

Oct. - Nov.

Volume 2 Number 5, 1987



UPCOMING EVENTS

October 3, Saturday, MO Dept. of Conervation's Day on the River. Call your local MDC office for details.

October 6, Tuesday, Jefferson City monthly meeting at MDC headquarters.

October 10th, Saturday, Kansas City Chapter plant salvage at Pittsburg-Midway Coal. Meet at Trading Post, Ks. Call Linda Ellis for details, (816)-472-0227

October 17, Saturday, Springfield Chapter. Hercules Glade trip. Meet at Temple Hall 9:00 AM. Louise Wienchowski: 831-4474.

October 17, Saturday, Jefferson City Chapter. Field trip to Pickle Springs Natural Area. St. Genevieve Co.

November 19, Thursday, Springfield,' Wreaths and Dried Flower Arranging and Business Meeting. 7:30 PM, Temple Hall, Room 143.

December 5, Saturday, 10 am to ? Quarterly Board Meeting. Mo. Dept. of Conservation Head-Quarters, 2901 W. Truman Blvd. Jefferson City,

December 15, Tuesday, Springfield,
Native Foods for the Holiday
6:30 PM Location TBA
Barbara Newman, (417)-881-7378.

RESTORING THE EARTH - 1988

The first national gathering to consider the restoration of all natural resource types and the redesign of urban areas will be held on January 13-16 at the University of California, Berkeley. The conference is organized by the Restoring the Earth project of The Tides Foundation, San Francisco, and co-sponsored both be the College of Natural Resources and the Center for Environmental Design Research of the University of California, Berkeley. Proceedings will be published and distributed by the Center. The conference will bring experts in natural resource restoration and management together with a broad selection of academic, govern-ment, industry, foundation, labor, pub-lic health, and environmental representatives; futher the exchange of scientific information on restoration; and present the accomplishments and capabilities of restoration techniques in resource management and planning.

Topics to be covered include restoration of coastal ecosystems and estuaries; rivers and lakes; streams and fisheries; rangelands, prairies, mined lands, forests and wildlife; atmosphere and climate; dry lands and agricultural lands; urban environmental planning; and control of toxic wastes. Formal refereed papers will be presented at scientific and technical sessions. Non-technical sessions will include accounts of restoration success and discussions of policy issues, legislation, litigation, trends, and resource conflict resolution. The program also includes keynote panels, plenary session workshops, films and exhibits.

Deadline for call for papers is Oct. 15, 1987. Submit 4 copies of abstract (title and 200-400 word descrip-

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tion of proposed 20 minute presentation). Final text of accepted papers will be due November 30, 1987. Information is available from: Restoring the Earth Conference, 1713 C Martin Luther King Jr. Way, Berkeley, CA 94709, or telephone (415) - 834-2645.

ASSISTANCE REQUESTED

Dr. George Ware at the Morton Arboretum in Lisle, Illinois is looking for Shumard oak acorns. He needs viable acorns (no insect holes and fully formed) from trees north of the Missouri River. If you have an opportunity of collect any, please send them to

Dr. George Ware
Morton Arboretum
Lisle, Illinois 60532
If you live in the St. Louis area you can give
your seeds to Doug Ladd.

The Value of Research Collections

Everyone has budget problems, but biological collections are being particularly hard hit. Although they don't have the novelty of gene synthesizers or satellite imaging techniques, collections of living and preserved organisms, their tissues, and other materials of biological origin still play a basic role in biology. They are essential in animal and plant identification in the wild and in the laboratory. To be of use, each specimen in a collection must be associated with labels, catalogs, field notes, photographs, and other materials. Together, the specimens and associated records tell us about the living world; this information is subject to verification. These collections support not only the field of systematic biology, but also ecology, physiology, behavior, wildlife management, and conservation.

After 250 years of work in systematic biology, why can't we make reliable identifications of animals and plants by using the literature, rather than collections? The reasons are many. Criteria used to separate two species in one area often fail to work somewhere else, because there can be wide geographic variation in one or both species. In addition, the distinguishing criteria may be difficult to describe in text and depict in illustrations. Many species of common genera of shrews, bats, and mice, for example, can be identified only by close examination of the skull and teeth. To identify reptiles, amphibians, and fishes, one must study details of such external features as

head plates, scales, and color patterns. Distinguishing some groups of fishes requires examination of such internal structures as gill rakers and pharyngeal teeth.

There are few technical identification guides available for many groups of nongame vertebrates, and the technical literature must be supported by an adequate reference collection. For all vertebrate classes except birds, accurate identifications with available aids require training at the master's degree level with an experienced taxonomist. For most invertebrate groups, identification by nonsystematics specialists verges on hopeless.

Most people assume that we already have a basic inventory of North American fauna and flora, but in fact the inventory is far from complete; for much of the world, we have only skimmed the cream of biotic diversity. Today, when it is urgently needed, the inventory progress is slowing because fewer taxonomists are being trained. We no longer have any systematic experts in the United States for many groups of organisms. Greatly improved techniques, identification aids, and manuals for use by a wider range of biologists can only be developed by specialists having the use of good systematics collections.

The irreplaceable material in biological collections also can provide a wealth of information about species of the past. For example, DNA was extracted recently from muscle tissue of a salted hide of the extinct quagga and recombinant DNA techniques revealed the differences in genetic material—thus the phylogenetic relationship between the quagga and its living relatives, the zebras and horse.

Successful management of wildlife resources, as well as biological research, must be based on facts learned and verified from organisms and their environmental conditions. Reports, books, data banks, and simulation models are all secondary sources, their usefulness dependent on the validity of the facts. Biological collections are a national resource of primary materials essential to all secondary sources. The unique nature of these resources, and our need for them, deserve wider recognition and support.

[Further details on the history and value of research collections can be found in "Why biological research collections?--the US Fish and Wildlife Service experience," submitted to the Wildlife Society Bulletin.]

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OVERZEALOUS PROTECTION OF RARE PLANTS OFTEN SPELLS DEATH TO THE POPULATION

Cooperation between land owners or managers and persons having crucial information on population locations is urgently needed if curtailment of Endangered, Threatened, or otherwise rare plant population depletion is to occur. The following account will serve to illustrate the point.

In May, 1978, the USDA Forest Office at Gainesville, Georgia, received information that Isotria medeoloides occurred on national forest holdings in Rabun County. The reporter feared that the plants might be dug if the location was divulged. Then in September, 1980, the Federal Register proposed listing of the species, stating that three populations had formerly occurred on Chattahoochee National Forest, having been discovered in the late 1960's with one site eradicated by road expansion and one site extant in 1979. Despite the efforts by forest service personnel, information was not divulged to either the USDA Forest Service or the U.S. Fish and Wildlife Service. Seven years after the initial report, the sites were divulged through an intermediary. Had this information not been received, one of the sites would have been impacted by powerline expansion and a timber sale within 12 months. Thus steps to protect the population came about for at least one Georgia population of this now federally Endangered species which numbers less than 5,000 individuals throughout the country, most of which are in populations numbering less than ten individuals.

Landowners or managers, for the most part, are interested in protecting rare plants, just as human nature is protective of anything rare. There are now more knowledgeable botanists exploring every nook and cranny of the ever decreasing natural habitats. Understandably rare finds are special to the individual who is lucky enough to find them, sometimes tempting the finder to keep the special place private. If this special knowledge is taken responsibly, however, the owner must be informed in order to provide the protection that is needed in such cases. Careful education of the uninformed owner on how to best protect the population can be provided through those charged with protection, either private organizations, such as the Plant Preservation Society or The Nature Conservancy, or public ones, such as the state plant protection programs or the U.S. Fish and Wildlife Service .--BEN SANDERS, WILDLIFE BIOLOGIST, CHATTAHOOCHEE-OCONEE NATIONAL FORESTS, 508 OAK STREET, NW., GAINESVILLE, GEORGIA 30501.

The above is reprinted from Castanea Vol. 52, No. 2, June 1987, p14 $\overline{7}$.

Shopping for Nursery-Propagated Plants

Mary Pockman

Although the greatest threat to native wildflowers and shrubs is unquestionably habitat loss, that threat is compounded by collection from the wild. Each year thousands of plants are dug to meet gardeners' growing demands for native plants. In some areas, for some species, wild collection has been devastating.

Gardeners who both cherish wildflowers in the wild and want to grow them at home know it is important to obtain plants of native species without jeopardizing their wild populations. That means growing them from seed or rescuing them, yet most wildflower gardeners buy at least some plants. How can we be sure of buying nursery-propagated plants, not plants collected from the wild?

First of all, in considering what plants to use, we need to learn whether a species can be and is propagated, or whether it is apt to be collected. The harder a species is to propagate, the slower to reach flowering size, the more exacting to cultivate, the less likely it is to be propagated by nurseries.

A helpful framework to organize such information has been developed by Dr. Richard Lightly, director of the Mt. Cuba Botanical Center, Greenville, Deleware. He outlines four groups, two of plants that are not generally wildcollected that we can buy with confidence, and two of plants that are presently collected that we should buy with caution or not at all. To start with the bright side. Certain plants cannot be wild-collected. Some, like Franklinia, no longer exist in the wild; others are cultivars or selections such as Monarda "Cambridge Scarlet" and "Ostbo Red", selections of mountain laurel (Kalmia latifolia); the double forms of bloodroot (Sanguinaria canadensis "Multiplex"); and largeflowered trillium (Trillium grandiflorum "Flore Plena"). Buy plants in that group without a qualm.

The second group to buy confidently can be nursery-produced more cheaply and in higher quality than they can be collected. In the group are such favorites as cardinal flower (Lobelia cardinalis), butterfly weed (Asclepias tuberosa), wild blue phlox (Phlox divaricata), and whorled coreopsis (Coreopsis verticillata).

At the other end of the spectrum are plants that are almost always collected because no one now knows how to propagate or grow them on a commercial scale. Lady's slippers and other native orchids are the chief example. Enjoy those plants in the wild, don't buy them.

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The fourth group, the most confusing, includes some of the best-loved natives—other trilliums than the large-flowered trillium, maiden—hair fern (Adiantum), great merrybells (Avularia), many lilies, mountain laurel, and Carolina rhododendron. Those plants can be wild-collected more cheaply than they can be nursery grown, at least in quantity, because of difficult propagation or culture or long production times. Some native plant nurseries are propagating them, though. If you buy plants in this group, use great care to be sure they are nursery propagated.

Several published resources can help you locate nurseries selling propagated plants. One is Nursery Sources: Native Plants and Wild Flowers (\$3.50) from the New England Wildflower Society, Hemenway Road, Framingham, MA 01701. It shows the percentages of native plants propagated, wild collected, and purchased from another source of 193 nurseries throughout the county, as reported in a 1984 survey. Lists limited to sources of nursery-propagated plants are available if you send a selfaddressed stamped envelope to such organizations as the Virginia Wildflower Preservation Society, P.O. Box 844 Annandale, VA 22003; and the North Carolina Botanical Garden, Totten Center 457-A, UNCC-CH, Chapel Hill, NC 27514.

Such lists are a good starting point, especially for mail orders, but they are necessarily limited. To find other sources of nursery-propagated native plants, look at what catalogues or advertisements say (and don't say), use your knowledge about which species are generally propagated, and be persistent in asking questions. Be prepared for some to be unanswered, however. If a nursery buys plants from another source, for example, or sells some propagated plants, some collected, it may be hard to learn the origin of particular plants. Or check with your local nonprofit organizations committed to conservation. They may be reliable sources of propagated plants.

When you shop for nursery-propagated plants at local garden centers and nurseries, in addition to asking questions, look critically at the plants themselves. Do they look healthy? Propagated wildflowers should be as green and vigorous as other nurserygrown plants. Are there bonus plants--a toothwort in a clump of rue anemone, for instance, or galax under a mountain laurel? They're rare in nursery beds. Are the plants larger than you'd expect? Do woody plants show signs of having been cut back? Is the soil the loose uniform mix most nurseries use? Are plants jammed against the side of the pot, suggesting they were dug from around rocks or roots? Those signs can suggest whether the plants are propagated or collected.

By doing some homework and by shopping with a questioning attitude and open eyes, you can create a beautiful garden of native shrubs and wildflowers without using a single wild-collected plant and, in so doing, you can help ensure that wild plants are left for all to enjoy.

Adapted for reprinting by permission from The Bulletin, the journal of the Virginia Wildflower Preservation Society. Information for the article came from a presentation at the Native Plants Preferred Symposium of March 16. 1986, sponsored by the American Horticultural Society, the U.S. National Arboretum, and the National Wildlife Federation.

Wildflower Seeds Available

Growing native plants from seeds or spores is not only satisfying and economical, but gives gardeners a source of difficult-to-obtain plants. The New England Wild Flower Society is offering for sale more than 150 varieties of wildflowers or ferns in their 1988 Seed List.

Included in the List are natives for woodland, wetland, and meadow gardens. Many of the sun-loving varieties make colorful additions to perennial borders. The Seed List is an adjunct of the Society's world-wide botanical garden seed distribution effort.

All requests for the 1988 Seed List must be received by March 1 because seed sales close March 15. Requests will be filled in the order received.

Send a self-addressed, \$.39-stamped envelope (#10, business size) to Seeds, New England Wild Flower Society/Garden in the Woods, Hemenway Road, Framingham, MA 01701. No requests for Lists will be honored without the stamped envelope.

Members of the New England Wild Flower Society will automatically receive the Seed List in January 1988.

MISSING ISSUES

Last month several copies of the newsletter were returned from the Post Office with the lavels ripped off. If you missed getting your last issue (which should have arrived by mid-August) let us know and we'll send you a new one. Newsletters are mailed in February, April, June, August, October and December. Let us know whenever you miss an issue.

ASH TWIGS REVISITED

Father Jim Sullivan

Most authors use the shape of the leaf scar - whether or not the upper margin is deeply concave - as the major distinguishing feature between White Ash and Green Ash in winter conditions. For years we have found this feature to be evidently inconsistent in the field.

We have found the two different types of leaf scar on the same twig, once even on opposite sides of the same node! We have found the supposed Green Ash leaf scar to be abundant in well drained soils - expected White Ash habitat. In the growing season, we have found both types of leaf scar to be associated with the less membranaceous leaflets with whitened undersides - supposed White Ash markers.

In the winter of 1986-1987, I did some sampling of $\underline{Fraxinus}$ twigs in the St. Louis area. I recalled that where the leaves were present, we were determining $\underline{Fraxinus}$ pennsylvanica \underline{var} . $\underline{subintegerrima}$ (Green Ash) in the floodplain soils, and $\underline{Fraxinus}$ americana (White Ash) in the upland or drained soil situations.

I therefore took a series of Ash twigs from periodically flooded low ground in the Missouri River valley of north St. Louis County, and on the same day, another series from adjacent loess hills. I later did the same in northern Jefferson County, in and adjacent to the Mississippi floodplain. I finally did the same in the Meramec River valley of west St. Louis County, where the high ground component was chert-encrusted dolomite bluffs. I thus had six series of twigs, representing low ground and high ground in three different river valleys.

The results were consistent throughout. The twigs all bore the supposed Green Ash leaf scars, with a degree of variability. Most of the leaf scars were notched at the top, but few had the deep emargination supposed to be characteristic of White Ash. Relatively few leaf scars were perfectly straight across the top. Variability was present in twigs of low as well as of high grounds.

The twigs of low and high ground were distinguishable, however, by other features. In hand, these features were both obvious and consistent. The twig-tips were the primary focus of the difference. In view of the ecological parameters of the two common Ash species, these new distinguishing features would appear to be taxonomically significant.

KEY CHARACTERS DISTINGUISHING TWIGS OF WHITE ASH AND GREEN ASH IN WINTER CONDITION

Twigs of high ground, drained situations.

Terminal bud prominent, occupying a broadly elliptic area roughly equivalent to an internodal cross-section of the twig.

Terminal buds deep reddish-brown.

Twigs averaging thicker.

--Fraxinus americana

Twigs of low ground, alluvial soils, floodplains.

Terminal bud not prominent, occupying a narrowly elliptic area distinctly smaller than an internodal cross-section of the twig.

Terminal buds dark, but usually frosted with scurfy-gray.

Twigs averaging thinner, the thicker ones tapering abruptly to the base of the terminal bud.

-- Fraxinus pennsylvanica var. subintegerrima

But what about those twigs we \underline{do} find with the deeply emarginate leaf scars? \overline{I} have no conclusions here, but from limited observations, I suspect a degree of correlation with the length added by the twig in a growing season. In a favorable situation, the twig may add more length, and the leaf scar may become more "filled out" in outline: something to take note of on future field trips. Whatever the reason, the leaf scars appear to be highly variable within the same species.

I feel confident that from now on when I distinguish between the twigs of our two most common Ash species, I will be noting not only the ecological situation, but also whether or not the terminal bud is "as big around" as the twig is.



FERNS AWAY FROM HOME

Once again, I just happened to be travelling through on the very day of the Annual Fern Foray of the American Fern Society. On August 8, about 25 fern freaks boarded a bus at Ohio State U and set out for the Hocking Hills, an arm of the Allegheny Mountains southeast of Columbus, Ohio.

Our first stop was at a huge sandstone cliff which had many cracks filled with Asplenium pinnatifidum (lobed spleenwort). The trip leaders, Dr Warren H Wagner, Jr, Dr Charles Werth and Dr James Hickey, provided flashlights so we could crawl under an overhang and see the Trichomanes gametophytes which propagate vegetatively and never develop sporophytes, the part of the plant we recognize as a fern.

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The next stop was in Hocking State Forest where a trail led down into a crevice where Vittaria gametophytes grow. These are probably relict as the species is not the same as that found elsewhere in the US. This plant also does not develop sporophytes but reproduces by gemmae, which can be seen growing around the edge of the prothalli (leaf).

The other end of the crevice opened into a large gorge where we found Asplenium trichomanes (maidenhair spleenwort) and Phegopteris connectilis (narrow beech fern).

Where the gorge opened to woodland, we found Botrychium virginianum (rattlesnake fern), B lanceolatum, B. oneidense (blunt-lobed grapefern) and B. dissectum f, dissectum and f. obliquum (common grapefern) and several intermediate plants. Since these were all growing near each other, this was a fine opportunity to compare these easily confused ferns. Also in this area were Osmunda cinnamonea and O. claytoniana (cinnamon and interrupted ferns), Dennstaedtia punctilobula (hayscented fern), Phegopteris hexagonoptera (beech fern), Thelypteris noveboracensis (New York fern) and some Dryopteris species.

A third stop was an alluvial creek bottom and adjacent hillside. Here we found Athyrium pycnocarpon (glade fern), A. asplenioides (southern lady fern) and A. thelypterioides (silvery glade fern) growing together. A. asplenioides has recently been determined to be a separate species. A. thelypterioides is unusual here because it lacks the many hairs on the back of the fronds and is not silver at all. On the hillside we found Asplenium montanum (mountain spleenwort) and searched in vain for A. x trudellii, hybrid of A. montunum and A.pinnatifidum. It seems a botanist had collected the dozens which had been there. We did find Lycopodium lucidulum (shining clubmoss), L. porophilum (rock clubmoss) and L. lucidulum x porophilum.

Our last stop was an open woodland hillside with some cliffs. Here were Cystopteris bulbifera, C. protrusa and their hybrid, C. tennesseensis, Adiantum pedatum, Dryopteris marginalis(marginal woodfern), D. goldiana (Goldie's woodfern) and their hybrid, D. x neo-wherryi. The find of the day was the three bird orchid. There were about two dozen freshly opened pure white little blossoms nodding together.

Collecting was permitted for all but the scarcer plants so I was able to obtain several species that are less common in Missouri but almost weedy farther east. Once again they all laughed at my excitement over their "weeds". And once again I had the best laugh when we drove miles down a country road to see one of Ohio's rarest ferns, Polypodium polypodioides (gray polypody), which is fairly common in Missouri. It was growing with Povirginianum

(rock cap fern) and Lygodium palmatum (climbing fern) which was nothing but a few brown leaves because of the drought.

Throughout the day, our leaders provided a constant flow of information, including much not yet published. We finished with tired bodies and boggled minds and, 400 miles and ll hours later, I was at work with a grin on my face. The boss wouldn't believe why I was up all night if I told him.

Sue Hollis



WELCOME TO NEW MEMBERS

Dianne and Bill Blankenship, Sioux City, IA
Robert Elworth, Willard
Craig Freeman, Lawrence, KS
Mrs. A.E. Lloyd, Foristell
Donald Miles, Warrensburg
Carol Taxman, St. Louis
George & Kay Yatskievych, St. Louis

St. Louis Chapter News

Forty-five people attended the St. Louis Chapter August meeting to hear Ginny Wallace talk on "St. Louis-Then and Now". She told in fascinating detail of how the St. Louis area went from 61% prairie during pre-settlement times to about 85% concrete today! Even though the white man had settled in the area one hundred years before the Lewis and Clark Expedition, it is possible, Ginny postulated, that the area'shabitate had been changed before that by the large Indian population on both sides of the Mississippi River. Around 900 AD the largest known concentration of Indians in North America practiced a form of fairly intensive agriculture in the area.

Doug Ladd will follow this general format for the September 24 meeting speaking on "Southwest Missouri- Then and Now". As always, the meetings are on the fourth Thursday at 7:30 PM in room 101 of McMillan Hall on the Washington University Campus

ington University campus.

The October 22 meeting will be a "Show and Tell" evening. This will be a chance to share photographs and experiences as well as a chance to have photos and plant material identified. All interested persons are welcome.

There are no regular meetings the months of November and December, the Chapter's traditional vacation period.

Marilyn Higgins

Our August meeting was at Powell Gardens, University of Missouri's Horticulture and Natural resources facility near Lone Jack. We wandered the grounds and closely examined the extensive annual, perennial and vegetable collections. The highlight of the meeting was the interaction of butterflies and moths and other common garden insects which were pointed out by Linda Ellis, the area Extension Horticulture Educator. We saw squash bugs laying eggs on one plant and eggs of the same insect hatching on another. Several predator insects were seen working out and, of course, lots we didn't know.

The Kansas City Chapter will have a membership booth at the grand opening of Powell's 1½ acre Home Idea Garden September 19th and 20th.

Our September meeting was at Wagner Prairie west of Olathe Ks. This is a typical eastern Kansas Prairie with a woodland border. We saw many composites, blue sage, snow-on-the-mountain, warm season grasses, and several aquatic species around the ponds. Two especially interesting plants were our native poinsettia and a dodder which grows inside another plant and pushes out mounds of blossoms that look like gauls.

Pittsburg-Midway Coal Mine

Salvage Project

The salvage survey on August 15 at the Pittsburg-Midway Coal Mine Company property produced good information for a wealth of plants that need to be rescued over the next few years. Mike Campbell, Environmental Specialist for the company, mapped woodland meadows, sloughs, silted ponds, oxbows, woodlands and a prairie relict.

The prairie is about nine acres and within a mile or two of active mining. The plants will need to be salvaged before spring. A dish in the middle provides habitat for many wet prairie species while the ridges on each side provide dry and thin-soil habitat. A hedge row on the north has a number of tree species.

Collection should be relatively easy with access to a closed road provided by the company. Seeds of clovers and coneflowers are now ripe and numerous liatris and sunflower species are available.

The day was hot but the plants were beautiful. I saw several plants I had not seen other than in guides and knew what they were, thanks to Linda Ellis' identification skills.

Mike Campbell went out of his way to map the potential areas for us and guide us to the prairie relict.

This prairie area must be salvaged in the next six months or so. Other areas will be ready for salvage after that for perhaps twenty years. We plan to establish regular salvage activities. The mine is in Bates County, just south of Kansas City on the Kansas state line. Linda Ellis will be organizing and should be contacted if you want to participate.

Some of the goodies: compass plant, rosin weed, tall thoroughwort, bundleflower, lead plant, wild acacia, rattlesnake master, button snakeroot, pitcher sage, prairie dropseed, bluestems, cordgrass and milkweeds.

-Paul Williams

Additional Notes

The salvage of the plants of the prairie remnant at Pittsburg-Midway will occur Oct. 10th. The plants are slated to go the the Kansas City Parks and Recreation restoration project on Cliff Dr. Pete Laughlin, the Parks landscape architect has helped us get volunteers from the neighborhood associations around Cliff Dr. to help with the salvage effort. Plants salvaged will go directly into a native display on the Drive. Tools for the salvage are being provided by Kansas City Community Gardens and the Vietnam Veterans of America, Chapter 317 are going to help with the digging and transportation.

There will be plenty of opportunities to salvage from this site in the future. Anyone in the plant society can have access to this remnant for salvage purposes. The Pittsburg-Midway people ask that all plants taken be used for the public benefit.