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MISSOURI NATIVE PLANT SOCIETY

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Missouriensis is the official publication of the Missouri Native Plant Society. Founded in 1979 as a non-profit corporation, the Society is devoted to the conservation and study of the plants growing wild in Missouri, to the education of the public about the significance of the native flora and its habitat, and to the publication of related information.

IN THIS ISSUE

MINUTES OF THE LAST MEETING

MISSOURI NATIVE PLANT SOCIETY
September 11, 1982 Board Meeting
Big Lake State Park, Bigelow, Missouri

CALL TO ORDER. President Paul Redfearn called the meeting to order at 10:02 A.M. It was mentioned that the Department of Natural Resources, our host for this meeting, had generously provided sweet rolls, donuts and coffee for our sustenance throughout the meeting.

ATTENDANCE. A total of twenty board members, general members and guests were present: Melvin L. Conrad, Erna R. Eisendrath, Karen S. Haller, Paul W. Nelson, Kenton C. Olsen, Paul L. Redfearn, Wallace R. Weber and Jim Henry Wilson from the Board. Others: Art Christ, Patrick DeLozier, Doris and William Epstein, Judy Gibbs, Albert J. Haller, Sylvia Hein, Gordan G. Howitt, S. Carson McCormack, Jr., Judy Mennis, John E. Molyneaux, Vaughn Oetting and Joanna Turner.

MINUTES. As per usual, the minutes of the June meeting were approved as published in Missouriensis.

TREASURER'S REPORT. None, due to the absence of both our present Treasurer, Rick Daley and our incoming Treasurer, John Karel.

OLD BUSINESS

By-Law Changes. One addition and one change were made to the By-Laws. Article VI, Section 2, referring to membership of the Board, should now have an additional line reading "After a Board member is absent for three consecutive meetings, the Board may request the resignation of that member." And, Article II, Section 1 has been changed to read, "Membership in this society shall be open to all persons interested in the native plants of Missouri upon application to the Treasurer, accompanied by remittance for dues as hereinafter provided.".

Future Board Meetings. Wally Weber, Paul Redfearn, and Melvin Conrad have volunteered to plan the January, April and June meetings. The January meeting may be in conjunction with the Missouri Prairie Foundation. April may find us in the Alley Springs State Park area. June will quite possibly involve the Kirksville area.

Election. Kenton Olsen reported that no additional nominations were submitted to the Nominating Committee.

Patches and Decals. Wally Weber reported a total of $89.50 received from the sale of our patches and decals. Wally Weber and Karen Haller are still selling them, so write or telephone for your patch ($1.50) or decal ($.75) before the supply is exhausted.

Postcards. Should anything more be done in regard to floral postcards depicting native plants? Are line drawings the best way to go? Or color photographs? Is the market large enough to justify the expense? More study is to be done in this regard prior to the January meeting.

NEW BUSINESS

Missouriensis. Cost of the latest printing was $176.78. Cost of the mailing was $16.00. Everyone involved is extremely pleased with these economical figures.

Updating the Flora of Missouri. Sylvia Hein, for Macon County and Patrick DeLozier, for Ray County have begun collecting plants for the records needed to update Steyermark's book. Arthur Christ continues his many years of service in the St. Louis area.

Donation to the Federated Garden Clubs of Missouri, Inc. Much discussion, thought, and time was involved in the decision to contribute to the educational display contest of the Federated Garden Clubs of Missouri. It was finally decided "That we donate a plaque to be called the Missouri Native Plant Society Award and that the cost should not exceed $100.00." As this is Ginny Wallace's project, she will be responsible for the selection of the plaque and the method of awarding it.

ADJOURNMENT. This came around noon, with a plan in mind to re-assemble for lunch and then at 1:30 to meet for the fieldtrip to Squaw Creek National Wildlife Refuge and Jamerson C. McCormack Natural Area, with Paul Nelson as our leader.

Respectfully submitted,
Karen S. Haller (signed)
Secretary

WHAT YOU MISSED

During the afternoon following the MONPS Board Meeting held at Big Lake State Park (Holt County) on September 11, 1982, a most interesting field trip was led by Paul Nelson, who is Director of the Natural History Program, Department of Natural Resources, as well as MONPS Inventory Committee Chairman. We started at the Squaw Creek National Wildlife Refuge, located only eight miles east of the park, where we made a brief tour of the headquarters. Then Paul urged us up a steep trail to the top of one of the loess mounds in the Jamerson C. McCormack Natural Area, and our efforts were rewarded by a spectacular view of the Missouri River floodplain and a large portion of Squaw Creek Refuge.

Loess mounds are striking dune-like features found along the east side of the Missouri River valley, reaching southward from Iowa to Kansas City, with similar but flatter deposits along the river valley from Kansas City to St. Louis. These hills had their origin in the Pleistocene Epoch when retreating glaciers left land surfaces exposed which were easily

eroded due to the absence of vegetation because of cold temperatures and drought. The strong winds characteristic after periods of glaciation carried these loose sediments toward the downwind side of the valley where they formed dune-like hills in areas closest to the source but more blanket-like deposits farther away. Deposits of up to seventy feet thick are found in the Squaw Creek area, among the thickest in Missouri. Such sediments are not limited to this area, however; they are found in widely scattered areas of the world, including central Europe and northern China as well as the Mississippi and Missouri River valleys.

Called loess (from the German lösen, to loosen, dissolve), this fine-grained deposit is composed mostly of silt but also usually contains clay and sand and is of a characteristic yellowish-brown color. The mounds are amazingly cohesive because the particles are angular and tend to interlock. Also plant roots serve as soil stabilizers, as do calcite "reinforcing rods," the carbonate minerals having been deposited by ground water in spaces left empty by decayed roots. However, erosion has cut deep, steep-sided ravines which dissect the mounds.

Forest vegetation grows from the flood plains almost up to the top of the hills and into the ravines on the north and east slopes, but there is a sharp transition on the south and west facing slopes to a treeless hill prairie. It is here that are found some of the last floral remnants of the huge prairie which once dominated the area, and some of the short grass plains species of the western United States reach their eastern limit here.

Plants seen on the field trip which are characteristic of the loess mounds and are not found elsewhere in Missouri were: Dalea enneandra, Bouteloua hirsuta (Hairy Grama Grass), Yucca glauca var. glauca (Soapweed), Liatris punctata var. nebraskana (Snakeroot), and Lygodesmia juncea (Skeleton Plant). The latter plant, an unusual member of the Compositae, was not blooming at this time, but a previous sighting in the Colorado foothills last summer showed a flower head resembling a single caryophyllaceous flower, with the pink ray flowers looking like notched "petals." A number of other rare species which are limited to the loess hills are listed in Weber (1981) and in Steyermark (L963) in his introductory chapter "Flora and Vegetation."

Many other plants which have a wider distribution in Missouri were seen, and it was interesting to note that ten of them were not listed in Steyermark for Holt County. Fortunately

we controlled our excitement and remembered to consult Henderson's Additions to the Flora of Missouri and found all but three of them reported there - a good reminder for all of us to check this publication before sending any new records to Dr. Weber. A copy can be obtained free of charge by writing Ginny K. Wallace, Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102. The three plants which were not listed in either publication for Holt County were Polygonum punctatum (Smartweed), Spiranthes cernua (Common Ladies' Tresses), and, surprisingly, Sorghastrum nutans (Indian Grass). However, these cannot be listed as county records as a collecting permit from the Department of Conservatoon had not been secured for this Natural Area and therefore the proper procedure could not be carried out.

Literature Cited

Henderson, Norlan C. 1980. Additions to the Flora of Missouri. Missouri Department of Conservation. 82 pp.

Steyermark, Julien A. 1963. Flora of Missouri. The Iowa State University Press, Ames.

Weber, Wallace R. "Missouri's Loess Hill Prairies: An Endangered Habitat." Missouri Prairie Journal. January 1981, pp3-6. The Missouri Prairie Foundation, P.O. Box 200, Columbia, MO 65205.

RUSSIAN BOTANISTS VISIT THE OZARKS

Turner Collins,
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Evangel College, Springfield

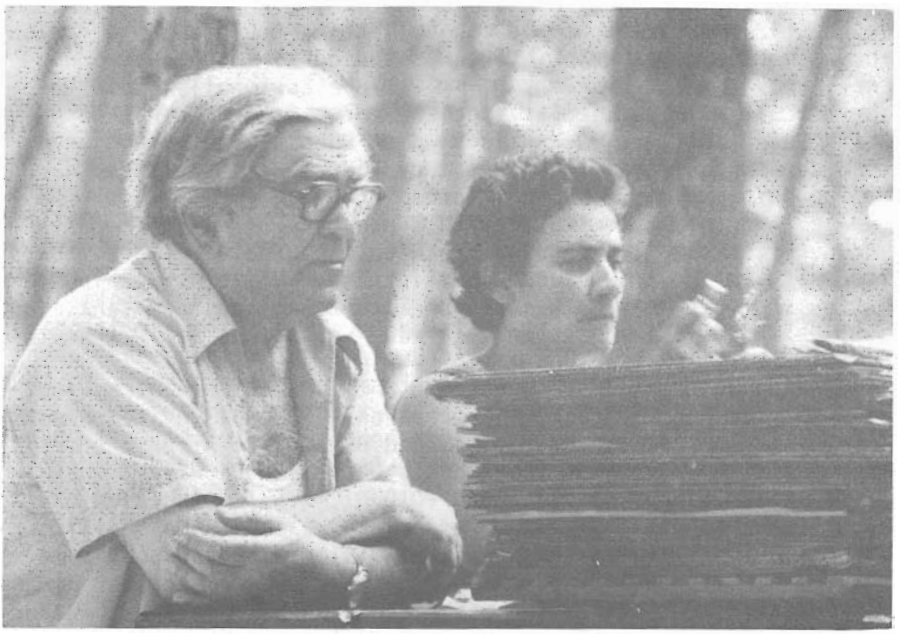
Wallace R. Weber,
Department of Biology,
Southwest Mo. State Univ.
Springfield

On August 4, 1982, the 10 P.M. newscast from KY-3 TV in Springfield, Missouri, included a short segment about a visitor from Russia who had spent the afternoon at Hercules Glade Wilderness Area. To several members of MONPS the visitor was more than just an ordinary

tourist traveling through the Ozarks. He was, in fact, the internationally famous botanist, Armen Takhtajan. For those of you who do not recognize the name, he is an authority on the evolution of the flowering plants and has published a classification of the angiosperms. In addition, he is an authority on the flora of Russia and is director of the Komarov Botanical Institute in Leningrad. Dr. Tahktajan was accompanied to America by an Armenian botanist and former student, Eleanora Gabrielian. Before arriving in New York for a 45 day stay in the States, he had informed his initial host, Arthur Cronquist, that he wished to visit the Ozarks. Through the Missouri Botanical Garden, we were contacted and asked to be his guides.

Since our visitors did not arrive until just before noon Thursday and had to return to St. Louis on Saturday, we were frustrated in our thoughts as to which of the many Ozark plant communities we would have time to show them in such a short time. However, we had little trouble placing limestone glades high on our list of priorities. Thursday afternoon seemed an appropriate time to take a short trip from Springfield to Hercules Glade Wilderness. Since neither of us had an intimate familiarity with the area, we were delighted that our local expert on Hercules, Janet Hicks, could accompany us. Janet, also a member of MONPS, completed her master's degree several years ago at SMSU, doing a vegetational study of Hercules for her thesis topic. After arriving at the Hercules Wilderness Area, we walked for some distance through a typical upland oak-hickory forest before reaching our first expanse of glade.

Before our visitors arrived, Turner had informed a local TV station of the expected arrival of our important guests, and KY-3TV subsequently decided to do a short news story about the Russian visitors to the Ozarks. They thought it appropriate to interview him in the field, so we arranged a rendezvous for 3:30 P.M. that afternoon. At the appointed time, the TV anchor man with his cameraman appeared, somewhat ruffled because of the long hot, humid walk to the glade in a white shirt and tie. After arriving on the scene, the newsman talked informally with Dr. Tahktajan about various things, including preservation of wilderness areas in Russia. At the same time the cameraman took informal shots of Dr. Tahktajan talking with members of our party, as well as shots of some of the plants we were showing him. When the newsman felt he had established some rapport with Dr. Tahktajan, he attempted to begin a formal interview. At this point Dr. Tahktajan simply walked away and refused to talk further with the TV man "on camera". Dr. Gabrielian informed us that Dr. Tahktajan did not like TV newsmen, and that he always refused interviews, even in Leningrad. After some discussion with Turner about the significance of Hercules Glades, and the controversies surrounding the preservation of wilderness areas, Dr. Takhtajan seemed to understand the significance of the news interview. He went to the news team and said--"I'll say a few words for you". The anchorman seemed satisfied that he was able to get some direct comments from Dr. Tahkatajan on preservation of natural areas. As the TV men trudged off through the woods to their car, Dr. Tahktajan remarked-"Television reporters are alike all over the world--a good example of convergent evolution!"



DR. ARMEN TAHKATAJAN, AT ALUM COVE NATURAL BRIDGE (NEWTON COUNTY), ARKANSAS, AUGUST 6, 1982.

Drs. Tahktajan and Gabrielian both spoke very good English and we were able to communicate well with them about the plants of the area. Perhaps our greatest language barrier was our different pronunciations of scientific names. Occasionally, after a moment of thought about a name we had used, Eleanor would exclaim "Oh you mean.....!" Dr. Tahktajan remarked that there are two pronunciations of Latin names, the European and the Anglo-American. Fortunately, we were able to bridge the difference between the two most of the time. Both were curious about the names of certain species, but we were impressed with the number of species and genera they knew.

Dr. Gabrielian was responsible for collecting the plants they wish to take back to the Soviet Union. She was indeed an enthusiastic and zealous collector. While Dr. Tahktajan would occasionally indicate to Eleanor to collect a particular species, more often than not he appeared irritated that she was collecting so much. Although we were unable to understand several exchanges they had in Russian, it appeared to us she was being told she had collected "enough!"

As we left Hercules, we traveled to a nearby general store-post office at Rueter, Missouri, where we drank cold pop, ate ice cream bars, and visited with the proprietor and postmistress. While we sat in the store resting from our very hot excursion into the glade, Dr. Tahktajan informed us he would like to see an American farm before he left southwest Missouri.

That evening we treated our guests to a typical American cook-out which Pansy Collins had graciously prepared. Several invited guests included two other members of MONPS, Jim and Dona Key. After the meal Dr. Tahktajan visited with the other guests while Janet, Wally, and Turner helped Eleanor press plants. At 10 P.M., KY-3 TV included a short segment on their late news program about Dr. Tahktajan's visit to the Ozarks, which included shots of him talking with us about some of the species we were observing, and comments by the commentator gleaned from their informal conversation beforethe aborted interview. Before taking our guests to their motel, we announced to them a starting time of 7:30 A.M. for tomorrow's trip, to which Dr. Tahktajan replied--"too early!"

About 9:30 A.M. Friday morning we left Springfield for Newton County, Arkansas, specifically, Alum Cove Natural Bridge. Here we planned to show Dr. Tahktajan some of the relict beech-magnolia stands which have persisted in the moist ravines of the Boston Mountains. Since we had to drive through Branson, we invited Ken Olson, a MONPS Board member, to accompany us on our Arkansas venture. The weather, which was again hot and muggy, along with the rugged terrain, took its toll on Dr. Tahktajan's 72 years, as we had to make frequent rest stops as we returned from the depths of the ravine at Alum Cove. Dr. Tahktajan seemed impressed with the vegetation and the terrain of the Ozarks, and in particular the occurrence of Magnolia acuminata in the midst of an oak-hickory forest.

When we returned that evening, Erma Weber had prepared a fried chicken dinner with all the trimmings. That afternoon Erma had purchased a bottle of vodka, since "everyone knows" that Russians drink vodka. When offered a drink before dinner, Dr. Tahktajan chose bourbon,

saying: "I don't like vodka; I much prefer American bourbon."

Originally we had planned to take our guests to the Current River area as we returned them to St. Louis by 4 P.M. Saturday. However, Dr. Tahktajan was still interested in seeing an Ozark farm, and not interested in starting the day befor 9 A.M. Consequently, we "scratched" the Current River area of the Ozarks from our itinerary. Through the efforts of the chairman of the Agriculture Department at SMSU, we took our guests to the R.F. Thompson dairy farm just east of Springfield. We received a very thorough tour of the farm and Dr. Tahktajan had a number of questions about its operation. After leaving the farm, we made one botanical stop at a small prairie remnant near Marshfield.

After delivering Dr. Tahktajan and Dr. Gabrielian to the Forest Park Hotel in St. Louis, we took the 200+ specimens that had been collected the past 3 days to the Missouri Botanical Garden, where we changed the specimens from our presses to theirs, and where the specimens were to be subsequently dried and sent to the Soviet Union.

As a result of the many conversations we had with our guests during their short stay, we learned a number of things bout their personal lives and their way of life. Dr. Tahktajan, for example, has a wife, two sons and a daughter, and is a grandfather. One son is a well known mathematician in the Soviet Union. He regularly reads the New York Times, and was aware of many current issues in our society (i.e. he was well informed about the evolution-creationism controversy which we discussed at one point). Dr. Gabrielian is the mother of two young children and her husband is a paleobotanist and chairman of the botany department at a university in Armenia.

As we returned to Springfield about 10 P.M. Saturday evening, we looked forward to a couple of days of relaxation after an exhausting 3 days. However, the past 3 days had been rewarding--we had made friends with 2 colleagues from a foreign country, learned something about their society, and parted feeling there was less difference between our ways of life than we had previously thought.

FILLIPENDULA RUBRA--QUEEN OF THE PRAIRIE

Ron Mullikin, Naturalist, St. Francois State Park
Missouri Department of Natural Resources
Jefferson City, 65101

In 1977 the Webster Groves Nature Study Society, while on a field trip at St. Francois State Park, discovered Filipendula rubra (Queen of the Prairie) in a fen. F. rubra is of the family Rosaceae. Formerly it had been known as Spiraea lobata Gronov., Spiraea palmata Linn. f. lovata Maxim. or Ulmaria rubra Hill.

According to Bailey (1928) the name Filapendula is derived from the Latin filum, thread, and pendulus, hanging, and alludes to "numerous small tubers hanging together by thread-like roots". All species are perennial herbs with stipulate, odd-pinnate leaves. In F. rubra these are 7-9 parted, with "oblong, acuminate, incisely serrate lobes". The terminal leaflet is largest, lateral leaflets 3-5 lobed, but sometimes missing on upper leaves. Leaves all green on both sides, pubescent only below, along veins. F. rubra is a glabrous plant, 2-8 feet in height, its pink flowers produced "in a rather large, paniculate cyme". Each produces 6-10 glabrous fruits: typical achenes: 1-seeded and indehiscent According to Bailey, these "can be sown in fall in pans or boxes and kept in the cool greenhouse, or sown in spring". Filipendulas can also be propagated "by division of older plants".

The typical habitat of F. rubra is a little known community called a fen. The word fen is of European origin and has several definitions, many of which are somewhat restrictive. Jeglum (1974) proposes a definition of a fen as "any wetland that is enriched by mineral soil water". Other common terms for such areas in the literature are carr, calcareous wet meadows, shallow marsh, mire, moor, swamp, bog, meadow marsh, and with a few adjectives an infinite number of other terms.

Studies in Iowa (Vander Valk, 1976) have noted three divisions of the fen; the sedge mat, the margin, and the water source. From my observations at St. Francois State Park, F. rubra is typical of the water source. In the literature, other species of Filipendula are typical of fen margins.

Filipendula rubra occurs in three separate populations occupying fens or calcareous seeps. In the largest populations, F. rubra forms a dominant fibrous root mass. During cold weather the root mass freezes solid. The fen is well defined in cold weather as surface water freezes leaving a trail of ice easily seen on a sunny day.

The present status of F. rubra is difficult to discern from the literature. References seem to suggest that major populations of F. rubra are rare in certain floristic areas, but that it is abundant elsewhere, giving a false sense that the plant is not endangered or threatened. Where cultivated, as referenced in Indiana (Deam, 1940), the first reaction is one of relief. However, continual work is necessary to maintain cultivated plants. Gardens do not insure a plant's protection, especially if we neglect or tire of our garden spot.

Steyermark (1963) cites F. rubra as having a more northern and eastern affinity. Upon examining floras in its known range, its status is still unclear.

Many references cite specific locations of F. rubra, but the information is no cause to relax:

Flora of Indiana (Deam,1940)-rare in 17 counties of central Indiana, but frequently cultivated.
Flora of Illinois (Jones,1963)-Uncommon.
Flora of Nova Scotia (Roland and Smith,1969)-planted as an ornamental.
Flora of New England (Seymour,1969)-Maine, 2 counties; New Hampshire, 2 counties; Vermont, 6 counties; Massachusetts, 1 county; Connecticut, 3 counties & found further southwest.
Vascular Flora of Glen Helen, Clifton Gorge and John Bryan State Park, Ohio (Anliot,1973)-site in the park.
Distribution of Illinois Vascular Plants (Mohlenbrock and Ladd, 1978)-12 counties, with many sites near Chicago area.
Flora of Canada (Scoggan,1978)-found south in the U.S.

Larry Morris (pers. communication, The Nature Conservancy, Natural Heritage Inventory) indicated that the natural range of F. rubra was from Pennsylvania to Michigan, through Iowa, and south to Georgia, Kentucky and Illinois. According to The Nature Conservancy, the status of the plant within its range is: threatened in Michigan, endangered in North Carolina, rare in Illinois, extirpated in Iowa, endangered in Missouri and Pennsylvania lists 20 sites but it is speculated that half of these or more are escaped from cultivation. Its federal standing as an endangered species is still being determined.

In Missouri, Steyermark (1963) cites one location for F. rubra. This site in Reynolds county was reported in 1951. Mr. Steve Orzell (graduate student, S.I.U.) visited the site in 1981 and reported it to be a timberless field of fescue. The only remaining clue of a fen was a wet spot in the field. Mr. Orzell has located two new populations growing in marginal habitat, in Reynolds County.

Only recently has Filipendula rubra received distinction as being protected in fens in the Coonville Creek Natural Area at St. Francois State Park. This may very well be the last stronghold of the species in Missouri.

Filipendula rubra is but one element in the complex fen community, and its economic and ecological values are virtually unexplored. The probable reason for this is that the fen community is generally regarded by the layman as unpleasing, a fact that places it in great danger of extinction. Goodwin (1978) said "any fool can appreciate mountain scenery, but it takes a man of discernment to appreciate the fens".

Literature Cited

Anliot, Sture, F., 1973. The Vascular Flora of Glen Helen, Clifton Gorge, and John Bryan State Park. Ohio State University, Columbus, Ohio.

Bailey, Liberty Hyde, 1928. The Standard Cyclopedia of Horticulture. The Macmillan Company, New York.

Deam, Charles C., 1940. Flora of Indiana. Dept. of Conservation, Division of Forestry.

Godwin, Harry. 1978. Fenland, Its Ancient Past and Uncertain Future. Cambridge University Press.

Jeglum, J.K., 1974. Toward a Wetland Classificaiton for Ontario. Sault Ste. Marie, Ontario. Great Lake Research Centre, Canadian Forestry Service, Dept. of Environment.

Jones, George Nelville, 1963. Flora of Illinois, containing keys for identification of ferns. University of Notre Dame Press.

Mohlenbrock, Robert H. and Douglas M. Ladd, 1978. Distribution of Illinois Vascular Plants. Southern Illinois University Press.

Roland, A.E. and E.C. Smith, 1969. "Flora of Nova Scotia." Proceedings of the Nova Scotia Institute of Science (20):1-236, and 278-746.

Seymour, Frank Conkling, 1969. The Flora of New England. C.E. Tuttle Co., Rutland, Vt.

Scoggan, Homer John, 1978. The Flora of Canada. National Museums of Canada.

Steyermark, Julian, 1963. Flora of Missouri. Iowa University Press, Ames, Iowa.

Vander Valk, A.G., 1976. "Zonation, Competitive Displacement and Stand-in Crop of Northwest Iowa Fen Communities." Proceedings of the Iowa Academy of Science 83 (2):51-54.

POA BULBOSA

Art Christ 3458A Watson Road St. Louis, Mo. 63139

On a field trip this spring to Roaring River State Park I found several plants of the grass Poa bulbosa. This species had been found once before in Missouri in Christian County in southwestern Missouri. It is a native grass of Europe, and flowers from April to June.

The culms of this species are swollen and bulblike at their bases. The basal leaves are short, while the cauline leaves are two or three with long sheaths and short flat blades. Some of the spikelets are changed into little bulblets which are dark purple at their bases

with their bracts prolonged into linear tips from five to fifteen millimeters long. It certainly is a different appearing species.

The author has deposited a voucher specimen at the Missouri Botanical Garden herbarium in accordance with the procedure outlined in the Winter, 1982 issue of Missouriensis (Vol. III, No. 3, pg. 18).

HELIANTHUS ROTA-PLASTICUS, A NEW SPECIES

As presented with illustrations at the Eighth North American Prairie Conference, Western Michigan University, Kalamazoo, MI, 3 August, 1982

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Prairie Ridge Nursery
Mt. Horeb, Wisconsin 53572

Charles C. King
Ohio Biological Survey
Columbus, Ohio 43210

Helianthus rota-plasticus, n. sp. has been observed, collected, and photographically recorded since 1977 from many locations throughout North America. The type specimen was collected 14 June 1981 at Mt. Horeb, Wisconsin. The typical form of this erect perennial has a sansfoliar, ferruginous stem with a terminal plasticized inflorescence consisting of a many-flowered head, 30 cm in diameter, having brown fused corollas and phyllaries on a 11.5 cm disc with an argental inverted receptable 2.0 cm in diameter. The eight yellow ovate rays, each 9 cm in length and 5.5 cm in width are attached at an angle of 45 degrees equilaterally upon the circumference of the disc. An occasional tetraploid form has 16 rays.

Anthesis occurs primarily during summer and autumn but occasionally throughout the year, even through the snow, at many northern stations. The inflorescence frequently orients directly into the wind and rotates counterclockwise at variable speeds correlated directly with local wind conditions. This unique botanical energy transfer process is referred to as "floralaeoliansynthesis" and provides selective advantage over competitive photosynthetic species unable to utilize wind energy as efficiently.

The species is undergoing rapid evolution in several portions of its range. Numerous color forms have developed: rubra, alba, caerulea, purpurea, nigra, and viridens. Color variations are common in hybrid swarms. Various growth forms, each of which may have ecotypic significance, include altissima, ultra-altissima, and triplicata. A liana form and an epiphytic form with possible parasitic characteristics have also been recorded.

This rapidly invading, aggressive, and early successional species has attained transcontinental distribution with substantial populations at many locations especially within the Prairie Peninsula. Identified sites of endemism include such widely separated prairie locations as Minneapolis, MN: Chicago, IL; and Mountain Grove, MO. Local centers of recent distribution include garden centers. This apparently indicates that commercial propagation has been achieved, and if this be so, then Helianthus rota-plasticus could be the forerunner of the horticultural use of native species in landscape design.

Strong prairie affinities are indicated by those populations associated with Sorghastrum nutans (Indian grass) and Andropogon gerardii (big bluestem). The species also occurs along roadsides, fencerows, and cemeteries. Commonly the species is found in highly disturbed residential and commercial urban, suburban, and rural sites. Prime habitat is sunny and shaded lawns and gardens. It occurs in the open or along edges and borders proximal to human habitations, frequently in door yards. The triplicata form frequents commercial sites.

Additional associated floristic and faunistic assemblages involve such species as Agaricus maculatum (the spotted mushroom) and Rana lawniensis (the lawn frog). Strong affinities exist with Globus speculescens (the gazing globe) and with several species of birds, e.g. Anas lawniensis-alba (the white lawn duck), Anas rotaptera (the rotating winged duck), and especially Phoenicopterus subrubra (the pink flamingo). Negative correlations between the occurrence of Helianthus rota-plasticus and members of the Talpidae (moles), Sylvilagus (rabbits), Procyon (raccoons), and Corvus (crows), as suggested by folk lore, have not been substantiated. However, allelopathy is suspected in regards to some ornamental species. Some distributional records suggest a possible relationship between Helianthus rota-plasticus and certain religious and patriotic environments. Interestingly, Helianthus rota-plasticus has low fidelity as an indicator of economic status of proximal human populations since little or no correlation exists between distribution of Helianthus rota-plasticus and human-assessed property evaluation.

Additional observers are solicited to assist in documenting the spread and development of this species. Prairie People with prurient pursuits and obscene obsessions are best qualified for this task. You are encouraged to become involved.

BARRY COUNTY BOTANICAL TREASURES

STeve Orzell
2236 Willow Ridge Lane
Chesterfield, MO 63017

Palmer and Steyermark (1935) originally described the Ozark Wake Robin, a member of the family Liliaceae as Trillium ozarkanum Palmer & Steyermark sp. nov., from Barry County in southwestern Missouri. The species is closely allied with Trillium pusiluum Michx., of the Atlantic Coastal Plain, and Trillium texanum Buckley, of eastern Texas. The Ozark Trillium is distinct from these as its leaves and sepals are broader and usually have five prominent veins, instead of three. Its petals are longer and broader, not becoming erect or ascending as in the other species, and its peduncles average longer. However in 1960 Steyermark changed the taxonomic status of the plant to T. pusillum Michx. var. ozarkanum (Palmer & Steyerm.) Steyerm. comb. nov., in preparation for the Flora of Missouri. Recent (1981) work by Case may have restored the Ozark Trillium to species status rather than a variety of T. pusillum; however, I have not been able to obtain this article.

Trillium pusillum var. ozarkanum is known from six counties in Arkansas, three counties in Kentucky, and one county in Tennessee (Morgan, 1980). In Missouri the plant has been historically collected from five Ozark counties. The plant has been listed as a federally threatened species since December, 1980.

Missouri populations have been recently field-checked from five sites in Barry county, two sites in Lawrence county and one site in Taney county. The status of the population in McDonald county is not known. The Barry county site is believed to have been extirpated by golf course development. One incomplete record from Lawrence county which lacks precise legal site description needs to be verified.

After correspondence with Dr. John Baumgardt, a keen botanist of Cassville, a trip was planned to visit some of the Barry county sites.

On April 3, I arrived in CAssville to embark on a most interesting botanical foray with Dr. Baumgardt. Unfortunately, it became obvious that the four populations we were to visit were very much endangered.

The first site we visited was along Mineral Springs road where a few scattered populations occur along a south-facing slope on the north side of the road.

The upper reaches of the slope were cleared and the trillium was restricted to a narrow wooded slope between the crest of the hill and the roadside. A recent fatal accident during excavation of the hilltop at least temporarily spared the plants from ultimate demise. Some individuals are showing signs of chlorosis as lime leaches down from rubble unearthed during bulldozing operations.

Just to the south in the SE1/4, NW1/4 of sec 34 a few plants occur along a south-west facing wooded slope. Dr. Baumgardt pointed out numerous localities where the plant once grew. The highway department has actively been excavating the base of the slope for roadbed fill. At this site survival of the remaining individuals is very precarious at best.

Our third locality brought us within city limits of Cassville, near the town's water tower. The plants grew on the east and west slopes of a northward drainage directly west of the water tower. All the plants along the east slope were destroyed when it was recently cleared. At present individuals are scattered along the opposite west slope.

At first glance one would never suspect the presence of the Ozark Trillium from the area. A young even-aged Ulmus - Fraxinus forest dominates the canopy. Thickets of Ribes missouriense, Lonicera japonica, Vinca minor are rampant. In association with the trillum were the flowering herbs: Lamium amplexicaule, Dentaria laciniata, Isopyrum biternatum, and Anemonella thalictroides. At midslope there is a rather large colony of some 13 plants. This was the largest clump encountered. Even here survey markers loom over the plants, forecasting a gloomy future.

Lastly we stopped at the type locality from which the species was described as new to science. A well manicured golf course marks the locality. Just across from the type locality on the west side of HWY 112 there is a motel complex. Behind a string of cabin-motels, nestled in a woodlot strewn with litter, are numerous Ozark Trilliums. Extreme caution was exercised when this site was visited.

In addition to the 4 sites visited Dr. Baumgardt reported that there are a few plants in Roaring River State Park. Dr. Baumgardt also has a few growing on his property in a garden with Trillium pusillum.

This year the Ozark Trillium flowered after Amelanchier aborea bloomed, but while Cercis canadensis and Cornus florida were peaking. Newly opened flowers are snow white; with age they become tinged with pink and finally rose-purple. A cluster of newly opened and aging flowers is truly a breathtaking site.

Even more remarkable are the numerous other Barry county botanical treasures. Dr. Baumgardt took me to a few sites with Delphinium treleasei, one site with Salix humilis, one site with Leavenworthia uniflora, and the type locality for Valerianella ozarkana. He showed me where a single plant of Cypripedium reginae thrives and is threatened with road realignment. In addition he pointed out where Muhlenbergia schreberi var. curtisetosa grows, and a site along the Roaring River with Lobelia X siphilitica var. hybrida. He also reported to me that Habenaria flava, Liparis lilifolia and Aplectrum hyemale occur in Barry county.
The striking flowers of the Ozark Trillium along with the numerous botanical sites harboring unique species made for some lasting memories. But the most enjoyable was having spent the hours with Dr. Baumgardt who instilled a sense of wonder and cast a ray of hope for the flora of southwestern Missouri. Thank you, Dr. Baumgardt.

Literature Cited

Case, P.W. 1981. "EAstern American Trilliums." Bull. of the American Rock Gard. Soc. 39: (2 & 3).

Morgan, S.W. 1980. Status report on Trillium pusillum Mich. var. ozarkanum (Palmer & Steyerm.) Steyerm. Natural History Section, Missouri Department of Conservation, Jefferson City, Missouri. 14 pgs.

Palmer, E.J. And Julian A. Steyermark. 1935. "An Annotated Catalogue of the Flowering Plants of Missouri." Annals of the Missouri Botanical Garden 22: 375-758.

Steyermark, J.A. 1960. "New Combinations and Forms in the Missouri Flora." Rhodora 62: 130.

THE PILLAGE GOES ON

Steve Clubine, Missouri Department of Conservation
Jefferson City, 65102

The Pale Prairie Coneflower (Echinacea angustifolia) jerkers were active again this year, not unexpectedly. Pale Prairie Coneflower has long been known for its numbing effect on gums, tongue and wounds. The Indians used the root for relief from toothache and sore throat. Pharmaceutical companies are presently purchasing

large quantities of the plant, at about $2.00 per pound, for use in certain medicines. It wouldn't be so bad if it wasn't for the possible permanent elimination of the plant. Numerous highways in Kansas and highway U.S. 54 from Kansas to Camden County, Missouri have been jerked completely clean of this showy prairie wildflower. Highway H running north from ElDorado Springs past Taberville Prairie has been stripped as well as numerous private prairies in St. Clair, Hickory, Vernon and Cedar Counties.

It would appear to me that if any of these wildflowers are to remain outside our own prairies, someone is going to have to take some action. Prairie appreciation is growing, so surely we can stir up enough public concern to make a voice heard by someone who has the power and authority to get things done.

Editor's note: This material was received July 1; unfortunately, one can assume that the pillage continued throughout the summer. Readers may wish to refer back to our Summer issue (Vol. IV, No. 1. pg. 5) to find earlier reports of the same problem.

TWO SPEEDWELLS NEW TO MISSOURI

David Castaner

The Herbarium, Central Missouri State University, Warrensburg, 64093

As a consequence of a county record search, a specimen previously called Veronica polita was reexamined and is now identified as V. persica Poir, the Common Field Speedwell. Regionally, it occurs in nearby Kansas, Illinois and Oklahoma, but has not previously been reported from Missouri. It can be easily separated from its two closest Missouri relatives, V. hederaefolia and V. polita, due to its prominently reticulate matured fruit and a corolla much larger than the calyx. A voucher specimen, Praetorius 63, 9 April, 1972, Warrensburg, Johnson County, is deposited in the herbarium at CMSU (WARM).

Another specimen, previously identified as Veronica longifolia, is now identified as V. latifolia L., the Saw-leaved Speedwell. It is not an uncommon horticultural escapee in the Northeastern United States. V. latifolia has axillary racemes, while the somewhat similar V. longifolia has terminal racemes. A voucher specimen, Barrow 140, 13 May, 1972, Warrensburg, Johnson County, is deposited in the herbarium at CMSU(WARM).

IF YOU TYPEWRITE, PLEASE TYPE RIGHT

JOHNSON'S SHUT-INS STATE PARK

Paul Nelson
Missouri Department of Natural Resources
Jefferson City, 65101

What is the most floristically diverse region of Missouri? More specifically, where could botanists walk in a given day and see more plants than anywhere else in Missouri? This article attempts to answer both questions and has a twofold purpose:

1) To explain the term "diverse" by comparing comprehensive floristic studies and discussing the importance of natural community differences.

2) Establishing as a matter of record and challenge the most diverse floristic area in Missouri.

Floristic diversity is a claim taken by almost every author on the subject of regional flora, scientific or popular. Literature often reveals the phrases "extremely diverse, highly varied, unequalled elsewhere rich and varied", or "the most diverse region of the state". In Missouri, the claims are made (and respectfully rightly so) in Steyermark's Flora of Missouri or his Natural Plant Associations and Succession in the Ozarks of Missouri. In addition, his publication entitled Vegetational History of the Ozark Forest provides argument and explanation for the presence of floristic elements in the Ozarks. Steyermark's use of the word "diversity" is directed at describing floristics on both a regional and statewide basis. How can we narrow down our claims for floristic diversity?

To present the challenge, I shall define diversity as: "the occurrence of the greatest number of Missouri's native or naturalized vascular plants in a natural region no greater than 3500 acres".

The acreage is selected based on known comprehensive floristic studies which are tabulated as follows:

TABLE 1

NAME	AUTHOR, DATE	ACREAGE	TOTAL TAXA	NO. N.C.'s*
Jonca Creek	Taylor, 1974	400	534	7
Montauk S.P.	Maupin, 1975	1192	625	9
Knob Noster S.P.	Mullikin, 1977	3500	444	8
Johnson's Shut-Ins S.P.	Nelson, 1977	2437	902	19
Roaring River S.P.	Hornberger, 1980	3459	667	10
Hawn S.P.	Solecki, 1981	3111	661	14
Bennett Spring S.P.	Ladd, 1982	1224	740	10

*N.C.'s refers to Natural Communities

Of the floristic studies listed above, the data reveals Johnson's Shut-Ins (Reynolds County) has the highest number of taxa with 902. In challenge of a model which we will assume can top this figure, selection of an area of Missouri's landscape must meet the following criteria:

1) The floristic study is comprehensive, that is, 95% of the model areas flora should be identified.

2) Selecting a model that embraces naturalness, that is, habitats that have maintained a high degree of presettlement natural integrity.

3) Not imbalanced by a high percentage (less than 10%) of non-native or alien flora.

If Johnson's Shut-Ins State Park is truly the most floristically diverse area known to date in Missouri, then why? Several factors used to explain species presence and richness include ecological range, geologic or climatic history, habitat adaptations, endemism, and variation in natural communities, all which affect our model area. However, the most significant influence can be explained in natural community variations.

Missouri's natural vegetation can be described by use of a classification scheme developed for the Missouri Natural Areas System. The principal objective of the classification scheme, entitled Terrestrial Natural Communities of Missouri (Nelson, 1981) is to provide a framework in which Missouri's ecological diversity can be identified and high quality examples of natural community types protected in Natural Areas. The scheme has been applied in floristics research including Solecki (1981), Hornberger (1981), and Nelson (1977). The remaining state park floristic studies have been cross-referenced to natural communities (Table 1) and described in the Natural Heritage Inventory of Missouri State Parks (Nelson, 1980).

A natural community is defined as all organisms - plant and animal - occupying a given environment of homogeneous influence. Description of the community, including environmental factors, uses vegetative structure, soil moisture, soil parent material, topography, and dominant or characteristic plants (or animals). There are 86 natural communities delineated in the classification system including forest, prairie, savanna, wetland, glade, cliff, gravel wash, and sandstone overhang. Referring to Table 1, we note that Johnson's Shut-Ins has 19 terrestrial natural communities which are listed as follows:

xeric forest (igneous)	calcareous seep
dry forest (limestone)	fen-shrub carr
dry forest (chert)	calcareous wet forest
dry forest (igneous)	dolomite glade
dry-mesic forest (limestone)	igneous glade
dry-mesic forest (chert)	dry dolomite cliff
dry-mesic forest (igneous)	dry igneous cliff

mesic forest (limestone)	igneous talus slope
mesic forest (chert)	gravel wash
mesic bottomland forest	

What accounts for species richness and natural community diversity at Johnson's Shut-Ins?

1) The park is located in a region of the state where geologic processes and formations, physiographical irregularities, and soil characteristics are at a crossroads. Situated in the St. Francois Mountains, nowhere else in the state is the difference in relief a maximum than in the vicinity of the park. This relief is further enhanced by the presence of the East Fork Black River carving a deep valley and exposing highly complex igneous substrates including rhyolite, felsite, granite, and ash flow-tuff. Western sections of the park are underlain by Cambrian and Ordovician dolomites including the Bonneterre, Derby-doerun, Potosi, and Eminence formations. This predominantly forested, landscape features deeply dissected ridges, north and south-facing slopes, glades, cliffs, springs, streams, and rivers, which all occur on parent material substrates offering a wide variety of moisture and pH conditions.

2) Examples of endemic species restricted to the Ozark region are found in the study area. Steyermark (1959) postulates, according to distributional data, that these species may have originated in the Ozarks or perhaps remained available for plant occupation since the late Tertiary, isolated in geological time by glaciation to the north, xeric conditions to the west, and the Cambrian seas to the south.

Hamamelis vernalis and Vernonia crinita of gravel bars; Aster anomalus, Galium arkansanum, Ranunculus harveyi, Ribes missouriensis, and Tradescantia longipes of woodlands; Solidago drummondii of limestone ledges; Parthenium hispidum and Rudbeckia missouriensis of glades, are but a few species represented in the study area as possible endemics.

3) Past geological events and shifts in climate may explain the occurrence of relic populations isolated in suitable habitats as well as those species reaching the extreme limit of their range.

Spring-fed meadows and shaded north-facing slopes offer cool, humid conditions to species of northern affinity forced to migrate southward during Pleistocene glaciation. Relic populations restricted to the southeastern Ozarks, such as Viola cucullata, Carex interior, C. leptalea, and Phlox maculata var. pyramidalis, are a few plants found in swampy meadows; whereas, shut-ins of igneous rocks and northfacing wooded slopes offer refuge to Ilex verticillata var. padifolia and Hamamelis virginiana, respectively (Steyermark, 1963).

The dry rocky glades are habitat for those species of southwestern affinity adapted to rapid evaporation and drainage of moisture from soils constantly exposed to sun and wind. Representative plants, such as

Evolvulus nuttallianus, Oenothera missouriensis, and Talinum calycinum, reach their northern or eastern limit bounded by the Mississippi River or dry bluffs of the Ozark region of Illinois.

4) Finally, an abundance of adventive and introduced species favors areas of recent disturbance by man and natural causes, which constitutes nearly one of every 10 taxa sampled. However, these alien plants are few to invade still "closed communities" and fortunately do not lend themselves as reminders of the presence of man within the majority of the present forested St. Francois Mountains.

A floristic's summary and natural community descriptions for Johnson's Shut-Ins State Park will be presented in the next issue of Missouriensis.

Literature Cited

Hornberger, Kathleen, 1980. The Vascular Flora of Roaring River State Park, Barry County, Mo. M.S. thesis. Southwest Missouri State University, Springfield. 120 pp.

Ladd, Douglas, 1982. Flora of Bennett Spring State Park, Camden-Laclede County, unpublished floristic research project in progress, Department of Natural Resources.

Maupin, Gordon, 1975. The Vascular Flora of Montauk State Park, Dent County, Mo. M.S. Southwest Missouri State University. 74 pp.

Mullikin, Ronald, 1977. Vascular Plants of Knob Noster State Park. M.S. Central Missouri State University, Warrensburg. 88 pp.

Nelson, Paul, 1977. Flora of Johnson's Shut-Ins State Park, Reynolds County, Mo. M.S. Southern Illinois University, Carbondale. 144 pp.

_____, 1980. Natural Heritage Inventory of Missouri State Parks, Missouri Department of Natural Resources, Jefferson City, Mo. 172 pp.

_____, 1981. Terrestrial Natural Communities of Missouri, Missouri Department of Natural Resources, Jefferson City, Mo. 66 pp.

Solecki, Mary Kay, 1981. The Vegetation and Floristics of Hawn State Park, Ste. Genevieve County, Mo. M.S. Southern Illinois University, Carbondale, Ill. 118 pp.

Steyermark, Julian, 1959. Vegetational History of the Ozark Forest. University of Missouri Studies, XXXI. 138 pp.

_____, 1963. Flora of Missouri, Iowa State University Press, Ames, Iowa. 1725 pp.

Taylor, W. 1972. Vascular Flora of Jonca Creek, Ste. Genevieve County, Mo. M.S. Southern Illinois University, Carbondale, Ill.

YOU NEEDN'T BE A DOCTOR TO BE ON

CALL FOR PAPERS FOR MISSOURIENSIS

ENDANGERED ISOTRIA

The letter reproduced below was accompanied by an interesting, but quite long, copy of the material from the Federal Register mentioned by its own author. For want of space in our publication, this material has been forwarded to the Chairman of our Environmental Action Committee (see inside front cover) who will make it available upon request.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES

September 17, 1982

Dear Concerned Citizen:

Enclosed is a copy of a recent entry in the Federal Register in which we announced our determination that Isotria medeoloides (small whorled pogonia) is an Endangered species, pursuant to the Endangered Species Act of 1973, as amended.

The provisions of the Act and its implementing regulations prohibit import, export, and interstate commerce in listed plants or their parts, but provide that certain otherwise prohibited activities may be conducted under permit. Permits are generally available for scientific research involving listed species, for activities enhancing survival or propagation of such species, or to prevent undue economic hardship. If you are engaged in activities that may require a permit, you should contact the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (703/235-1903).

The Act also prohibits Federal agencies from carrying out, authorizing, or funding any actions likely to jeopardize the continued existence of Endangered species. Exemptions from these prohibitions may, however, be granted in exceptional circumstances.

We would appreciate your passing on this information to any persons to whom you think it would be helpful. Any information or advice that you or your colleagues can provide also would be welcome. Questions concerning this action may be referred to the Service's northeast Regional Office, One Gateway Center, Suite 700, Newton Corner, Massachusetts 02158 (617/965-5100, extension 316) which is our lead Region for this species.

Signed: Ronald E.Lambertson, Associate Director

EVERY HOUR SPENT IN PROOF READING
IS LONGER THAN TWO IN THE FIELD!

AUTUMN HAZARD FOR FIELD BOTANISTS

Joanna Turner, 9564 Litzsinger Rd., St. Louis, MO 63124

A recent medical article explains why some of us who are active in the field in the late fall still suffer from coughing, sneezing, and unfortunately even asthma, after the ragweed season is over. As discovered by Dr. John Santilli, Jr., the culprits are fungi in the class Basidiomycetes, which release vast numbers of spores, known as basidiospores, into the air in autumn.

Previous studies had not revealed a high sensitivity to mushroom spores because the whole body of the fungus was used, but Dr. Santelli and other allergists were able to isolate enough pure basidiospores to make extracts suitable for testing. The results were startling: 90 to 95% of asthmatics suffering from wheezing in October and November were found to be allergic to basidiospores, as were many subjects with allergic rhinitis who were symptomatic in the fall.

Unlike pollen, which is often trapped in the nose, basidiospores are tiny enough (about one-thousandth of an inch in diameter) to reach deep into the lungs, where they can cause respiratory problems. In addition, many parts of the world do not have ragweed, but the Basidiomycetes are ubiquitous.

In the fall, each time the fungus is touched, as by a raindrop, spores are released into the air, where they can remain

for some time. A large mushroom with a 4-inch wide cap could release 100 million spores an hour over a period of five to six days; thus basidiospores may be as common as house dust. However, even those sensitive to the spores are happily able to eat the mushrooms with impunity.

ACKNOWLEDGMENT: Thanks to CJ Publishing Company, New York, for permission to abstract the article "Discovered: a major cause of asthma" in their publication Breath, 1(2):p. 2-3.

NEW PUBLICATIONS AUTUMN

Several newly published books that may be of interest to members of MONPS have recently been brought to our attention. The first is the Department of Conservation's latest publication, Field Guide to Missouri Ferns, and is hot off the press

Written by Dr.James S.Key of Springfield, the 220 page book covers 79 fern species, representing 28 genera. Identifying characteristics and usual habitat, as well as pen-and-ink drawings by Paul Nelson, are given for each of the species.

Intended for the amateur botanist, Missouri Ferns also contains sections on the life cycle of ferns, the collection and preservation of specimens, a glossary of botanical terms used by the author, and an index of both common and scientific names.

Missouri Ferns is a handy 6" x 9" size, bound in a durable,soft cover.The price is $3.00 per copy, plus a $.12 sales tax for Missouri residents. It is available from the Missouri Department of Conservation,P.O.Box 180, Jefferson City, 65102.

For $12.50 per copy(plus 20% for postage and handling) the Proceedings of the Sixth American Prairie Conference(1978) are available from the Ohio Biological Survey, 484 W.12th Ave., Columbus, Ohio,43210. Actual title of the book is The Prairie Peninsula--In The"Shadow" of Transeau. Titles of the many invited and contributed papers cover a wide range of information about prairies, past and present; the book was edited by Ronald L.Stuckey and Karen J.Reese, both of the College of Biological Sciences at the Ohio State University.

Finally, for $71.95 it is now possible to learn The Biological Aspects of Rare Plant Conservation. Edited by Hugh Synge, this book contains contributions"from eminent scientists throughout the world" and is said to be an invaluable addition to the professional libraries of ecologists,population biologists, phytosociologists and conservationists. It is published by John Wiley and Sons.

PLEASE NOTE:

CONTINUOUS PAGINATION,BEGINNING IN THIS 2nd ISSUE OF THIS YEAR'S Vol.4 OF MISSOURIENSIS. THIS SHOULD BE USEFUL TO THOSE WISHING TO RETRIEVE PUBLISHED MATERIAL. FOR THE SAME SEGMENT OF OUR READERSHIP AN INDEX TO Vols.1-3 IS IN PREPARATION

MISSOURI BOTANICAL RECORD[3]

Edited By

Wallace R. Weber[1] & Douglas Ladd[2]

TAXON	COUNTY	DATE	COLLECTOR	HERB.
REPORTED BY PAUL NELSON, MO DEPT. OF NATURAL RESOURCES, P.O. BOX 176, JEFFERSON CITY, MO 65102				
Ophioglossum engelmannii (16)	Reynolds	4/17/76	Nelson	DNR
Athyrium felix-femina var. asplenoides	Reynolds	6/20/75	Nelson	DNR
Typha angustifolia (48) (35)	Reynolds	6/28/75	Nelson	DNR
Aegilops cylindrica (126)	Reynolds	5/11/75	Nelson	DNR
Agropyron smithii (124)	Reynolds	6/28/75	Nelson	DNR
Agrostis elliottiana (148)	Reynolds	5/10/75	Nelson	DNR
Aristida intermedia (174)	Reynolds	8/18/76	Nelson	DNR
A. longespica (172)	Reynolds	8/18/76	Nelson	DNR
Bromus japonicus (86)	Reynolds	6/9/75	Nelson	DNR
B. racemosus (86)	Reynolds	5/19/ 75	Nelson	DNR
Cinna arundinacea (150)	Reynolds	8/ /75	Nelson	DNR
Dactylis glomerata (115)	Reynolds	5/11/75	Nelson	DNR
Diarrhena americana (113)	Reynolds	8/8/75	Nelson	DNR
Echinochloa muricata (234)	Reynolds	8/30/75	Nelson	DNR
E. muricata var. occidentalis (234)	Reynolds	8/9/75	Nelson	DNR
Eleusine indica (177)	Reynolds	8/16/75	Nelson	DNR
Elymus canadensis (130)	Reynolds	7/4/75	Nelson	DNR
E. villosus (128)	Reynolds	6/4/75	Nelson	DNR
Eragrostis capillaris (106)	Reynolds	8/31/75	Nelson	DNR
E. cilianensis (108)	Reynolds	9/27/75	Nelson	DNR
E. pectinacea (107)	Reynolds	8/20/76	Nelson	DNR
E. spectabilis (110)	Reynolds	7/20/75	Nelson	DNR
Festuca obtusa (92)h	Reynolds	6/20/75	Nelson	DNR
Leersia virginica (192)	Reynolds	8/19/75	Nelson	DNR
Melica nitens (118)	Reynolds	5/19/75	Nelson	DNR
Panicum capillare (226)	Reynolds	9/30/75	Nelson	DNR
P. capillare var. occidentale (228)	Reynolds	6/20/75	Nelson	DNR
P. columbianum STATE RECORD	Reynolds	6/20/75	Nelson	DNR
P. commutatum var. commutatum (221)	Reynolds	8/20/76	Nelson	DNR
P. dichotomum (213)	Reynolds	8/18/76	Nelson	DNR
P. dichotomum var. barbulatum (213)	Reynolds	8/28/76	Nelson	DNR
P. gattingeri (226)	Reynolds	9/10/76	Nelson	DNR

TAXON	COUNTY	DATE	COLLECTOR	HERB.
P. linearifolium var. werneri (212)	Reynolds	5/12/75	Nelson	DNR
P. praecocius (217)	Reynolds	8/18/76	Nelson	DNR
P. ravenelii (221)	Reynolds	6/20/75	Nelson	DNR
Paspalum laeve (202)	Reynolds	8/20/75	Nelson	DNR
Phleum pratense (153)	Reynolds	6/20/75	Nelson	DNR
Poa compressa (100)	Reynolds	9/28/75	Nelson	DNR
P. sylvestris (102)	Reynolds	5/10/75	Nelson	DNR
Setaria geniculata (237)	Reynolds	8/14/75	Nelson	DNR
S. faberi (238)	Reynolds	8/11/76	Nelson	DNR
Sphenopholis intermedia (138)	Reynolds	5/12/75	Nelson	DNR
Tridens flavus (120)	Reynolds	8/8/75	Nelson	DNR
Bulbostylis capillaris (282)	Reynolds	1/14/76	Nelson	DNR
Carex amphibola (358)	Reynolds	5/1/76	Nelson	DNR
C. blanda (354)	Reynolds	4/24/76	Nelson	DNR
C. cephalophora (331)	Reynolds	9/10/76	Nelson	DNR
C. conjuncta (340)	Reynolds	6/20/75	Nelson	DNR
C. convoluta (331)	Reynolds	5/10/75	Nelson	DNR
C. digitalis (352)	Reynolds	7/22/75	Nelson	DNR
C. flaccosperma var. glaucodea (360)	Reynolds	1/15/76	Nelson	DNR
C. gracilescens (355)	Reynolds	5/1/76	Nelson	DNR
C. hirtifolia (351)	Reynolds	5/1/76	Nelson	DNR
C. hitchcockiana (356)	Reynolds	4/24/76	Nelson	DNR
C. leavenworthii (331)	Reynolds	5/1/76	Nelson	DNR
C. normalis (342)	Reynolds	5/29/76	Nelson	DNR
C. oligocarpa (356)	Reynolds	5/1/76	Nelson	DNR
C. pensylvanica (347)	Reynolds	4/23/75	Nelson	DNR
C. physorhyncha (347)	Reynolds	5/1/76	Nelson	DNR
C. projecta (341)	Reynolds	5/25/75	Nelson	DNR
C. retroflexa (330)	Reynolds	5/1/76	Nelson	DNR
C. texensis (331)	Reynolds	8/20/75	Nelson	DNR
C. stipata (338)	Reynolds	5/16/75	Nelson	DNR
C. tribuloides (341)	Reynolds	6/3/75	Nelson	DNR
Cyperus esculentus (264)	Reynolds	8/8/75	Nelson	DNR
C. ferruginescens (263)	Reynolds	8/12/75	Nelson	DNR
C. filiculmis (268)	Reynolds	8/8/75	Nelson	DNR
C. strigosus var. robustior (266)	Reynolds	8/14/75	Nelson	DNR
Scirpus verecundus (288)	Reynolds	4/11/76	Nelson	DNR
Commelina communis (397)	Reynolds	6/28/75	Nelson	DNR
Juncus marginatus var. setosus (412)	Reynolds	7/20/75	Nelson	DNR
J. torreyi (413)	Reynolds	7/18/75	Nelson	DNR
Luzula multiflora (416)	Reynolds	5/12/75	Nelson	DNR

TAXON	COUNTY	DATE	COLLECTOR	HERB.
Asparagus officinalis (439)	Reynolds	9/23/76	Nelson	DNR
Erythronium americanum (433)	Reynolds	5/19/75	Nelson	DNR
Hemerocallis fulva (430)	Reynolds	6/28/75	Nelson	DNR
Ornithogalum umbellatum (438)	Reynolds	5/11/75	Nelson	DNR
Polygonatum biflorum (442)	Reynolds	5/1/76	Nelson	DNR
Smilax herbacea (451)	Reynolds	7/4/75	Nelson	DNR
S. pulverulenta (450)	Reynolds	6/28/75	Nelson	DNR
Dioscorea batatas STATE RECORD	Reynolds	6/28/75	Nelson	DNR
Hypoxis hirsuta (457)	Reynolds	4/23/75	Nelson	DNR
Narcissus poeticus (456)	Reynolds	4/23/75	Nelson	DNR
N. pseudo-narcissus (456)	Reynolds	3/27/75	Nelson	DNR
Iris pallida (462)	Reynolds	5/29/76	Nelson	DNR
Corallorhiza wisteriana (484)	Reynolds	5/1/76	Nelson	DNR
Habenaria peramoena (476)	Reynolds	7/4/75	Nelson	DNR
Spiranthes ovalis (482)	Reynolds	10/16/75	Nelson	DNR
Triphora trianthophora (478)	Reynolds	8/19/75	Nelson	DNR
Salix interior var. interior f. wheeleri	Reynolds	7/20/75	Nelson	DNR
Carya cordiformis (516) (497)	Reynolds	10/16/75	Nelson	DNR
C. ovalis (521)	Reynolds	8/19/75	Nelson	DNR
Celtis occidentalis var. canina (558)	Reynolds	7/20/75	Nelson	DNR
C. occidentalis var. pumila (558)	Reynolds	10/16/75	Nelson	DNR
C. laevigata var. texana (560)	Reynolds	5/19/75	Nelson	DNR
Ulmus rubra (555)	Reynolds	5/12/75	Nelson	DNR
Polygonum aviculare (586)	Reynolds	5/10/75	Nelson	DNR
P. pensylvanicum var. laevigatum (590)	Reynolds	5/11/76	Nelson	DNR
P. persicaria (592)	Reynolds	6/20/75	Nelson	DNR
P. punctatum var. confertiflorum (593)	Reynolds	8/8/75	Nelson	DNR
Rumex obtusifolius (581)	Reynolds	6/28/75	Nelson	DNR
Chenopodium album (611)	Reynolds	7/7/75	Nelson	DNR
Amaranthus hybridus (623)	Reynolds	8/19/75	Nelson	DNR
Mirabilis albida (628)	Reynolds	6/20/75	Nelson	DNR
M. nyctaginea (628)	Reynolds	5/12/75	Nelson	DNR
Mollugo verticillata (632)	Reynolds	8/9/75	Nelson	DNR
Talinum calycinum (636)	Reynolds	6/20/75	Nelson	DNR
T. parviflorum (636)	Reynolds	9/6/75	Nelson	DNR
Liriodendron tulipifera (671)	Reynolds	6/28/75	Nelson	DNR
Hydrastis canadensis (674)	Reynolds	4/23/75	Nelson	DNR
Ranunculus acris (692)	Reynolds	5/22/76	Nelson	DNR
R. micranthus var. delitescens (688)	Reynolds	5/19/75	Nelson	DNR
R. pusillus (687)	Reynolds	5/1/76	Nelson	DNR
Descurainea sophia (768)	Reynolds	6/ /76	Nelson	DNR
Draba aprica (746)	Reynolds	4/11/76	Nelson	DNR

TAXON	COUNTY	DATE	COLLECTOR	HERB.
Lepidium campestre (737)	Reynolds	5/11/75	Nelson	DNR
L. virginicum (738)	Reynolds	5/19/75	Nelson	DNR
Sisymbrium officinale var. leiocarpum	Reynolds	8/ /76	Nelson	DNR
Thlaspi arvensis (742) (765)	Reynolds	5/25/75	Nelson	DNR
T. perfoliatum (742)	Reynolds	3/7/76	Nelson	DNR
Sedum sarmentosum (772)	Reynolds	6/20/75	Nelson	DNR
S. ternatum (772)	Reynolds	4/19/75	Nelson	DNR
Hydrangea arborescens (782)	Reynolds	6/28/75	Nelson	DNR
Pyrus malus (798)	Reynolds	9/6/75	Nelson	DNR
Rosa multiflora (849)	Reynolds	5/12/75	Nelson	DNR
Rubus enslenii (838)	Reynolds	5/19/75	Nelson	DNR
R. invisus (838)	Reynolds	5/10/75	Nelson	DNR
R. orarius (841)	Reynolds	5/12/75	Nelson	DNR
Apios americana var. turrigera (948)	Reynolds	6/28/75	Nelson	DNR
Crotalaria sagittalis (882)	Reynolds	8/20/75	Nelson	DNR
Desmodium cuspidatum (920)	Reynolds	9/6/75	Nelson	DNR
D. nuttallii (922)	Reynolds	8/8/75	Nelson	DNR
Lespedeza cuneata (934)	Reynolds	8/8/75	Nelson	DNR
L. stuevei var. angustifolia (930)	Reynolds	8/30/75	Nelson	DNR
Robinia hispida (907)	Reynolds	7/20/75	Nelson	DNR
Trifolium campestre (890)	Reynolds	5/16/75	Nelson	DNR
Polygala incarnata (970)	Reynolds	7/11/76	Nelson	DNR
P. verticillata var. ambigua (973)	Reynolds	6/28/75	Nelson	DNR
Acalypha gracilens var. monococca	Reynolds	6/28/75	Nelson	DNR
Crotonopsis elliptica (978) (980)	Reynolds	7/20/75	Nelson	DNR
Euphorbia dentata (986)	Reynolds	7/20/75	Nelson	DNR
E. heterophylla (986)	Reynolds	7/20/75	Nelson	DNR
E. supina (994)	Reynolds	7/20/75	Nelson	DNR
Phyllanthus caroliniensis (974)	Reynolds	7/14/75	Nelson	DNR
Acer saccharum var. floridanum (1013)	Reynolds	8/20/75	Nelson	DNR
A. rubrum var. trilobum (1017)	Reynolds	8/20/75	Nelson	DNR
Parthenocissus quinquefolia (1034)	Reynolds	5/ /75	Nelson	DNR
Abutilon theophrastii (1052)	Reynolds	8/16/75	Nelson	DNR
Hypericum drummondii (1061)	Reynolds	7/20/75	Nelson	DNR
H. perforatum (1058)	Reynolds	7/18/76	Nelson	DNR
Oenothera speciosa (1105)	Reynolds	5/25/75	Nelson	DNR
Osmorhiza claytonii (1126)	Reynolds	5/10/75	Nelson	DNR
Sanicula canadensis (1121)	Reynolds	6/20/75	Nelson	DNR
S. gregaria (1121)	Reynolds	5/12/75	Nelson	DNR
Taenidia integerrima (1136)	Reynolds	5/19/75	Nelson	DNR
Torillis japonica (1128)	Reynolds	6/9/75	Nelson	DNR

TAXON	COUNTY	DATE	COLLECTOR	HERB.
Monotropa hypopithys (1156)	Reynolds	10/16/75	Nelson	DNR
Fraxinus pennsylvanica var. subintegerrima (1180)	Reynolds	8/12/75	Nelson	DNR
Syringa vulgaris (1182)	Reynolds	5/23/75	Nelson	DNR
Gentiana andrewsii (1190)	Reynolds	10/23/76	Nelson	DNR
Apocynum cannabinum (1198)	Reynolds	6/20/75	Nelson	DNR
Cuscuta campestris (1223)	Reynolds	8/20/75	Nelson	DNR
C. cuspidata (1222)	Reynolds	8/9/75	Nelson	DNR
Evolvulus nuttallianus (1212)	Reynolds	6/5/76	Nelson	DNR
Phlox pilosa var. ozarkana (1229)	Reynolds	5/19/75	Nelson	DNR
Phacelia gilioides (1237)	Reynolds	4/23/75	Nelson	DNR
Myosotis virginica (1252)	Reynolds	5/10/75	Nelson	DNR
Agastache nepetioides (1276)	Reynolds	8/8/75	Nelson	DNR
Collinsonia canadensis (1307)	Reynolds	8/14/75	Nelson	DNR
Glechoma hederacea (1279)	Reynolds	4/23/75	Nelson	DNR
Lamium amplexicaule (1285)	Reynolds	5/19/75	Nelson	DNR
L. purpureum (1285)	Reynolds	5/19/75	Nelson	DNR
Leonurus cardiaca (1284)	Reynolds	5/20/75	Nelson	DNR
Monarda fistulosa var. mollis (1291)	Reynolds	7/4/75	Nelson	DNR
Lycopersicon esculentum (1314)	Reynolds	9/28/75	Nelson	DNR
Physalis heterophylla (1317)	Reynolds	6/20/75	Nelson	DNR
P. longifolia (1318)	Reynolds	5/25/75	Nelson	DNR
Gerardia tenuifolia (1360)	Reynolds	9/ /75	Nelson	DNR
Linaria canadensis (1348)	Reynolds	5/12/75	Nelson	DNR
Scrophularia marilandica (1346)	Reynolds	8/8/75	Nelson	DNR
Seymeria macrophylla (1357)	Reynolds	7/4/75	Nelson	DNR
Catalpa speciosa (1371)	Reynolds	7/4/75	Nelson	DNR
Orobanche uniflora (1374)	Reynolds	4/24/75	Nelson	DNR
Ruellia humilis (1376)	Reynolds	6/28/75	Nelson	DNR
R. strepens (1375)	Reynolds	5/19/75	Nelson	DNR
Plantago cordata (1381)	Reynolds	5/11/75	Nelson	DNR
P. virginica (1385)	Reynolds	5/10/75	Nelson	DNR
Diodia virginiana (1395)	Reynolds	8/20/76	Nelson	DNR
Galium virgatum (1389)	Reynolds	4/23/76	Nelson	DNR
Houstonia caerulea (1399)	Reynolds	5/19/75	Nelson	DNR
Lonicera japonica (1406)	Reynolds	4/11/76	Nelson	DNR
Citrullus vulgaris (1426)	Reynolds	9/28/75	Nelson	DNR
Arctium minus (1619)	Reynolds	8/20/75	Nelson	DNR

TAXON	COUNTY	DATE	COLLECTOR	HERB.
Aster dumosus var. strictior (1519)	Reynolds	9/7/75	Nelson	DNR
A. laevis (1515)	Reynolds	10/23/76	Nelson	DNR
A. praealtus (1522)	Reynolds	9/28/75	Nelson	DNR
A. sagittifolius (1512)	Reynolds	9/14/75	Nelson	DNR
A. sericeus (1514)	Reynolds	9/23/75	Nelson	DNR
A. vimineus var. subdumosus (1520)	Reynolds	6/20/75	Nelson	DNR
Bidens connata var. petiolata (1586)	Reynolds	8/11/76	Nelson	DNR
B. polylepis (1590)	Reynolds	9/14/75	Nelson	DNR
Cichorium intybus (1629)	Reynolds	6/20/75	Nelson	DNR
Cirsium discolor (1621)	Reynolds	8/8/75	Nelson	DNR
Echinacea pallida (1562)	Reynolds	5/28/76	Nelson	DNR
Erigeron annuus (1526)	Reynolds	8/30/75	Nelson	DNR
E. canadensis (1529)	Reynolds	8/16/75	Nelson	DNR
Eupatorium altissimum (1463)	Reynolds	8/31/75	Nelson	DNR
Gnaphalium purpureum (1534)	Reynolds	6/20/75	Nelson	DNR
Helianthus annuus (1568)	Reynolds	8/30/75	Nelson	DNR
H. hirsutus var. trachyphyllus (1572)	Reynolds	6/20/75	Nelson	DNR
H. strumosus (1574)	Reynolds	6/4/75	Nelson	DNR
H. tuberosus (1575)	Reynolds	9/6/75	Nelson	DNR
Kuhnia eupatorioides (1468)	Reynolds	9/6/75	Nelson	DNR
Lactuca canadensis (1639)	Reynolds	6/20/75	Nelson	DNR
L. hirsuta (1640)	Reynolds	6/4/75	Nelson	DNR
L. saligna (1639)	Reynolds	8/14/75	Nelson	DNR
L. scariola (1638)	Reynolds	8/14/75	Nelson	DNR
Parthenium hispidum (1553)	Reynolds	5/11/75	Nelson	DNR
Rudbeckia hirta (1558)	Reynolds	8/12/75	Nelson	DNR
R. subtomentosa (1557)	Reynolds	8/30/75	Nelson	DNR
Solidago altissima (1496)	Reynolds	9/7/75	Nelson	DNR
S. juncea (1489)	Reynolds	8/8/75	Nelson	DNR
Sonchus asper (1636)	Reynolds	6/4/75	Nelson	DNR
Taraxacum officinale (1634)	Reynolds	5/19/75	Nelson	DNR
Tragopogon dubius (1634)	Reynolds	5/25/75	Nelson	DNR
Verbesina helianthoides (1578)	Reynolds	6/20/75	Nelson	DNR

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[2]Bennett Spring State Park, Brice Route, Lebanon, MO 65536 (Associate Editor).
[3]The official register for the update of state and county records since Steyermark, 1963, and Henderson, 1980. All contributors should follow the format established by the Inventory Committee in Missouriensis 3(3): 18-20, and contributions should be sent to the editor of the MO DOT RECORD for publication. The number in parenthesis after each taxon indicates page number in Steyermark.