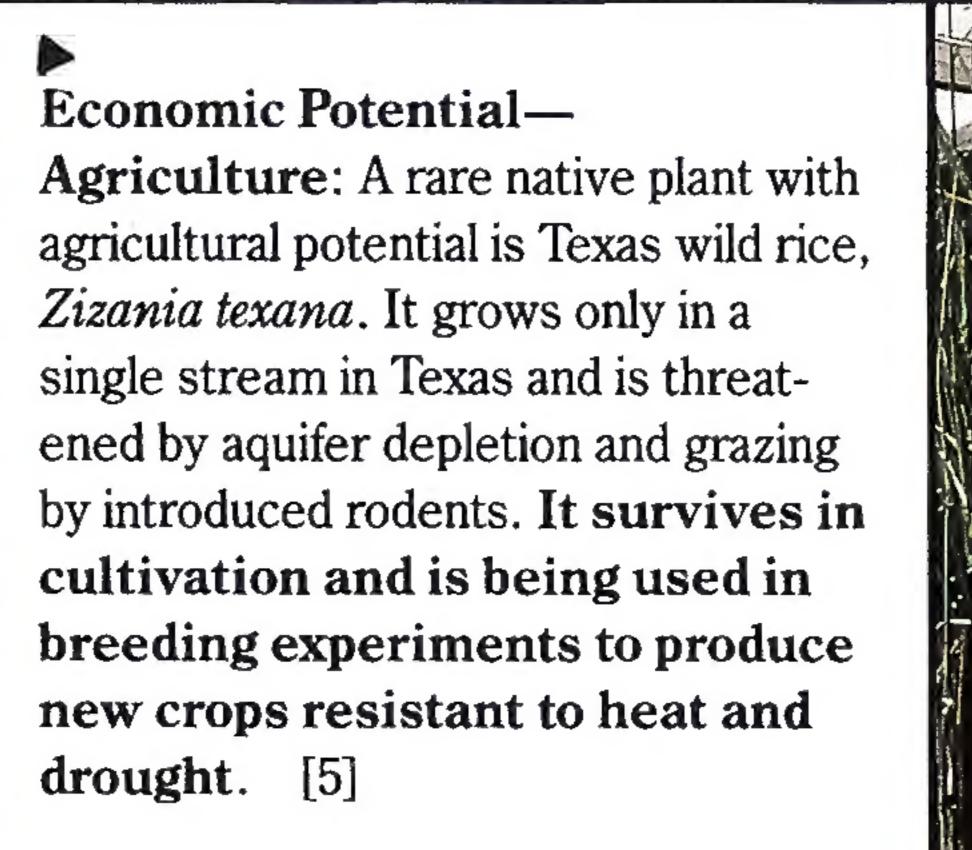
Cooperative Research: Malheur's wire-lettuce, Stephanomeria malheurensis (left), was once driven to extinction in the wild. Fortunately researchers at the University of California, Davis had saved seed from the original population. Under a cooperative arrangement, the Berry Botanic Garden has produced tens of thousands of seeds for storage in a gene bank and has propagated plants that have been used to reestablish the species in the wild. [8]

Reintroduction: Knowlton pincushion cactus, Pediocactus knowltonii (below, left), occupying 15 acres in northwestern New Mexico, is a favorite among cactus fanciers, but illegal collecting has seriously depleted its numbers in the wild. An innovative program is helping to restore this cactus in nature by reintroducing plants to a less accessible location within the species' historic range. [15]





Narrow distribution: Being found at very few sites makes species vulnerable to catastrophic events. For example, the tree anemone, Carpenteria californica (above), is quite common in the horticultural trade but is not reproducing in the wild. Few people realize that some commercially common plants may be endangered in the wild. [6]



Economic Potential: The Okeechobee gourd, Cucurbita okeechobeensis (left), in the squash family, is resistant to cucumber mosaic virus and powdery mildew and is of great interest to plant breeders. This species is nearly extinct in its native habitat, which has been cleared for farming in Lake Okeechobee, Florida. [18]

Garrett's mint, Dicerandra christmanii (right), is a very rare plant known from only three degraded sites in central Florida. This diminutive mint is among 20 to 30 species found only in central Florida's scrub communities. Its unique menthol fragrance and drought tolerance may prove to be of economic value. Bok Tower Gardens, a CPC affiliate, is maintaining cultivated populations of these plants and plans to reintroduce them when protected sites become available. [18]

the ecological balance of life on Earth.



Tropical Ecosystems: Worldwide, biodiversity is richest in the tropics. CPC's tropical priority regions include Puerto Rico, the Virgin Islands, southern Florida and Hawaii, which has the highest concentration of endangered plants in the U.S. Silversword, Argyroxiphium sandwicense (above), was once abundant in Hawaii but has been reduced to only a few individuals by grazing amimals introduced in the 1700s. [7].

Education: Education and displays at CPC's network of 25 botanical gardens and arboreta encourage approximately 4 million visitors a year to see and learn about the most endangered plants in their region—plants they would be unlikely to encounter in the wild. Teaching us to understand, to care, and to become involved is a vital role of the Participating Institutions of the CPC. Right: Students study the tallgrass prairie at Shaw Arboretum, MBG. [4] To preserve essential biological diversity in our world, it is critical to understand and appreciate the roles of plants in intact natural habitats. Plants give us food, medicines, clothing, and shelter as renewable resources. Fundamentally, plants fix the energy of the sun and make it available to other organisms, including ourselves. In the most profound sense, plants maintain

Dedicated to the twenty-five Participating Institutions of the Center for Plant Conservation: The Arnold Arboretum of Harvard University, The Berry Botanic Garden, Bok Tower Gardens, Denver Botanic Gardens, Desert Botanical Garden, Fairchild Tropical Garden, The Arboretum at Flagstaff, Garden in the Woods, Amy B. H. Greenwell Ethnobotanical Garden, The Holden Arboretum, Honolulu Botanical Gardens, Harold L. Lyon Arboretum, Mercer Arboretum and Botanic Gardens, Missouri Botanical Garden, National Tropical Botanical Garden, The Nebraska Statewide Arboretum, The New York Botanical Garden, The North Carolina Arboretum, North Carolina Botanical Garden, Rancho Santa Ana Botanic Garden, Red Butte Gardens and Arboretum, Regional Parks Botanic Garden, San Antonio Botanical Garden, University of California Botanical Garden, Waimea Arboretum and Botanical Garden.

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	[5]	William Emery, Southwest	[10]	Linda McMahan, The Berry		Garden	[21]	Irene Storks	[26] Kenneth Wurdack
		Texas State Univ.		Botanic Garden	[17]	Robert Schlising, California	[22]	Robert Sutter, The Nature	
	[6]	Donald Falk, MBG/CPC	[11]	Nebraska Statewide Arboretum		State Univ., Chico		Conservancy	MBG=Missouri Botanical Garden
	[7]	Derral Herbst, U.S. Fish &	[12]	The New York Botanical Garden	[18]	Jonathan Shaw, Bok Tower	[23]	Kerry Walter, World Conservation	CPC=Center for Plant Conservation
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