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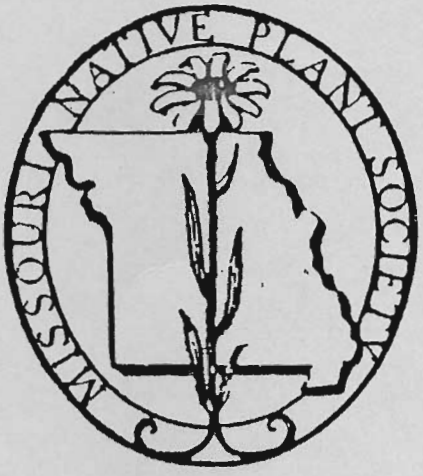

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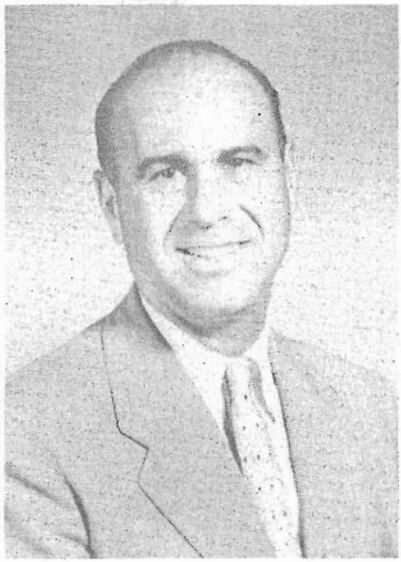
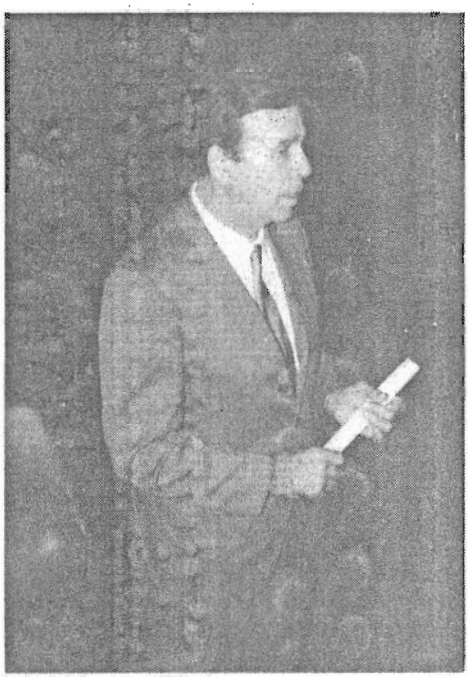
CONTENTS

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.





Julian Steyermark. Upper left: 1954. Upper right: 1979 at the Missouri Botanical Garden. Bottom: April, 1988, with Luther Raechal (center) and Susan Murphy (right) on one of his last outings in Missouri.

EDITORIAL

On October 15, 1988, Missouri lost one of its most eminent botanists. Dr. Julian Steyermark passed away due to complications of cancer. In this issue George Yatskievych reviews the life of Dr. Steyermark from the time he entered the Henry Shaw School of Botany until the time of his death.

All of us will miss his botanical wisdom, his devotion to botany, and particularly his continuing interest in the flora of Missouri. While he may be most remembered for his monumental Flora of Missouri, many of us cut our teeth on his very useful Spring Flora of Missouri. In fact, as a young new biology teacher at Southwest Missouri State College in Springfield, I would have been at a lost to teach my first course in field botany had it not been for his Spring Flora and the fact that he had already examined the small herbarium at SMSC and annotated all of the collections. In addition Dr. Steyermark agreed to examine all my new collections from Missouri. These he quickly annotated and returned to me.

My early field experience in Missouri also taught me that Dr. Steyermark was not only a fine taxonomist, but a perceptive field ecologist. His Studies of the Vegetation of Missouri-I, Natural Plant Associations and Succession in the Ozarks of Missouri is an excellent example of ecological reconnaisance. My colleagues and I at SMSU, together with Dr. Stewart Ware of the College of William and Mary, have analyzed extensive sampling data gathered in the forests along the Ozarks National Scenic Riverways using modern Detrended Correspondence Analysis Ordination. This analysis verified Steyermark's observation that the appearance and difference in the oak-hickory or oak-pine association on the one hand and the sugar maple association on the other hand lies in the acidity and chemical nature of the soil, rather than, as Weaver and Clements maintain, in the physical or moisture conditions of the soil.

Steyermark was also keenly interested in the geography of plants. His Vegetational History of the Ozark Forest makes excellent reading, not only about botanical exploration in he Ozarks, but also about ancient geographic relationships and changes that have occurred since the white man settled in the Ozarks.

Finally, as a bryologist, it was gratifying to see so many mosses and liverworts from Missouri collected by Dr. Steyermark. In fact, he was the first to discover the rare Sword Moss, Bryoxiphium norvegicum in Missouri. He was, what is unfortunately today a rare commodity, a compleat botanist.

Paul Redfearn

JULIAN STEYERMARK, A LIFETIME OF BOTANY

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On October 15, 1988, the Missouri Native Plant Society lost a charter member and the state's botanical community lost its patron saint. Dr. Julian Alfred Steyermark died in his sleep shortly after midnight, at his home in St. Louis. He had been waging a valiant fight against cancer, but finally succumbed to pneumonia contracted during hospitalization. He was an internationally famous botanist, the world champion plant collector, and an ardent conservationist.

Julian Steyermark was born on January 27, 1909, in St. Louis, on Shenandoah Street, near Shaw's Garden. In school, his earliest interest was art, but a high school biology teacher, Edith Glatfelter, turned his attention to botany. He enrolled in the Henry Shaw School of Botany, a cooperative program between Washington University and the Missouri Botanical Garden, where he received his A.B. degree in 1929 and a M.S. degree in 1930. Julian's love of art may have been instrumental in drawing him to the Garden, because beginning in late 1925 he completed a large set of beautiful watercolors, both of orchids from the Garden's collection and of native wildflowers. It was during this time that he began collecting herbarium specimens in Missouri and other states.

Steyermark's botanical interests focused on taxonomy and floristics and his Master's thesis was a revision of the genus *Menodora* (a small genus in the lilac family, Oleaceae). In 1930 he enrolled at Harvard University for doctoral studies, no doubt at the suggestion of his friend, E. J. Palmer, who was on the staff at the Arnold Arboretum there. For unknown reasons, this did not work out and Steyermark returned to Washington University the following year and completed his Ph. D. in 1933, having been credited with a M.A. from Harvard in 1931. His doctoral dissertation was on the systematics of the gumweeds, *Grindelia*, in the sunflower family (Asteraceae).

During his college years, Julian was already active in research on the Missouri flora. By 1933, he had collected nearly 10,000 specimens, more than many professional botanists collect during their entire careers (his nonchronological numbering system for early collections makes determination of the exact number difficult). His first scholarly publication, entitled, "A study of Plant Distribution in Relation to the Acidity of Various Soils in Missouri," was published in the *Annals of the Missouri Botanical Garden* (18: 41-55) in 1931. This early work culminated in the publication of Palmer and Steyermark's important, *An Annotated Catalogue of the Flowering Plants of Missouri* (22: 375-758 + 21 pl.) in 1935, which was the first major step toward completion of a floristic manual for the state.

Upon graduation, Steyermark was hired as research assistant to Dr. Robert Woodson at the Missouri Botanical Garden. This position led to his first experience in the tropics, a 3 month expedition to Panama in late 1934 for Woodson's Flora of Panama project. The Great Depression made jobs for

botanists scarce and Julian was forced to teach high school (at University City Senior High, in the St. Louis area) for two years before finding a permanent position. Few high school students today can claim to have had an instructor with a Ph. D! During the summers he worked for the U. S. Forest Service, doing plant inventories. Then, in 1937, the Field Museum of Natural History in Chicago offered him a curatorial position to work on the *Flora of Guatemala* project, where he was to spend the next 21 years studying tropical botany. At this point, he found time to marry the formed Cora Shoop (on September 1, 1937), whose colorful adventures with "XY" were delightfully recorded in her book, *Behind the Scenes*, published by the Missouri Botanical Garden in 1984 (and still available).

From the first, Julian's time at the Field Museum was split between his two great areas of interest: the tropics, which he was paid to study and where he spent much of his time; and the Missouri flora, which he continued to study on weekends and during his spare time. During these years, he undertook at least seven major expeditions, working in Guatemala, Ecuador, and Venezuela, and authored or coauthored treatments of numerous plant groups for projects in these countries. His work in Ecuador and Venezuela during World War II resulted primarily from his involvement in wartime efforts by the U. S. government to locate neotropical sources of quinine [an antimalarial drug distilled from the bark of various *Chinchona* (Rubiaceae) species], which allowed him to botanize extensively in these countries.

On the other hand, weekends (other than while he was in the tropics) were spent in marathon trips to Missouri. Julian and Cora succeeded in botanizing in every county, often covering over 1,000 miles in a single outing. What emerged from this was several book-length publications, notably his *Spring Flora of Missouri* (1940) and the two parted, *Studies of the Vegetation of Missouri* (Field Mus. Bot. Ser. 9: 353-618 + 24 pl., 1940). He wrote numerous shorter articles, which were mostly published in the *Missouri Botanical Garden Bulletin* and the *Bulletin of the Chicago Natural History Museum*, whose topics ranged from interesting examples of native flora to impassioned pleas for conservation of natural resources in the Ozarks. During his last two years at the Field Museum, he turned a major portion of his attention to completion of the *Flora of Missouri*, with financial assistance from the National Science Foundation. Difficulties in finding a publisher with the resources to handle such a large volume and editorial delays pushed the eventual publication date back to 1963. It is for his exemplary *Flora* that Steyermark is best known to Missourians.

The wartime governmental quinine project provided Julian his first opportunity to botanize in the Venezuelan Guayana, in 1944. This picturesque and poorly known region captured his interest, and was to become a major focus for his research during the remainder of his life. He was fond of calling the area "The Lost world", after the title of a 1912 fantasy-novella by Sir Arthur Conan Doyle (which in turn was inspired by an earlier, British expedition to the region). His initial efforts were in collaboration with Bassett Maguire of the New York Botanical Garden and were aimed at a

floristic treatment for an area known as the Guayana Highlands, which includes portion of southern Venezuela and adjacent countries.

By 1958, Steyermark as ready for a change, following problems with the administration of the Field Museum, including some unhappiness with his involvement in the Missouri research during his years there. After receiving offers from several institutions in Latin America, he accepted a position at the federal Instituto Botánico of the Ministerio de Agricultura y Cria in Caracas, Venezuela. Steyermark spent portions of the spring and summer of 1958 on the faculties of Southern Illinois University, Carbondale, and the University of Missouri, Columbia, before he and Cora arranged their affairs for the move. Portions of their home in Barrington, Illinois, with extensive plantings of Missouri native flora, were eventually transferred to the Nature Conservancy.

From 1959 to 1984, Julian split his time between the field and the herbarium in Venezuela. He published numerous papers on taxonomy and floristics of various plant groups and also contributed treatments of several families to the Flora de Venezuela (Venezuela's national, multivolume, floristic project), including book-length works on two very difficult families, the Rubiaceae (coffee family) and the Piperaceae (pepper family). Twenty-five major expeditions were completed during this time, mostly to little-known portions of the Guayana region. Some of these included helicoptor transport to remote regions inaccessible by foot, such as the summits of the towering sandstone "tepuis", whose sheer sides made movement of equipment and plant specimens logistically impossible otherwise. Julian also continued his collaboration on the *Flora of the Guayana Highlands*, but eventually envisioned a project to produce a floristic manual for the southern half of Venezuela, encompassing the entire Guayana region in that country. He was also active in the fight to provide protection for some of Venezuela's outstanding natural areas as national parks and preserves.

During his years in Caracas, Steyermark was instrumental in facilitating scientific exchange between botanists in the United States and Venezuela. In particular, he was in close contact with the Missouri Botanical Garden , and Garden researchers accompanied him on several expeditions as part of a joint Venezuelan collecting program, which he had negotiated. In 1984, the political situation at the Instituto Botánico and Cora's failing health convinced Julian to return to this country, and he accepted an enthusiastic offer to join the staff of the Missouri Botanical Garden, where his botanical career had started nearly 40 years earlier. Unfortunately, Cora Steyermark passed away shortly before they were to return to St. Louis.

During his final years in Missouri, Julian undertook only two more expeditions to Venezuela, spending most of his time coordinating and writing treatments for the *Flora of the Venezuelan Guayana Project.* The complete manual will cover over 9,000 species, more than 3 times the number treated in the Flora of Missouri. He received additional funding from the National Science Foundation to insure this project's success, but did not live to see it to completion. In 1988, he was diagnosed as having cancer, and his health declined quickly, in spite of surgery and radiation therapy.

Julian Steyermark was truly a giant among botanists and his passing is viewed by many as the end of an era. He was honored by numerous governments and organizations and a list of his awards would cover a page. In his home state, the Missouri Native Plant Society named its highest award after him. He was given citations by the Ozark Chapter of the Sierra Club and the Missouri Department of Conservation; the latter also named a 73 acre wooded tract near Hannibal for him. The Missouri Botanical Garden awarded him the Henry Shaw Medal in 1979, only the third time in 45 years that this award had been made. In 1986, he was admitted to the Guiness Book of World Records as the champion plant collector--his collections numbered over 138,000, including special series made in collaboration with other botanists, and his personal collection numbers exceeded 132,000, including over 52,000 from Missouri. He described over 2,000 new taxa during his career and over 200 new taxa were named by other botanists in his honor.

Julian began and ended his remarkable botanical career in Missouri. An early member of the Webster Groves Nature Study Society and a life member of the Missouri Plant Society, his thoughts were never far from the state, even during his years in the tropics. While living in Venezuela, he found time to write letters advising the Native Plant Society on matters pertaining to a revision of the floristic manual and to recount some of his experiences in Missouri. These were published in several issues of *Missouriensis*. His earliest collection on record, dated April 4, 1926, was *Ellisia nyctelea* (Hydrophyllaceae) from Cliff Cave in St. Louis County (a specimen has not been located). It seems fitting that his last numbered collection (no. 132,223), which was *Morus rubra* (Moraceae), collected on October 18, 1987, at Innsbruck Estates in Warren County, should also have been made in Missouri.

The Steyermark Award of the Missouri Native Plant Society is among the tributes to remind us in future years of Julian's numerous, important contributions to botany. Future editions of the state's floristic manual, which will be renamed *Steyermark's Flora of Missouri* in his honor, will serve as a monument to his career. The Missouri Botanical Garden has also established a fund in his name to support research and expeditions in Latin America, particularly in Venezuela, and to support research on the natural history of Missouri. This will help other botanists to follow in the footsteps of this giant among botanists.

POA INTERIOR RYDBERG (POACEAE), A NEW RECORD FOR MISSOURI

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Poa interior Rydberg, or inland bluegrass, is a tufted perennial grass occurring in prairies, open woods, and on grassy slopes. Previous records indicate a distribution across Canada, from Vermont and Michigan to Washington, and extending south through Nebraska and Wyoming to Arizona, New Mexico, and Texas (Hitchcock, 1950). The nearest previously known locality to Missouri is in western Nebraska. In May, 1987, I collected this grass while compiling a species list for Snowball Hill Prairie in Cass County, Missouri. This 21 acre, privately owned, prairie was surveyed as part of the six county Kansas City Area Natural Features Inventory conducted by the Missouri Department of Conservation in conjunction with the Nature Conservancy.

Snowball Hill Prairie, near Harrisonville, is one of the largest and most diverse high quality prairie tracts located in the inventory area. Situated on a steep hill with a 968 ft. maximum elevation, it contains a gradient of moisture classes from its peak to the 900 ft. elevation around its base. The prairie has been maintained by annual haying and this is probably responsible for the introduction of such common weedy species as *Melilotus albus* Desr. and *Trifolium campestre* Schreb. The tract is crossed by a railroad right-of-way near its eastern boundary, and this could also be a source of species introductions. It is not known whether *Poa interior* is native or introduced at the site.

The specimen was initially identified only to genus, due to my difficulty in determining the species. It does not key well to any of the taxa included in Steyermark (1963), having critical character states intermediate between *Poa wolfii* Scribner, *P. palustris* L., and *P. sylvestris* A. Gray, and not agreeing morphologically with any of these species. The collection (*Smith 2429*) was deposited in the herbarium of the Missouri Botanical Garden (MO) in June, 1988, where it was determined to species by Roy Gereau, who has recently completed a catalogue of Missouri's grasses (Gereau, 1987). This situation illustrates the importance of depositing voucher specimens, especially taxonomically difficult ones, in a herbarium where they may be examined by persons most familiar with the group. Future work should include determining the size of the population of this species at the site and searching for additional populations in similar habitats in nearby areas.

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THE CONFUSING CASE OF THE FLAME FAME FLOWER

George Yatskievych
Flora of Missouri Project

Common names have been central to many disputes among amateur and professional botanists almost since the advent of the binomial system of nomenclature. Most professional botanists swear by Latin names, often to the vehement exclusion of common names, while many amateurs hold views polarized to the opposite extreme. For those of us who find it necessary to communicate with both of these groups about various plants, the problems are indeed vexing! The need to satisfy everyone has forced many national and state level conservation groups to coin new common names for numerous rare and endangered species, often in an attempt to popularize little-known and rarely seen taxa that have no traditional common names.

One advantage inherent in the use of Latin binomials is that the original use of a given epithet, and often its derivation, usually can be traced with some certainty. This is not always possible with common names, particularly those with long-standing traditional usage whose original application may predate the writing of floras in this country.

A case in point is the genus *Talinum*, in the purslane family, Portulaceae. Collectively, the 50 or so species are most commonly known as rock pinks, but several species groups have been known long enough, either as botanical oddities or as rock garden plants, to have common names of their own. The species related to *T. parviflorum* are one such group, and it was an incongruity in the application of a common name to these species that resulted in this essay.

I first learned about that peculiar branch of botany known as floristics in Arizona; I "cut my teeth", botanically speaking, in the isolated mountain ranges and intervening basins of the southern part of the state, near the Mexican boundary. There we knew the local species of *Talinum* as flame flowers, and I was told that this was due to the bright orange or red flowers, which, from a distance, appeared like small tufts of fire. When (several years later and after a few moves) I arrived in Missouri, I was pleased to see the two native rock pinks, *T. calycinum* and *T. parviflorum*, whose flowers fit the name flame flower as perfectly as those of the other states' species. Imagine my surprise when referring to Steyermark's botanical bible to find that these plants were known locally as fame flower, rather than *flame* flower! With my southwestern bias, I was sure that the "easterners" had been propagating a typographical error. Because in revising Steyermark's Flora I would eventually have to account for this discrepancy, a search through the literature was inevitable. Somewhere along the line I began to exceed what was necessary for making a simple choice between the two names.

My first thought was to trace the use of these names in various floras and field guides. It soon became obvious that there was little consistency in usage, except that flame flower was prevalent in the western half of the country, while fame flower was used primarily in the eastern half and in the horticultural literature. For example, in the *Peterson Field Guide series*, the name flame flower was used to denote *Talinum parviflorum* in the volume covering Texas and the southwestern states, while the same species was called fame flower in the volume covering the eastern states. As I examined progressively older texts it became apparent that the term fame flower was not merely a typographical error, but a name of long-standing, traditional usage, whose origin predated any of the books available.

Having established the authenticity of fame flower as a common name, it next became of interest to explain its derivation. The generic name *Talinum* is of uncertain origin, but is generally held to have been based upon a Senegalese vernacular name for one of the species (the genus was first described by Michel Adanson, based on African materials), so there are no clues to the origin of fame flower there. The best account of nomenclatural matters that I was able to find was by Thomas Meehan, in his 1879 compendium entitled, *The Native Flowers and Ferns of the United States*. Meehan discussed the origin of the Latin and common names of *T. teretifolium*, a widespread, eastern species related to the two Missouri taxa. He also noted that this species was known at least as far back as 1691, when Leonard Plukunet described it under the polynomial *Sedum petraeum teretifolium Virginianum*, over 100 years before the species was officially described and awarded a binomial.

Meehan provided a better clue in explaining the name of the section of *Talinum* to which his subject belongs, and which had first been described as a separate genus by Constantin Rafinesque under the name *Phemeranthus*. Meehan suggested that *Phemeranthus* was a translation of fame flower, and that Rafinesque had based his scientific name on the existing vernacular one. An examination of the original 1814 description (in Italian) of this generic name revealed that it was based on the odd phenology of the species--the flower open at midday and close within a few hours (the origin of the other common name for the plants: flower of an hour). The name *Phemeranthus* comes from three Greek roots: epi-hemera-anthus, or literally, "on the day flower". Meehan inferred that the name fame flower was an allusion to the flowers' short duration, making use of an archaic form of the word fame as a verb suggesting hunger or starvation (from the French root, afamer, to starve). This verb is more familiar to us in its modern form, famish. Poetically, the flowers starve by the end of the day. This does not, however, entirely explain the origin of the name fame flower, which Rafinesque neither cited nor mentioned in his original description.

Another possible suggestion for the origin of this term comes from Meehan's description of the life history of this plant. He noted that while some early authors had included the species in the stonecrop genus, *Sedum*, because of its succulent foliage, that group generally has evergreen leaves. Instead, *Talinum teretifolium* leaves wilt and wither at the end of the growing

season, leaving only an inconspicuous, tuberous rootstock to overwinter. Fame flower may have been the poignant expression of some early naturalist's observation that the plants are famished at the end of each season. Ultimately we may never know the real history behind this common name, but either of the two possibilities suggested above is plausible.

Having established that the name fame flower is not merely a spelling error, but rather a valid common name with a long-standing tradition of use in the eastern and midwestern United States (including Missouri), I was faced with the unpleasant possibility that not those easterners, but rather my southwestern compatriots, had committed a typographical blunder. Fortunately, if this is the case, it happened so long ago as to have become a tradition in its own right. The literature on western plants, particularly works that include common names, unfortunately is all more recent than that covering the eastern states. Examination of the available literature revealed that the name flame flower has long been in use in the western states, particularly in Texas. For example, Ellen Schulz, in her 1928 *Texas Wildflowers*, wrote, "The buds expand into flowers in the early morning, to enjoy the sunlight for but a single day, as they permanently close with the twilight of their birthday. The name flame flower was given because of the flame-colored petals of some species." It is of interest that this same author used the other name, fame flower, in an earlier book, *500 Wildflowers of San Antonio and Vicinity* (1922). Thus, while the historical roots of the name flame flower remain buried, they can be traced back at least 60 years. At least the meaning of this name is unambiguous.

Searching for the roots of vernacular plant names is an interesting, educational experience. It reveals to the investigator something of the way in which earlier generations viewed plants, what they noticed most in nature, and which characteristics about a given species stood out or made it useful. It is a sad commentary on society that many of the new common names being coined today relate to species at risk of extinction--those we never paid heed to in the past, but put a convenient tag onto now in an effort to popularize their plight. However, if these common names become rooted in our language, perhaps they too will one day provide some future generation with a reflection of that which we found important in nature today.

VULPIA BROMOIDES IN MISSOURI

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On April 22, 1980, while on a field trip to southwestern Missouri, I found a small unfamiliar grass in Wild Cat Park in Joplin, Jasper County. It was not included in either the *Flora of Missouri* (Steyermark 1963) or *The Grasses of Missouri* (Kucera 1961). Recently I asked Gerrit Davidse at the Missouri Botanical Garden to examine my collection and he identified it as *Vulpia bromoides* (L.) S. F. Gray. This species is not included in the most recent checklist of the grasses of Missouri (Gereau 1987). George Yatskievych and I checked the collections in the herbarium at the Missouri Botanical Garden (MO) for a collection of this species from Missouri and there were none although there were collections from other states. My collection (Christ 19-3-3A) has been deposited in the herbarium at the Missouri Botanical Garden.

Since *Vulpia bromoides* is new to Missouri, I include a description adapted from a study of this genus by Lonard & Gould (1974).

> Culms loosely tufted or solitary, erect to decumbent, minutely retrorsely scabrous-pubescent or glabrous, 5-50 cm tall; leaves glabrous to puberulent, ligules ca 0.5 mm long, blades flat or involute, 0.5-2.5 cm wide, generally less than 15 cm long; panicles contracted, 5-15 cm long, branches usually tightly erect-appressed, conspicuously exserted above uppermost leaf, stalk of inflorescence extending as much as 15 cm below the lowermost branches; pedicels flattened to noticeably clavate above; spikelets 5-10 mm long excluding the awns; florets 4-7, widely spaced, the uppermost reduced, nodes of rachilla about 1 mm apart; glumes smooth, subulate, the first 3.5-5.0 mm long excluding the awn, smooth and lustrous to scabrous, awn of lowermost floret 3-12 mm long, firm, scabrous; palea and lemma nearly equal in length; stamens normally one, anther ca 0.5 mm long; caryopsis 3.5-4.0 mm long. Common on the west coast of North America from British Columbia to northern Baja California, infrequent in other regions of North America. *Vulpia bromoides* is similar in general habit and spikelet characteristics to *Vulpia myuros* (L.) K. C. Gmel. from which it may be distinguished by its longer first glume.

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THREE SPECIES NEW TO MISSOURI

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During 1986 and 1987 I conducted a Natural Features Inventory of five western and northwestern Missouri counties. This project was funded through a cost-sharing agreement between the Missouri Department of Conservation and the Land Reclamation Commission. Among the highlights of this inventory were the fens or "Shakey Springs" of Lafayette County. This colloquial name, Shakey Springs, is an apt one given the boggy, quaking character of these three sites. As the first documented occurrences of fen communities in the Glaciated Plains Region of Missouri, these sites are of special significance. Equally significant, however, was the discovery of three plant species new to Missouri, and the rediscovery of a fourth species. The new state records are: Marsh Marigold, *Caltha palustris* L., Flat-top White Aster, *Aster pubentior* Cronq., and Water Parsnip, *Berula erecta* (Huds.) Cov. var. incisum (Torr.) Cronq. The fourth species, Narrow-leaved Willow-herb , *Epilobium leptophyllum* Raf., was previously known from a single site in the Kansas City area and was listed as PE (possibly extirpated) by Wilson (1984).

The Shakey Springs sites all occur in northeast Lafayette County along small south-flowing tributaries of Salt Fork Creek. This region is extremely agricultural and all three sites have been considerably impacted by agricultural activities. Turtlehead Fen is a small remnant of a formerly extensive fen complex that was tiled and drained in the last two decades. The Cragg Branch Fens have been subjected to draining and dozing attempts. The third site, Salt Fork Fen, is apparently hydrologically intact. However, the field on the west was formerly cultivated to the fen's immediate border, and the site is currently being grazed by cattle. Despite these disturbances, all three sites have a fairly diverse natural fen flora which, in addition to the rare taxa discussed here, includes *Boehmeria cylindrica*, *Cardamine bulbosa*, *Carex lurida*, *Chelone glabra*, *Dulichium arundinaceum*, *Epilobium coloratum*, *Lycopus americana*, and *Mimulus ringens*.

The rare plant potential of the Shakey Springs was first realized with the discovery of *Caltha palustris* at Salt Fork Fen on April 28, 1987. This event was followed by the discoveries of *Aster pubentior* on August 4, *Berula erecta* on August 19 and *Epilobium leptophyllum* on September 3. Each of the Shakey Springs supports at least two of these species. Salt Fork Fen has good populations of both *Caltha palustris* and *Aster pubentior*. These two species, along with *Berula erecta*, also occur at the Cragg Branch Fens. Turtlehead Fen has populations of both *Berula erecta* and *Epilobium leptophyllum*.

Caltha palustris (Ranunculaceae) is a bright yellow-flowered perennial with broadly cordate leaves in the Ranunculaceae. This species is abundant in the ungrazed portion of Salt Fork Fen. It is also common at the Cragg Branch Fens. The range of *C. palustris* is circumboreal. In states bordering Missouri, it is relatively common in the northern portions of both Iowa and Illinois and rare in northeast Nebraska. Its habitat within this range is wet woods, marshes and bogs.

Aster pubentior (Compositae) is a robust, rhizomatous perennial 5-15 dm tall. The inflorescence, composed of numerous heads with white rays and yellowish disks, is open corymbiform and tends to be flat topped. At Salt Fork Fen this species is common throughout the ungrazed portion of the fen. It is likewise widely distributed at the Cragg Branch site where it commonly occurs at the disturbed periphery of the fens. Barkley (1986) states that "This is a distinctive entity in our region but eastward in the area of the Great Lakes, it intergrades with and is replaced by *A. umbellatus* Mill., a species with consistently larger heads." He gives the number of ray flowers for *A. pubentior* as 5-10 with a maximum of 14. Gleason and Cronquist (1963) use the number of ray flowers to distinguish between the two species with *A. pubentior* having 4-7 rays and *A. umbellatus* 7-14 rays. Ray flowers of the plants at the Lafayette County fens numbered from 4 to 8 per head. *A. pubentior ranges* from Michigan to the eastern Great Plains and Alberta. It is known from only one county each in Iowa and Nebraska. The habitat of this species within its typical range is low damp sites, often in wooded areas.

Berula erecta var. *incisum* (Umbelliferae) is a slender, glabrous, somewhat weak-stemmed plant. Its distinctive leaves are pinnate, with 9-23 subentire to serrate or lobed leaflets. The upper leaflets are usually lanceolate and deeply incised (McGregor 1986). This species inhabits the wetter microsites of the fens, and is especially abundant in an area of pooled seepage at Turtlehead Fen. This fen habitat is fairly typical of *B. erecta* elsewhere in its range. McGregor (1986) lists its habitat as around springs and in cool shallow water. In North America, this species ranges from New York, southern Ontario, Minnesota, and British Columbia south to Florida, Texas and Mexico. It also occurs in Europe and the Mediterranean region.

Epilobium leptophyllum (Onagraceae) is an erect, perennial herb. It can be distinguished from the other member of this genus in Missouri, *E. coloratum*, by narrower (1-4 mm vs. 5-25 mm), canescent, mostly entire leaves which are not decurrent. E. leptophyllum was found growing under a moderately dense stand of cattail (*Typha latifolia*) and bur-reed (*Sparganium eurycarpum*) at Turtlehead Fen. Salt Fork and Cragg Branch Fens were not visited on or after this date and it is uncertain whether this species occurs at those two sites. *E. leptophyllum* occurs in similar habitats elsewhere within its range. In Illinois it is uncommon in boggy, springy habitats in the northern one-half of the state (Mohlenbrock 1986). *E. leptophyllum* is widely distributed across the northern United States and southern Canada ranging southward to North Carolina and West Virginia in the east, and southern Colorado in the west.

Lafayette County lies within the Deep Loess Section of the Glaciated Plains Natural Division (Thom and Wilson 1980). Although the region was glaciated during the Kansas Glaciation, no glacial till remains and upland soils are of deep loess. The soils at the immediate fen sites are alluvial. Bedrock is either limestone, shale or sandstone of the Kansas City group at a depth of eight or more feet. All three sites are located at the base of the slope immediately adjacent to small tributaries. The fens are apparently fed by water percolating down through the overlying loess, which upon encountering the impermeable bedrock, moves laterally across this layer

eventually emerging as a diffuse seepage spring. Waters of the fens are circumneutral (pH of 6.5 - 7.0).

As is the case with fen habitats elsewhere in Missouri, the Lafayette County fens serve as refugia for plant species with typically more northerly distributions. The four species reported here, with the possible exception of *Berula erecta*, can be considered relict species in Missouri. Here in the cool, seepy microclimates of the Shakey Springs, these species persist as populations disjunct from their typical range, survivors from a past glacial period when the climate was significantly cooler than today.

Voucher specimens of all four species have been deposited at the herbarium of the Missouri Botanical Garden (MO).

I would like to thank Eleanor P. Gaines, Donald R. Kurz, Timothy A. Nigh, Timothy E. Smith, Michael J. Sweet and George A. Yatskievych, all of the Natural History Section of the Missouri Department of Conservation, for their helpful reviews of this paper.

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MINUTES OF THE SEPTEMBER 17, 1988 BOARD MEETING

Call to Order. The meeting was called to order by Vice President Karen Haller at 7:45 p.m. Other board members present were: Sue Hollis, Wallace Weber, Mervin Wallace, Melvin Conrad, Louis Wienchowski, Patrick DeLozier, Bill Summers, Linda Ellis, and Lynda Richards. Other members and guests present at the meeting were: John Molyneaux, Jim Bogler, and Tim Nigh.

Minutes of the Previous Meeting. Since Ginny Wallace had sent copies of the June 4 minutes to all board members, the board voted to waive reading of the minutes, and they were approved as written.

Treasurer's Report. Mervin Wallace presented the following operating statement, approved as read, for 6/3/88 to 9/16/88:

Balance on hand 6/3/88	$4,037.07
Income from operations	
Membership dues	347.50
Interest from checking account	61.82
Total income and cash	4,446.39
Disbursements	
Post Master (bulk mailing)	100.00
Paul Redfearn (printing Missouriensis)	450.00
Chapter Dues	6.00
Director of Revenue	1.00
Sparky's Quick Print	257.26
Ginny Wallace (bulk mailing)	39.98
Total Disbursements	854.24
Balance on hand 9/16/88	$3,592.15

Doug Ladd and Wallace worked on a financial projection. The biggest expenses are for *Missouriensis* at $1000 per volume, "Petal Pusher" at $1200 per year, and Conservation Federation dues. But there are other expenses, many of which have been absorbed by members in the past. Most native plant societies' dues are $15 or $20. The conclusion was that we need to raise MoNPS dues.

Committee Reports.

Missouri Flora Atlas Committee. Wally Weber distributed a page showing how the state record maps will be coded. He has a backlog of 1800 records to publish in the next two Missouriensis issues. (He reminded us that all records must be verified by an herbarium curator who has checked the specimen.) Weber believes that the Atlas could be published as soon as January, 1989. No firm cost figures are yet available; 500 copies might be printed for $5400 and sold for $10 apiece, possibly with prepublication sales to raise money. This edition will use Steyermark's nomenclature. A new edition in five years or so will use the new nomenclature expected in the new Flora. Melvin Conrad volunteered some student time to help check maps.

Newsletter. Linda Ellis made the usual plea for chapters to get news and events to her in time for publication. Sue Hollis also expressed an opinion on this subject. Bill Summers congratulated the editors for the fine job they are doing, and all concurred.

Membership Committee. Mervin Wallace reported in Ginny's absence. The membership list was recently purged of those that have not paid dues. There are 417 members now, compared to 412 a year ago. Membership is now on a calendar year basis; dues must be paid by March. No new chapters have formed, but John Doggett is interested in forming a Sikeston chapter. The "Petal Pusher" was recognized as an important bond among our widespread membership.

Field Trip Committee. The float trip, glade hike, picnic, and fern expedition were a great success. Letters will be sent to the Hollis clan members who helped with the picnic. It was decided that next year's four board meetings will be planned and hosted by chapters. This will promote better chapter-state relationships and give more members a chance to help.

Environmental and Educational Committee. Paul Nelson was absent so no report was given. Under this topic Mervin Wallace mentioned the increase in digging along rights-of-way, especially for coneflowers.

Nominating Committee. No report. (Ginny Wallace and Paul Nelson were previously appointed to serve on this committee.)

Editorial Committee. The editor of *Missouriensis* is in China. Several outdated entries were noted on the officer, board, and chairman lists inside the *Missouriensis* cover, and these were corrected. It was recommended that the secretary send the corrected list to Paul Redfearn for the next issue of *Missouriensis*. Also recommended was the addition of the names, addresses, and telephone numbers of the chapter representatives to the officer and board member list, as these are entitled to a vote at board meetings.

Old Business

Pins. Linda Ellis will submit art work at the December meeting; probably a pink-and-white *Cypripedium reginae* (to match our brochure) or a yellow-and-brown *C. calceolus*. The pins will cost $1.20 each for 200, plus a one-time die fee of $46. Chapters might sell the pins for $4 and keep $1.

Buttons. Wallace Weber offered to make buttons at cost for members. These buttons would be good to sell during 1989, the Society's tenth anniversary year.

New Business

Eastern Native Plant Alliance. Linda Ellis presented both written and oral reports on the Conference in Asheville, NC, this July, which she and Kay Yatskievych attended. The board voted to send a letter to coordinator Mary

Pockman, stating that MoNPS sanctions their goals and will continue to send representatives.

Board Meeting Frequency. The board voted to continue scheduling four meetings per year. One might be cancelled if a quorum could not be present.

Minnesota Native Plants Brochure. Lynda Richards passed out copies of a native plant brochure available at Minnesota highway rest stops. It carefully distinguishes between native and introduced wildflowers. Its publication by the state's trade and tourism board indicates that someone up there thinks wildflowers may be good for business.

Chapter Reports

Kansas City. Sue Hollis, chapter representative, reported that they are becoming more active and getting more local members. They have elected officers and are planning a newsletter.

St. Louis. Bill Summers reported that there are 109 members, with about 40 showing up for activities. Program and following field trip are usually on the same theme: butterflies and butterfly plants, Shaw's Arboretum - then and now, herbal and nutritious plants, and "show-and-tell" were some of this year's fare.

Springfield. Louise Wienchowski told of plans to help Dave Catlin plant native plants around the new Nature Center. Recent activities included a program and field trip on ferns with Dr. James S. Key, and an herbalist.

Kirksville. Melvin Conrad described a successful joint spring meeting with the local Audubon chapter, where they shared bird and plant lore. They will be planting native prairie plants in a university-owned plot.

Announcements

The next meeting will be on December 3 at the Fish and Wildlife Service Building in Columbia.

Adjournment.

The meeting was adjourned at 10:00 p.m.

Respectively submitted,

Lynda Richards, Secretary