NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO

Founding Chapter Of

THE OHIO NATIVE PLANT SOCIETY

6 Louise Drive
Chagrin Falls, Ohio 44022
(216) 338-6622

On the Fringe

Volume No. 6 **March/April 1987** **Number 2**

ANNUAL DINNER
NOVEMBER 13, 1987

PROGRAMS AND EVENTS:

March 1 (Sunday) **Dayton Chapter - 1:30 p.m.** - Cedar Bog Tour with Paul Knoop, Aullwood Director of Education. Meet at parking lot off Woodburn Road.

March 13 (Friday) **Cincinnati Chapter - 5:45 p.m.** - Annual Dinner of the Cincinnati Chapter at the Cinci Zoo. Dr. Diederick DeJong of Univ. of Cinci will give a lecture entitled "African Safari: To the Snows of Kilimanjaro."

March 14 (Saturday) **Cleveland Chapter - 1:00 p.m.** - Tom Yates presents a class, "Native Plant Propogation." We will grow ferns from spores, graft shrubs and learn different ways to sow seeds. Registration limited. Fee $5.00 in advance. Call 338-6622. Cleveland Museum of Natural History.

March 14 (Saturday) **Wilderness Center - 2:00 p.m.** - Orientation hike to Jackson Bog and the Stark-Case Prairie. Meet at Wilderness Center.

March 16 (Monday) **Columbus Chapter - 7:30 p.m.** - "Ferns of Ohio." Allison Cusick, staff botanist of the Division of Natural Areas and Preserves will discuss our native ferns and their relatives. Their life cycle, habitats, ecology, and identification will be included. Sharon Woods Metro Park.

March 16 (Monday) **Dayton Chapter - 7:30 p.m.** - Endangered species lecture with Jeff Knoop, Director of Land Registry and Protection, The Nature Conservancy, Cox Arboretum.

March 19 (Thursday) **Cleveland Chapter - 7:30 p.m.** - Slide night at the Chagrin Falls Library. Bring 10 of your best 1986 slides of unusual plants and places.

March 28 (Saturday) **Cincinnati Chapter** - Hike at Clear Creek Falls and Fort Hill State Park with Vic Soukup. Call for details.

April 5 (Sunday) **Dayton Chapter - 8:00 a.m.** - All day Adams County Tour. Sack lunch. Call for details.

April 11 (Saturday) **Wilderness Center - 2:00 p.m.** - Hike in Homersville Wet Sedge Meadow. Meet at Wilderness Center.

April 12 (Sunday) **Columbus Chapter - 9:00 a.m.** - Field trip to Clifton Gorge State Nature Preserve and Cedar Bog Memorial. Meet at Otterbein College Science Bldg.

April 18 (Saturday) **Cincinnati Chapter** - Hike in Caesar Creek Preserve, Clinton County with Bill Culbertson. Call for details.

April 20 (Monday) **Columbus Chapter - 7:30 p.m.** - A program of beautiful slides illustrating the native orchids of Ohio will be presented by David McCann. Sharon Woods Metro Park.

April 20 (Monday) **Dayton Chapter - 7:30 p.m.** - Wildflower lecture by Harry Butler, well known plant authority. Cox Arboretum.

April 23 (Thursday) **Cleveland Chapter - 7:30 p.m.** - A very popular speaker last year, Lazarus Macior returns to continue his lecture on "How Flowers Attract Pollinators," showing flowers under ultra-violet light, and secrets rarely seen by us. Holden Arboretum.

April 25 (Saturday) **Cleveland Chapter - 9:30 a.m.** - Jay Beswick will lead a field trip in Mill Stream Run Reservation, a new area in the Metro Parks filled with bluebells, isopyrum and other Spring treasures. Meet at the Royal View Shelter House on Valley Parkway.

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Athens does not have a Spring schedule at press time. If you are going to be in the area, please call Ingrid Chorba and she will let you know what is planned.

Athens	-	Ingrid Chorba	-	614/592-2543	Eve.
Cleveland	-	Tom Sampliner	-	216/932-3720	Eve.
Cincinnati	-	Jim Innis	-	513/385-0670	Eve.
Columbus	-	Jim Stahl	-	614/882-5084	Eve.
Dayton	-	Ellen Fox	-	513/897-8139	Eve.
Toledo Organizer	-	Denise Gehring	-	419/535-3058	Work
Wilderness Center	-	Glenna Sheaffer	-	419/289-6137	Eve.

NETWORKING TO SAVE IMPERILLED PLANTS by D.A. Falk and K.S. Walter

This article is reprinted with permission of Wildflower, Canada's National Magazine of Wild Flora. Autumn 1986 issue.

The public is increasingly aware of how rapidly tropical habitats are being destroyed and how many of the exceedingly numerous plant and animal species in them lost. But habitat destruction and the specter of massive plant extinction is truly a global issue, cutting across national boundaries and hemispheres and encompassing the developed as well as the developing worlds. In both tropical and temperate regions 10 to 15 percent of the native plant species are in danger.

Botanical gardens and arboreta have a key role to play in sustaining both rare plants and the habitats in which they live. Collectively, botanical gardens have extensive experience with cultivating rare and unusual plants, but the efforts of gardens working separately have not been comprehensive or effective enough to satisfy the urgent need to conserve, study and propagate the thousands of species of rare U.S. plants.

In 1984, therefore, a group of botanical gardens, arboreta and conservation organizations joined to form the first national organization for conserving endangered plants. The Center for Plant Conservation, headquartered at the Arnold Arboretum in Jamaica Plain, Massachusetts, and now with 18 participating institutions, is helping to fund and coordinate the efforts of these gardens to propagate and study rare native plants. The Center's aim is to bring representatives of the more than 3,000 rare and endangered taxa in the U.S. into cultivation at botanical gardens so they may be cared for by experienced professionals, be made available for research and education and ultimately, it is hoped, be saved from extinction.

The Problem - The temperate zones are considerably less rich in plant species than tropical zones. The relative homogeneity of temperate habitats has helped protect them from the losses that are now devastating the tropics. For instance, while just a few decades of loggaing in the tropics has created a major biological crisis, centuries of logging and clearing in New England has not eliminated any dominant tree species there, as far as is known.

Nonetheless, the cumulative effect of centuries of abuse -- activities with a large impact over a long period of time -- is beginning to have a telling effect on temperate floras, and the U.S. is no exception.

Many rare plants are nearing extinction as a result of such human activities as agriculture, burning, collecting, development, introduction of exotic pests, forestry, grazing, mining, pollution, spraying, trampling, offroad vehicles, and water projects. It has been estimated that at least 200 species of U.S. plants have become extinct since the Europeans arrived in North America. Although, it is impossible to determine how many fell prey to each cause, it appears that most instances of native plant extinction are human-induced. It is probable that the pace of endangerment and extinction is quickening.

The Endangered Species Act, passed by Congress in 1973, tries to save plant species by giving federal protection to species that have been put on the federal endangered or threatened species list. But the protection applies only to interstate commerce and to plants on federal lands; the Act does not have enough clout in cases where the plants occur only or primarily on private land. State laws for protecting rare plants are seldom stronger.

Traditional Solutions - For most of this century in the U.S. efforts to protect species and habitats have emphasized land acquisition. Early recognition of the value of conserving large tracts of land in national parks and forests, and the strong post-World War II growth of an active conservation movement, have combined to place a strong emphasis on acquiring or otherwise protecting land.

Extensive private involvement is in some ways characteristic of the U.S. conservation effort. Few industrialized countries have managed to conserve as much land without resorting to extensive government programs. In the U.S., a single private organization, the Nature Conservancy, has engineered the protection of more than 2.3 million acres of important, and often critical, habitat.

In recent years, however, there has been a shift in the land conservation movement. While conservationists are still strongly -- and totally appropriately -- committed to increasing the total acreage of protected land, they are also paying increasing attention as land stewardship. This ethic, which matured in the 1970's, places a great emphasis on careful management of parcels of valuable habitat to ensure that they will remain valuable as living genetic reserves.

One reason for the recent emphasis on management is that, with the single possible exception of Alaska, large tracts of wilderness are often no longer available to be set aside. Gone are the days when vast parks could be created with the strike of a pen, as in 1872 Theodore Roosevelt created the two-million-acre Yellowstone National Park.

Instead, land conservation of the 1980s has become leaner, meaner and more clever at achieving successes in areas that are otherwise increasingly developed. Conservationists use more refined and sophisticated techniques, for example, buying key parcels to capture the most valuable acreage; exploring conservation restriction agreements instead of outright land purchases; and suggesting tax incentives for landowners who agree not to develop their lands.

Good land management, however, requires good information -- the sort of information that is very difficult to come by for the rarest and most endangered plants in North America, such as Texas snowbell, **Styrax texana.** Only 25 individuals of this plant were reported when the plant was discovered in 1976, all growing on steep limestone cliffs in southern Texas, making it hard to determine what factors limit its distribution and what factors might help enhance its chances of survival.

At present, the land manager more often than not has to rely on instinct, analogy and luck to provide optimal growing conditions for the many species in his or her care.

The New Players - Providing optimal growing conditions for plants is one of the traditions of botanical gardens and arboreta; collectively, they have been doing it for centuries. What is new is the emergence of gardens and arboreta as key new allies in conservation, in addition to their traditional strengths of display, education and research. Gardens have long sought to cultivate the rare or unusual, and the skills they have developed to do so are now being further refined as tools in the fight to conserve natural diversity.

Conservation is not a totally new occupation for American gardens, of course. Several in the U.S. — including North Carolina Botanical Garden, Rancho Santa Ana Botanic Garden, Garden in the Woods and Fairchild Tropical Garden — have years of experience with rare native species.

But wide recognition of the seriousness of plant extinction began in the 1970s with passage of the Endangered Species Act. In the late 1970s and early 1980s a number of conferences, at the Royal Botanic Gardens, Kew, the New York Botanical Garden and elsewhere, suggested that it was time for gardens to pull together into some kind of coordinated national and international program to work on the problem.

Such an effort would require a comprehensive database as well as strict scientific and horticultural standards. It was clear that no single garden could lead the whole, since the enterprise would require a tremendous commitment of resources on a national scale. And it was equally clear that leadership was unlikely to come from conservation organizations outside the garden community.

Finally, in 1984, a group of eleven gardens and conservation organizations across the U.S. joined to form the Center for Plant Conservation, the world's first national organization dedicated to cultivation and conservation of native endangered plants. The American Association of Botanical Gardens and Arboreta (AABGA) lent key encouragement and support in the Center's early period, helping to form the original group of member gardens. In addition, the Center assembled an advisory council of eminent plant conservationists from the Smithsonian Institution, the World Wildlife Fund-U.S., the U.S. Office of Endangered Species (Department of the Interior), the International Union for the Conservation of Nature (IUCN) and the Nature Conservancy. By the end of the year, seven more gardens from key locations had joined the original eleven, and a national network was in place.

Operating as a consortium, the participating institutions propose to take on cultivation of the endangered species of their respective regions. In this way, each garden's collection will have a truly biogeographic character; together these regional collections will form a comprehensive, living, national repository of genetic material -- the National Collection of Endangered Plants. This collection will be used for storage, propagation, cultivation, research and, perhaps in some cases, eventual reintroduction to the wild.

Following a planning meeting at the Smithsonian in April 1985, the 18 gardens developed proposals to collect and attempt to cultivate a trial number of species

from their respective regions. By the year's end, many of the nation's rare species had been brought into cultivation for the first time. Work plans for 1986 are currently being written and reviewed.

The Brass Tacks of Conservation - The gardens' work to date is an impressive record of accomplishment, illustrating some of the diverse roles that gardens can plan in species conservation.

The Garden in the Woods, in Framingham, Massachusetts, is one of the few gardens in the U.S. dedicated by charter to the cultivation of endangered species of its region. On its geographically diverse 45-acre site, it is growing 49 species of rare and endangered plants, most of them from the northeastern U.S., and some -- like the southern species Oconee bells, **Shortia galacifolia** -- of major horticultural interest.

The Holden Arboretum in Mentor, Ohio, illustrates the ability of gardens to work with plants in a wide range of settings, from controlled growth conditions to near-natural habitat. For example, members of the Arboretum staff collected seeds of northern monkshood, **Aconitum noveboracense**, and planted them by a natural stream bank spring outflow, where they encounter conditions similar to those typical of their wild locales. Holden has also been working with the Ohio Department of Natural Resources on growing the spreading globeflower, **Trollius laxis.**

The Fairchild Tropical Garden, in Miami, which for years has specialized in the cultivation of palms and cycads, is growing two species that have been listed as endangered -- the key tree-cactus, **Cereus robinii**, and a gymnosperm, the Florida torreya, **Torreya taxifolia.** Only one plant of each of these species is presently in cultivation at Fairchild, and part of Fairchild's initial work is to bulk up existing collections to meet the Center's standards.

The North Carolina Botanical Garden in Chapel Hill, with a long history of working with rare and endangered native plants, specializes in plants of the Piedmont region and has an especially strong collection of carnivorous plants, notably pitcher plants, **Sarracenia spp.** It has also pioneered in propagating carnivorous plants for the horticultural trade so as to alleviate pressures on wild populations. This garden also interacts with conservation organizations and government agencies to further the conservation effort.

. **Napaea dioica** L. Glade Mallow.

The Rancho Santa Ana Botanic Garden in Claremont, California, is involved in a network of conservation organizations and botanical gardens, all in California, working to conserve the state's exceptionally rich and highly endangered flora. One particular genus of succulents, **Dudleya**, is of special conservation concern — 16 of the total 27 taxa are being tracked by the Center.

The Waimea Arboretum and Botanical Garden on the island of Oahu in Hawaii and the Pacific Tropical Botanical Garden on Kauai have a daunting task ahead of them, for the Hawaiian flora is by far the most critically endangered in the country. Of the total of 1,800 native Hawaiian plant species, nearly one half appear in the Center's database. Moreover, the state has two special problems: The native flora is being rapidly overrun by exotic plants and animals; and the native species are often widely dispersed and particularly recalcitrant in cultivation. Special steps must be taken to preserve these plants.

Waimea has an impressive record of native plant conservation. It currently has 47 taxa of conservation concern in cultivation, many represented by several individuals from multiple accessions. One endangered plant, **Euphorbia skottsbergii** var. **kalaeloana**, is represented by more than 50 individuals and has been in cultivation there since 1977.

A problem facing the Center is the lack of a suitable mid-elevation garden in Hawaii. Waimea and Pacific Tropical are simply situated too low to ensure much success with high-elevation plants. Discussions are under way on the feasibility of setting up a facility at the appropriate elevation.

One problem facing several of the gardens working with the Center is the substantial effort necessary to grow annuals: In order to keep them genetically pure, pollination must be strictly controlled, seed carefully collected and the proper environment for germination re-created each year. In these cases, long-term seed storage may be the only cost-effective means of preserving the gene pool.

The Berry Botanic Garden in Portland, Oregon, is exploring the crucial strategy of storage of rare plant seeds. While maintaining a living collection of many rare northwestern taxa, the garden has established a rare and endangered species seedbank for seeds of more than 100 of the rarest species of the region. Seed storage is a natural complement to plant cultivation: It costs relatively little in money, time and space; it can enable a garden to maintain many taxa successfully; and it can let scientists easily exchange material for research use.

The Center has acknowledged the key importance of seed storage in its integrated strategy, and has been joined by the U.S. Department of Agriculture, which has opened facilities of the national Plant Germplasm System -- among the largest seed storage facilities in the world -- to endangered species in the Center's program. The cooperation will ensure permanent, secure storage of species that are also growing out in the gardens.

Continuing the Effort - At the national office in Boston, the Center has been busy

developing a funding strategy through private donations and grants from individuals, corporations and foundations. In 1985 alone, the Center's participating institutions received seven grants from the Institute of Museum Services (IMS) for their conservation work.

Because the National Collection of Endangered Species, the largest of its kind in the world, is a permanent living archive, it must be supported by a permanent fund for maintenance. An Endowment Fund with a goal of $15 million has thus been established to support the collections, giving plant lovers an opportunity to make a permanent contribution to preservation of our country's flora. Each gift of $5,000 will enable the Center to enter a plant into the National Collection in the donor's name.

The first groups to take notice of the Center were other organizations in the international conservation community, most notably the IUCN. In November 1985, IUCN sponsored a conference in Las Palmas, Canary Islands, on botanical gardens and the world conservation strategy, in which members of the Center's staff presented a report of their work to date as well as a computer program for botanical gardens records management.

In the U.S., one of the Center's collaborations is with the Garden Club of America (GCA), which in 1985 agreed to co-sponsor an educational program on endangered native plant species. Beginning in 1986, a slide show entitled "The Garland of Generations" will be circulating to the GCA's local chapters as well as to other interested conservation groups.

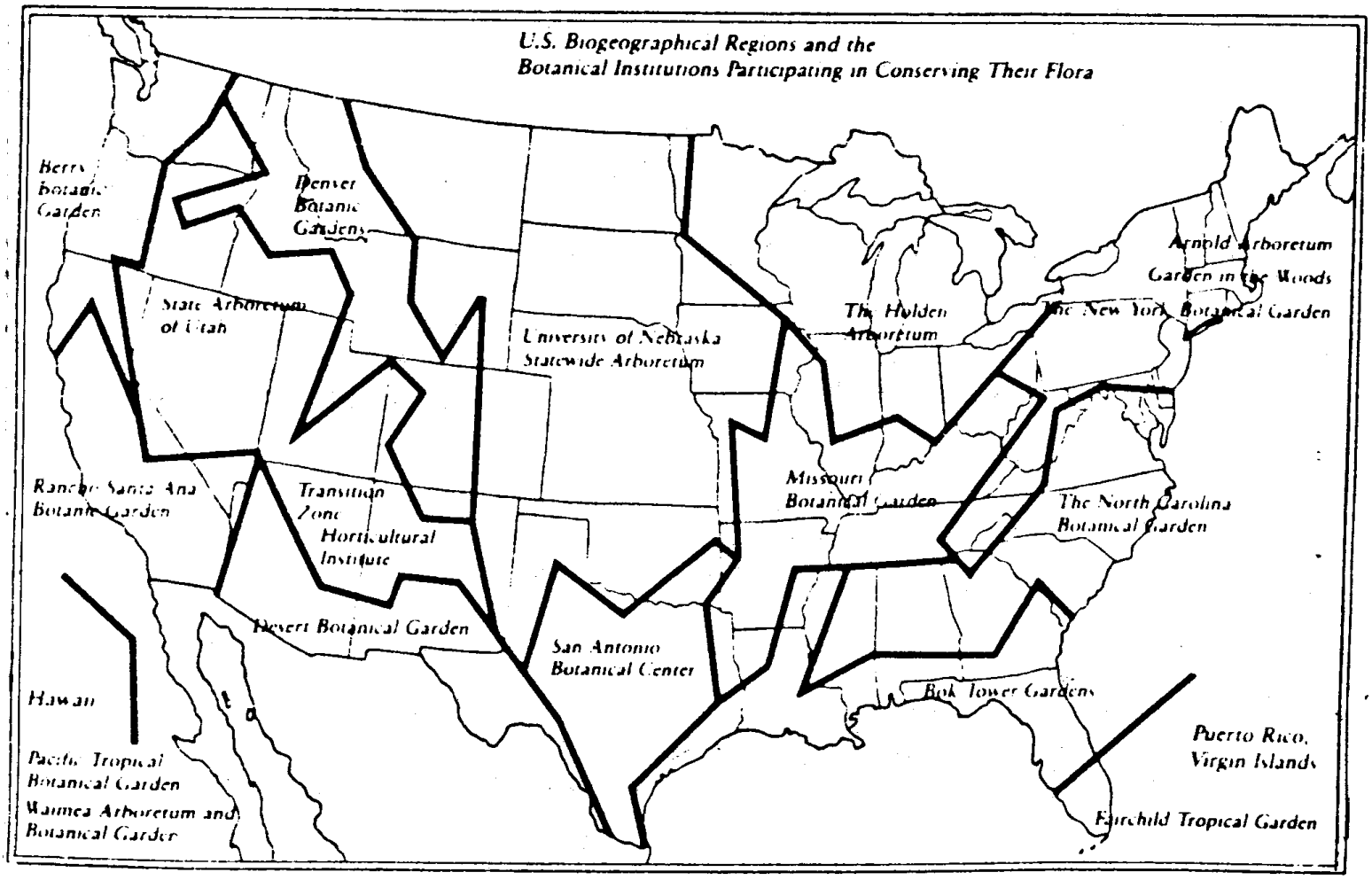
One of the major needs of a project on such a large scale is a collection of up-to-date and accurate information on each plant -- a database. The Center's initial database was derived from a subset of the Nature Conservancy's and contained for each taxon such information as scientific and common names, family, federal status, global rank and state occurences. To the database much new information has been added, concerning ecological parameters, plant habit, state protection status, threats to the natural populations, bibliographic citations, and collection and cultivation data.

As its database grows, the Center is establishing electronic connections to other national and international databases. One aim is to provide electronic connections with all 18 gardens, to allow for timely and efficient information transfer.

It would be a sad commentary and a bad omen if one of the richest nations on earth allowed a substantial proportion of its native flora to go extinct, especially since we are just at the threshold of being able to unlock the unique genetic marvels of these plants. If we cannot save our plants, the prospects of being able to save the untold thousands of tropical species that are similarly endangered are dismal.

Any organization working with endangered species takes on a Herculean task. Population pressures, development and habitat degradation are unlikely to abate, which means that the protection of rare species will be an ongoing struggle. The

work of the Center and other conservation organizations holds out the hope that the combination of **ex situ** and **in situ** conservation will stem the tide of extinction.



Donald A. Falk, co-founder of the Center for Plant Conservation, now serves as its director of administration. Dr. Kerry S. Walter is senior program officer, data systems and botany, at the Center, Boston, Massachusetts.

LEOPOLD'S LAMENT

"What a thousand acres of Silphiums looked like when they tickled the bellies of the buffalo is a question never again to be answered, and perhaps not even asked." Aldo Leopold. A Sand County Almanac, 1949.

Leopold laments the loss of a Silphium to the road crew's mower after they had removed the fence that had protected this small remnant of the once vast prairie. He points this out as an example of mechanized man's oblivious attitude toward our native flora. In the growth of our country, the removal of the natural landscape has exacted a heavy price from our native flora.

In Leopold's words, "This is one little episode in the funeral of the native flora which, in turn, is one episode in the funeral of the floras of the world."[1] In North America alone it has been estimated that at least 200 native plant species have become extinct since European settlement and that on a global scale at least several hundred thousand species are likely to be lost during the next few decades. This predicted rate of extinction has not occured since the dinosaurs and associated organisms disappeared 65 million years ago.

Since the passing of Leopold's Silphium thousands of acres of land in the Midwest have been set aside by State and private conservation organizations to protect critical habitats for plant and animal species, affording protection for whole communities and the rarest of species. The urban and agricultural sprawl in this country has set a pace that hard presses conservation organizations and that has brought hundreds of species to the brink of extinction.

Roughly fifteen percent, 3,000 species, of our nation's flora are endangered or threatened with extinction. In Ohio, approximately one-third of our estimated 1800 native plant species are considered rare and endangered. The Great Lakes-Midwest region of our country contains approximately 82 native plant species that are endangered and of national concern. The long-term effects of years of abuse to our natural landscape are showing up with dramatic results.

In recent years, a great deal of time and money has been spent to identify and preserve the best

49. **Solidago Hoùghtonii** T. & G. Houghton's Golden-rod.

existing examples of high quality plant communities and their many diverse elements. Long-term species conservation, however, cannot be guaranteed through land acquisition alone. For although a site may be protected, elements for which the land was acquired may disappear through natural succession indicating the need for management planning.

In 1941, Leopold lamented that "The practices we now call conservation are, to a large extent, local alleviations of biotic pain. They are necessary, but they must not be confused with cures. The art of land doctoring is being practiced with vigor, but the science of land health is yet to be born. A science of land health needs, first of all, a base datum of normality, a picture of how healthy land maintains itself as an organism." [2] Today, in 1987, the science of land health is developing and great strides are being made in the attempts to understand the land and its elements.

To understand how, "... healthy land maintains itself as an organism," requires long-term monitoring of protected plant communities. Understanding the dynamics and associations within a plant community and the establishment of management plans for species within the community are the first great inroads in the developing science of land health.

Long-term species conservation must be made through the development of successful management regimes based upon a species life history and habitat requirements. Traditionally, this type of information has been obtained through field (in situ) research of native populations. Today, another complimentary mode of research is being developed that offers an expanded view of a species life history based upon information collected through the cultivation of plant species in the greenhouse and the garden (ex situ).

From a national perspective, the leading proponent of ex situ conservation is the Center for Plant Conservation (CPC). One of the many strengths of the CPC program is that they have chosen to utilize botanical institutions within broad geographical areas to house and develop the National Collection of Endangered Species. The Holden Arboretum was selected in October of 1984 to develop the regional collection from the Great Lakes-Midwest section of the country, which includes all or portions of the state of Ohio, Indiana, Illinois, Iowa, Minnesota, Wisconsin and Michigan.

Ex situ conservation and research of endangered species is nothing new to Holden as they have been engaged in this form of conservation since 1982 when they formed a cooperative research agreement with the Ohio Department of Natural Resources, Division of Natural Areas and Preserves.

Since 1982, Holden has actively been engaged in research designed to determine the propagation and cultural requirements of Ohio's rare and endangered species. Holden is currently displaying over 125 Ohio Heritage species in its Myrtle S. Holden Wildflower Garden. Experience gained through experimentation with Ohio's endangered flora has provided a firm foundation upon which the basis of Holden's cooperative CPC program is being built.

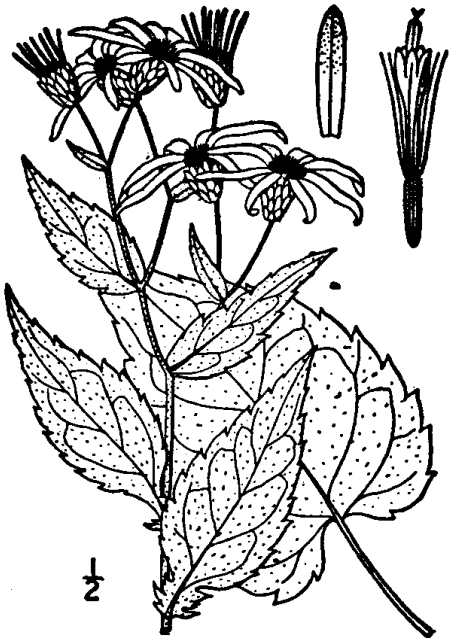
The primary objectives of the CPC are: to develop live plant collections for public display, genetic storage and research; to share basic information about the biology and horticulture of endangered species; to establish long-term germ plasm preservation through seed storage at a Federal seed bank; and to educate the public about the threats to our endangered flora. As a cooperative garden, Holden is called upon to carry out each of these objectives.

To develop a public display of endangered species is easier said than done. To develop a truly representative collection requires research and communication to determine which species within the region are the most urgently endangered. After a species list is determined, then collection permits must be obtained; first from the individual state and then the landowner. Arrangements then must be made for the collection of propagules (seeds, spores or cuttings) from a wild population. In the first two years of the program, Holden has brought sixteen species into cultivation, requiring the development of cooperative programs with the U.S. Fish and Wildlife Service, Region 3, and the states of Ohio, Illinois, Wisconsin and Michigan. The CPC species brought into cultivation by The Holden Arboretum are: Aconitum noveboracense, Aster furcatus, Besseya bullii, Cirsium pitcheri, Hymenoxys aculis v. glabra, Iris lacustris, Iliamna remota, Lespedeza leptostachya, Napaea dioica, Oxytropis campestris v. chartacea, Plantago cordata, Silene regia, Solidago houghtonii, Synandra hispidula, Talinum rugospermum, Trollius laxus subsp. laxus.

Developing a collection for public display and genetic storage from propagules requires that an adequate sample is collected from a population so that the genetic diversity of the given species is preserved. The CPC calls for collections to be made from wild populations large enough so that the collection of seed from each of fifty individuals will not impact the population and reduce its survival capabilities. To allow for germ plasm retention in a Federal seed repository and within a living collection, it is necessary to collect 25-30 seeds from each of the fifty plants within the population.

When seed is brought to Holden, it is accessioned, cleaned and shipped to the Federal seed repository. A sample is held out for propagation research and the development of the living collection. To adequately represent the wild population's genetic diversity, it is necessary to produce enough plants for both research and the display of at least fifty individuals of each species within the garden.

Propagation research at Holden requires the development of regimes that most accurately represent the natural sequence of events that trigger



Aster furcàtus Burgess. Forking Aster.

germination of seeds in the wild. As this information is largely unknown except for a small percentage of our nation's endangered flora, this requires some basic initial research. As it is a priority to first of all get plants out into cultivation, Holden's current level of propagation research is still in the initial stages for the majority of the sixteen species.

To date, Holden has recorded germination from all but one of the sixteen species thus far brought into cultivation. Initial propagation experimentation has included warm and cold, moist stratification and to a lesser extent, scarification. Determining which propagation regime produces the best results provides a basis upon which later research can be expanded and refined. Further cultural research that will be conducted for each species will be designed to establish environmental tolerances such as soil, light, and moisture requirements. Establishing these criteria helps to define the optimum growing conditions for a given species, the results of which can be extrapolated and held up as a model for the species wild habitat.

Ex situ conservation is a complimentary mode of research that is best looked at as a tool that will help to supply answers to the many unanswered questions posed by our nation's endangered flora. It is a viable option, but not one that is put forth as a replacement to habitat protection. Preserving wild habitats and communities is the best mode of conservation for it will be a hollow victory if endangered species only grow in gardens. Today, it is not uncommon to see a Ginko or Franklin tree growing in a landscape but none exist in the wild. Let us learn from these examples.

Great advancements have been made in the practices of conservation and the science of land health since Leopold's lament. Precious land and critical habitat is being acquired throughout the country. The developing science of land stewardship is taking great strides to become the science of land health. The developing strategy of ex situ conservation as applied by the CPC and The Holden Arboretum has presented the Midwest with another tool in their conservation aresenal that shall help to stem the tide of extinction.

Of the estimated 3,000 species of our nation's flora that are faced with the threat of extinction, only 113 species have been afforded legal protection under the Endangered Species Act of 1973, and only ten percent are presently in cultivation. To save our disappearing species is a goal that we all should strive for and one that will require the work and support of all conservation organizations dedicated to our native flora. State, Federal, and private conservation organizations all need your support and commitment. Join us in helping to assure that Leopold's lament is not that of our children.

Brian Parsons is the propagator at Holden Arboretum for the Center for Plant Conservation program. His outstanding talen and deveotion to his work has contributed to the outstanding successes that have been achieved at Holden Arboretum.

TROLLIUS LAXUS SALISB. SSP. LAXUS SPREADING GLOBE-FLOWER by Guy Denny

There are about 30 species of globe-flowers throughout the world, the majority of which occur in Asia. Although the European globe-flower (Trollius europaeurs) is cultivated as an ornamental plant in the United States and Canada, the only species of globe-flower native to North America is the spreading globe-flower (Trollius laxus).

The name "globe-flower" was first mentioned in botanical literature by Swiss naturalist Conrad von Gesner in 1555. Gesner, writing in Latin, simply latinized the local name "Trollblume" of northeastern Switzerland into "Trollius flos." The Trollblume of German-speaking countries is what we call globeflower. Trollius is therefore derived from the ancient German word troll or trollen which means "a globe" or "to roll." This is in reference to the distinctively globe-like flowers of the European species.

The specific name laxus is of Latin origin meaning "loose." This description refers to how the flowers of the American species tend to be in a spreading or very loose rather than tight globular form like those of the European globe-flower.

The first report of Trollius in North America was from the early American botanist Gotthilf Heinrich Ernst Muhlenberg. The 1783 he reported this plant, which he named Trollius Americanus, from near Lancaster, Pa. However, Muhlenberg neglected to describe his new-found species. Consequently, in 1807 when the British botanist and gardener Richard Anthony Salisbury gave a botanical description of this new American species based on Muhlenberg's records, he reported it as a new species to science under the name he provided--Trollius laxus Salisb.

It was not until 1862 that a western, white-flowered component of this species was discovered in the Rocky Mountains and adjacent Canada. This highly disjunct western taxon (taxonomic entity) is more plentiful than its eastern counterpart. It also has a different habitat requirement in that it tends to favor wet alpine and subalpine habitats, usually near snowbanks and snowmelt basins.

The famous American botanist, and taxonomist Asa Gray described this western plant as the variety Trollius laxus, Salisb., var albiflorus. The term albiflorus comes from the alba meaning "white" and florus meaning "flower." Although Gray treats these two taxa as varieties, some taxonomists consider the eastern and western elements to represent separate species.

Today, however, most botanists follow the treatment of Love, Love and Kapoor, based on the fact that the western North American populations are cream or white-flowered as opposed to the typically greenish-yellow flowers of the eastern populations, combined with the highly unusual range separation between the two taxa, they elevated the plant's status to subspecies level. It should be noted that in some situations the eastern populations have cream-colored flowers as well and are therefore hardly distinguishable from western plants. Consequently, more research is needed to clarify the confusing taxonomic treatment of Trollius laxus.

West-central New York appears to be the center of distribution for the eastern populations of spreading globe-flower. Although spreading globe-flower is rare and very localized throughout its range, the state of New York has the most and the largest populations. In addition to New York, spreading globe-flower is presently known only from western Connecticut, New Jersey, Pennsylvania, and Ohio.

In Ohio there are pre-1910 records for this plant from Columbiana, Fairfield, Mahoning, Stark and Wayne counties. The Wayne County record was adjacent to a cemetery and very possibly may have been a cultivated specimen. This population, as well as all the others except the one in Mahoning County, has since been destroyed. Today, the only known sites in Ohio where spreading globe-flower occurs are in Mahoning County at Poland Municipal Forest and in Ashtabula County at a site discovered in 1983 by James K. Bissell, chief botanist for the Cleveland Museum of Natural History. Consequently, spreading globe-flower is officially listed by the Division of Natural Areas & Preserves as an endangered species in Ohio.

Naturalists should watch for additional occurrences of spreading globe-flower in Ohio. It easily can be overlooked or misidentified since it bears a superficial resemblance to both swamp buttercup and marsh marigold which often occur in the same wetland habitat. However, unlike marsh marigold, notice that spreading globeflower usually has a large solitary, pale-yellow flower borne singly at the tip of the stem. Also, notice the 1-3 stem leaves with very short or no petioles occurring toward the top of each stem. Globe-flower blooms from mid-April to early May. The flowers are much paler than the bright yellow flowers of either swamp buttercup or marsh marigold. And finally, the seed pod of globe-flower is a follicle quite unlike the achene of buttercup.

The spreading globe-flower is a herbaceous perennial herb that grows to a height of 12-20". It is a member of the Buttercup Family (Ranunculaceae). Like many other members of this family, the flowers, which are about 1-1½" in diameter, are dominated by 5-7 bright greenish-yellow, showy, petal-like sepals. The 15-25 petals, on the other hand, are very small and inconspicuous.

Spreading globe-flower occurs in calcareous to circumneutral wetlands especially in sloping fen meadows and seepage swamps, often in sparse to moderate shrub cover. It especially seems to favor cold, highly alkaline groundwater seeps where it occurs on low, sedge-covered tussocks situated just above the gently flowing surface waters; it may even occur directly

Globeflower

on seepy mineral soil.

In an effort to better protect this endangered species, the Division of Natural Areas & Preserves and the Ohio Biological Survey joined forces in 1982 using private foundation funds to provide grant monies to Brain C. Parsons and Thomas A. Yates of The Holden Arboretum in northeastern Ohio. The pair studied the cultural requirements of spreading globe-flower. Valuable management data doncerning the life history and habitat requirements of globe-flower resulted.

Last summer the Division also funded Greg Rhinehalt, a graduate student at Ohio University to conduct an ecological and systematics study of Trollius laxus. He will evaluate the distinctiveness of the eastern and western components and provide information on the population dynamics and habitat requirements of the eastern taxon. His research, which is to be completed in June, was funded through the Division's research grants program with monies donated through the Natural Areas Tax Checkoff Program.

Jim Bissell is currently assisting the Division with the acquisition of the spreading globe-flower site in Ashtabula County. Tax Checkoff funds are also being used to purchase this unique site which, in addition to the globe-flower, supports several other rare and endangered species. It is the only fen community known to occur in Ashtabula County. The future now looks much brighter for the spreading globe-flower in Ohio thanks to the support of individuals like Jim Bissell. Brian Parsons, Tom Yates and Greg Rhinehalt, as well as to the hundreds of thousands of Ohioans who have contributed to the Natural Areas Tax Checkoff Program.

Guy Denny, Assistant Chief of the Division of Natural Areas and Preserves, ODNR. Wrote this article which appeared in the DNAP Newsletter, February 1987. We reprint it as it refers directly to one of the endangered species that is being protected under the Holden Arboretum program.

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NOTICE ON NEWSLETTER SUBSCRIPTIONS FOR STATE MEMBERS

If you wish a subscription to "On The Fringe" they are available at the rate of $7.50 per year. Send your check made payable to: Native Plant Society, 6 Louise Drive, Chagrin Falls, Ohio 44022.

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WILDERNESS CENTER WEEKEND - August 21 through August 23

The Native Plant Society of the Wilderness Center, (The Wilderness Center Botanizers) and the Wilderness Center itself are co-hosting the first annual Summer Meeting of the Ohio Native Plant Society. The overall theme of the week-end will be a survey of a cross section of the plant life of the glacial frontal region of Northeastern Ohio. The role of the glaciers and their deposits as habitat formers will be stressed as well as the diversity of the plants found in the many wild communities of the area.

The weekend is designed to help the amateur botanist and the natural resource professional gain a broader perspective of the diverse nature of Ohio's plant cover, to understand some of the geobotany relationships of plant communities, and to gain a feel for Ohio's plant history.

The schedule calls for a Friday evening slide show on ferns and orchids of the limestone area of Canada, like that from which our glacial deposits were brought. Saturday starts with an optional bird hike at sunrise, followed by a continental breakfast. There will be two half-day excursions — called Safaris — on Saturday, with a catered picnic lunch at the Center. To allow for a more personal level of leadership, each Safari will have its own leaders with 20 or less participants.

A meeting of the Ohio Native Plant Society will preceed the family-style, all-you-can-eat dinner in the evening. Following dinner, the program will consist of sharing experiences, places, and even slides of interest to the group.

Sunday morning will start with an optional sunrise chapel, followed by a second continental breakfast. A third Safari period, Sunday morning, will end the weekend.

In total, there will be a six Safaris to choose from, with destinations such as acid bogs, a prairie remnant, glacial geology tour, sandstone gorge, strip mine natural revegetation, and an alkaline fen. The trips will range from moderately difficult to easy. The range of plant families to be seen is extremely varied. All the leaders will be very knowledgeable in their areas.

Registration is limited to 100. The fee will be $30.00 for Ohio Native Plant Society members, $35.00 for non-members. The fee covers all of the programs, the two continental breakfasts, and the lunch and dinner on Saturday.

Persons attending the weekend will find a variety of accommodations to choose from: free indoor bedroll camping in the Wilderness Center with bathroom facilities but no shower, camping for self-contained trailers at the Center at no charge, commercial camping at nearby trailer parks, or rooms at nearby motels. In addition, since The Wilderness Center is only 70 miles south of Cleveland, it would be possible to commute each day.

This is a weekend not to be missed! The area around Wilmot is diverse and highly interesting. Write: The Wilderness Society, Box 202, Wilmot, Ohio 44689-0202 or call (216) 359-5235 for a pre-registration packet. Deadline is August 1, 1987.

SATURDAY, MAY 9 - 9:30 A.M. - ENLOW CREEK PRESERVE, PA.

A professional guide is being engaged for this day. I must have some idea of how many will turn out so that we are not made to lock foolish. This is a Garden of Eden with tons of unusual flowers and ferns, plus an artist's pallette of colorful birds. The May newsletter will detail a good motel whose rates are $25/night for two people. Call 338-6622 if you are interested.

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1987 PROJECTS:

At the February 17th Board Meeting the projects for this year were adopted. The following is a quick precis of each one. **PLEASE** work on one of them this year.

Brochure of Native Plantings for Developers: This is an old project that has never been completed. The prime objective is to create a fairly simple brochure outlining native trees, shrubs, grasses and forbs that could be used, or preserved in the original landscape, instead of bulldozing a proposed development flat and then replanting with exotics. The point would be stressed that this is cheaper in the long run and would attract birds, butterflies, and created a colorful landscape. We need workers who are willing to research the facts and can do some writing. Chairman: Marian Larson, 247-7092.

Garden Center Wildflower Garden: Again, an ongoing project, but the difference this year is that the Garden Center is taking possession of the ravine and will be doing the daily maintenance. We will volunteer what work we can and will help advise on native planting. This is a lovely place to put in some time. Chairman: Larry Giblock, 272-5852.

Museum of Natural History Wildflower Garden: Jim Bissell has long had two such gardens at the Museum, one rather formal display garden and one more natural native area. All that is needed here are some occasional hours of weeding. Again, a lovely place to put in a few hours. Chairman: Doris Lad, 221-9162.

Stewardship Assistance in Northeast Ohio Preserves: There are quite a few Nature Conservancy and Division of Natural Areas Preserves around us. The proposal is to offer help in terms of getting rid of unwanted alien invader plants, or other such activity. The volunteer would try to enlist the work of local Scout troops or school groups to supply manpower. Chairman: Tom Sampliner, 932-3720.

Wildflower Seed Sales and Exchange: More will be written in detail in the May Newsletter, but for now the project consists of offering seeds collected from Holden Arboretum for 25¢ per packet, to the general public, or for exchange to institutions or sister organizations. The seed would be collected from plants actually growing

in the Arboretum gardens, but would be native to various parts of the state and are considered one generation removed from their indigenous area. Workers on this project would meet 4 or 5 times a year to fill orders and send the seeds out. We will run a list of current specialties in each newsletter. Chairman: Tom Yates, 946-4400.

Slide Collection: We are still collecting slides of native plants, either habitat shots or close-ups. They need not be of professional quality. They will either be given to the Museum or kept in our own files for use in lectures, illustration of articles, or use in a future video-tape for conservation purposes. Chairman: Bruce Mack, 321-5496.

Don't let these projects scare you away. In all cases you can give as much or as little time as you want, and in no case will it take more than a couple of hours each time you volunteer. You will find that you learn alot, meet some very nice people, and end up having a good time. Part of the fun of belonging to an organization is giving of yourself. And it gets you out in the fresh air and sunshine.

If you have any questions about any project, please call the chairman and talk to them about it.

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DUES ARE DUE!!

Most of you have been absolutely wonderful about paying your dues!! And in most cases you have gone up a category, which makes running the Society just that much easier. I thank you, the Board thanks you, for your generosity.

The rest of you, get out your checkbook and write that check. You will be surprised; your hand will not turn green and fall off!!! If you do not respond by May 1, you will be removed from the mailing list and not get the newsletter any longer. Write today.

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NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO

Founding Chapter Of

THE OHIO NATIVE PLANT SOCIETY

6 Louise Drive Chagrin Falls, Ohio 44022

Tom Sampliner
2472 Overlook Rd. Suite #8
Cleveland Hts., OH 44106

ADDRESS CORRECTION REQUESTED

Memberships are **DUE FOR RENEWAL** on January 1, 1987. Please continue to support your Society and renew at the **highest** possible category. Those of you who send us Sustaining and Patron memberships are enabling us to go on with our worthwhile projects. An active membership just about pays for the newsletter costs. However, economics aside, we need **EACH** of your memberships and each year we get stronger and better. The 1987 Program and Field Trips schedule will be worthwhile.

Please enroll me as a member of the NATIVE PLANT SOCIETY OF NORTHEASTERN OHIO.

☐ ACTIVE.....$ 7.50
☐ FAMILY $15.00
☐ SUSTAINING ...$25.00
☐ PATRON.....$50.00

Membership runs from January through December and is not pro-rated.

Make checks payable to: NATIVE PLANT SOCIETY
6 Louise Drive, Chagrin Falls, Ohio 44022

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