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Observations on the Flora of the Southeastern United States with Special Reference to Northern Louisiana. By Dr. Robert Kral

Editor's note: The following article was published by Dr. Robert Kral in the journal Sida in 1966. The parts about the northern Louisiana flora are especially interesting, and still applicable, to this day. Unfortunately, the last paragraph is especially prescient as concerns the demise of many elements in the north Louisiana flora.

We are indebted to Dr. Kral for permission to reprint his article, to the journal Sida for originally publishing this article, to the Biodiversity Heritage Library for making this article available in the public domain, and to the Missouri Botanical Garden, which supplied the texts for digitization.

The appearance in the lower portions of the gulf coastal plain of northern woodland elements has long aroused the curiosity and subsequent comment of botanists. A consensus of opinion has it that these plants are leftovers of Pleistocene floras; certainly their almost invariably insulated location in steep, highly shaded ravines or in deep, relatively undisturbed mesic woodlands, is strongly suggestive of such a history.

In the spring of 1959 and again

in the period from 1962 to 1964 I became interested in locating habitats which would yield similar species in northern Louisiana. The northern parishes of Louisiana have long been known to harbor certain species more typical of the Interior Highlands Appalachians or woodlands and prairies of the central lowlands. Several species had already been reported on or collected by Dr. John Moore, Dr. Clair Brown, Miss Caroline Dormon or Dr. L.H. Shinners (i.e. some noteworthy finds such as Uvularia sessilifolia, Erythronium rostratum, Lilium michauxii, Cypripedium calceolus, Quercus marcrcarpa, Silene virginica, Sanguinaria Canadensis, Geranium maculatum, Dodecatheon meadia, Viola eriocarpa, Silphium terebinthinaceum, S. lacinatum, Cacalia plantaginea, and many more).

Thus the results of my own field work have not been very exciting in terms of new finds. Often a full day of investigating what seemed to be fine collecting areas of hardwood forested tracts, richly endowed with deep rich soils, would net me nothing in the way of species

which would have abounded in similar habitats to the north in the mid-west. Yet, when I would, with much walking and a little luck, finally come on a



Erythronium rostratum. Photo courte Jim Van Kley at Stephen F. Austin University



Podophyllum peltatum. Photo courtesy Ream Design

"Populations of Podophyllum, for example, are large, luxuriant, and probably very ancient."

The first group appears to be hanging on where cold air drainage is most likely to be impounded [sic] The second group persists like shallow pools left by a retreating Pleistocene tide, namely on "older" alluvial soils.



Chamalirium luteum. Photo courtesy U.S. Forest Service—Celebrating Wildflowers.



Lilium michauxii Photo courtesy Southeasternflora.com

northern woodland element it would be in considerable, often breathtaking, abundance. However, such finds would usually be only of one or two species. For example, a wooded area of alluvial high bank might yield clouds of yellow Erythronium, but hardly another species while a similar habitat in Missouri or Illinois would have Trillium recurvatum, Anemonella, Phlox, Sanguinaria, Mertansia, Viola (missouriensis, eriocarpa, and others) etc. Searches of wooded ravine floras were often more disappointing. In the course of some of these long, often fruitless, walks, I finally began to see what a possible explanation could be. Most of the discoveries appeared to be of clones rather than dispersed populations of many clones; this is an indication that some barrier to development of seedlings is active or at least intermittently active.

Reasoning further, and on the basis of observations in northern Louisiana and east Texas, there appear to be two sorts of habitat complexes of northern woodland plants. One group is comprised of ravine bank species, i.e. Adiantum pedatum, Woodsia obtusa, Carex jamesii, Chamaelirium luteum, Lilium michauxii, Campanula americana, Cypripedium calceoulus, Quercus borealis, Magnolia acuminata, Silene virginica, Saxifraga virginiensis, Hydrangea arborescens, Amelanchier arborea, Cynoglossum virginianum, Erigeron pulchellus, Senecio obovatus. Another appears to be found on alluvial sites: Uvularia sessilifolia, Polygonatum biflorum, Erythronium rostratum, Trillium recurvatum, Sanguinaria canadensis, Dentaria laciniata, Podophyllum peltatum, Gillenia stipulacea, Senecio aureus, Polymnia uvedalia, etc. A third and smaller group

"It is interesting to see these old "islands" of Podopyllum, Erythronium, Trillium etc. being melted away by the inexorable cutting action of the streams."

does not appear to be as selective and may be fairly abundant in either sort of habitat, i.e. Botrychium virginianum, Podophyllum peltatum, Phlox divaricata, Arisaema triphyllum, Lindera benzoin.

The first group appears to be hanging on where cold air drainage is most likely to be impounded, where there is more cool air because of less intense insolation, where rough topography more likely maintains their narrow foothold on life simply by making an area less suitable for crop, farming, pasture, or logging.

The second group persists like shallow pools left by a retreating Pleistocene tide, namely on "older" alluvial soils. These areas must be little disturbed; grazing or logging, however light, appears to have a final effect. In the Midwestern United States, where all of this alluvial complex of species is far more abundant, succession on newly formed alluvium is quite rapid. Thus, as rapidly as a meandering stream cuts through older alluvium, newly created area is being occupied by seedlings and the species remain abundant. In northern Louisiana this does not seem to be the case. One is struck by the size, also the infrequency of the population there.

A possible explanation, in the case of the first group, is that the ravine species are being eroded out of suitable habitats by headword cutting of streams. This first of all relates to the immensely greater amount of erosion water during the wet cycles of the Pleistocene, a period during which much sharp cutting was occurring with the creation of many good ravine habitats for such plants to occupy. Probably these situations at the close of the Pleistocene were similar to the spring woodlands of northern Illinois and were filled with an abundance of species, all of course reproducing prolifically by seed. After the Pleistocene, and accompanying a warning and drying, the number of suitable habitats to the south decreased and therefore the area of such species decreased, becoming confined to the coolest localities (i.e. deeper ravines, north-facing steep wooded slopes). As the erosion cycle progressed, ravines widened and warmed save at their heads; hence the surviving populations migrated headword in the ravines and branch ravines. Most of such migration was, and is, through lateral movement of vegetative propagules. This would account for the presence of isolated populations in the branches of major drainages such as the Bayou D'Arbonne in northern Louisiana, and their usual absence along the larger, broader valley slopes. Thus, as



Polymnia uvedalia Photo courtesy Southeasternflora.com

"This would account for the presence of isolated populations in the branches of major drainages such as the Bayou D'Arbonne in northern Louisiana"

erosion continues, and as warmer conditions poor for reproduction by seed persist, the fate of the few remaining stands of plants is predictably poor. This may also explain the sparse number of species in any one locality.

In the case of the second or alluvial woodland, group there again appears to be maintenance primarily by vegetative reproduction. Populations of *Podophyllum*, for example, are large, luxuriant, and probably very ancient. The same is true for *Erythronium*, *Trillium*, *Sanguinaria*, *Dentaria*, *Pohygonatum*, *Uvularia*. They invariable occupy older alluvial terraces of streams. In northern Louisiana west of the present delta the bulk of the streams reside in quite old valleys, which often have two definable terraces. The older terraces probably represent the boundary of oscillation of streams whose load was vastly greater; confined within these boundaries are the more recent floodplains of the present streams. In the newer floodplains, portions of the older floodplains exist as low, gradually eroding, islands; if such are wooded and relatively undisturbed they are often abundantly carpeted by one or more of the above-mentioned types of plants. Little or no reproduction by seed seems to go one, but vegetative reproduction does. Gradually, these populations are worked away by the cutting of the streams, become more and more isolated from one another and ultimately disappear. Again, as is the case with the ravine plants, their fate is plain unless the weather pattern in the region should again change. It is interesting to see these old "islands" of Podopyllum, Erythronium, Trillium etc. being melted away by the inexo-



This is a digital-elevation model (DEM) of one stretch of the Middle Fork of Bayou D'Arbonne in Claiborne Parish. Low elevations are blue and high elevations are red. Areas of active stream head-cutting (and good places to find some plants mentioned in this article) are generally depicted by the green line, i.e. terraces adjacent to the floodplain of the Middle Fork of Bayou D'Arbonne. *DEM courtesy the LSU CADGIS Research Laboratory.*

rable cutting action of the streams. Many such examples are presently in evidence along the Bayou D'Arbonne, the Bayou Bartholomew, and Sugar Bayou and on a grander scale along the Red River and its tributaries to the west.

In northern Louisiana west of the high delta of the Mississippi which is bounded to the west by the Ouachita River, a sort of axis of parishes exists south of which many of the above-mentioned plants do not seem to occur. This axis, from my observations, appears to be through Ouachita, Lincoln, Bienville, Webster, and Caddo Parishes and it is only broken by the Red River system.

(Erythronium, Uvularia, Polygona*tum* have been found south of this axis but only along the Red River). While mesic woodland elements are plentiful south of the axis, they are of a different history. In fact, these (i.e. Trillium maculatum, Magnolia grandiflora, Vibrunum acerifolium, Ilex longipes, Asimina parvifolra, Acer barbatum, Acer leucoderme, Magnolia pyramidata, Liliuym michauxii, Ilex vomitoria, Hydrangea quercifolia) appear to be part of an older forest whose movement into Louisiana was from the east in the Gulf Coastal Plain. In fact, and as commented on by earlier workers, there is a striking similarity between the floras of Sab-



A Mayapple patch. Image courtesy Plant Postings Blog http://plantpostings.blogspot.com/



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ine Parish, Louisiana and the Big Thicket of eastern Texas, and that of northwestern Florida and southern Alabama. Some species have been winnowed out from east to west, but a great many are shared by all areas.

It would seem to me that one of the most critical areas for descriptive or floristic ecology remains literally untouched in northern Louisiana and eastern Texas. Many extensive stands of hardwood forest still remain relatively undisturbed as the region is still not very heavily "Gradually, these populations are worked away by the cutting of the streams, become more and more isolated from one another and ultimately disappear. "

populated. However, such studies must be done soon. Industry in the form of hardwood pulp, veneer, and furniture mills is rapidly moving into the region; in many other parts of these areas hardwoods are being cleaned out to make room for pine. Many of the beautiful streams of northern Louisiana are being dammed up with a subsequent destruction of bottomland hardwood communities.





Maianthemum racemosum.. Photo by David Moore.



Sanguinaria Canadensis. Photo by David Moore.



Cardamine concatenate (Dentaria laciniata). Source: Wikipedia.



Trillium maculatum ©USC Herbarium. Photo by John Nelson



Polygonatum biflorum. Photo courtesy Peter Gormon at the Southwest Environmental Information Network.



Saxifraga virginiensis. Photo courtesy George Wallace at What's Blooming Now

River Cane, Native Bamboo, Switch Cane, Can't Make Up My Mind By Dr. Charles M. Allen

Our native bamboo could be considered a single species (Arundinaria gigantea) with two varieties; var. arundinaria and var tecta or as two species; arundinaria and tecta. The var. arundinaria is by far the more widespread and common and is reported from all Louisiana parishes except Cameron, Jefferson, Jefferson Davis, St. James, St. Martin, and Vermilion. The var. tecta is restricted to southeastern Louisiana with reports only from St. Tammany, Tangipahoa, and Washington parishes usually in fairly wet areas along the edge of bogs or seepage areas. The var. arundinaria does not have the air spaces and is usually in somewhat dry areas; usually in stream floodplains but often on the drier natural levees of streams and not in truly wet area. The common names for var. arundinaria include giant cane, bamboo, river cane, switch cane, canebrake bamboo, and southern cane. The var. tecta is usually called

> switch cane. Both are rhizomatous woody members of the grass family with typical monocot leaves that is with parallel veins. Both flower early in the year (January to

short bladeless stems. The flowers are in large spikelets. The best identification of the variety tecta is the presence of a ring of air spaces in the underground rhizome. Other characteristics often mentioned are



Arundinaria gigantea Photo courtesy Carolinanature.com



Arundinaria tecta underground rhizome showing air spaces. Photo courtesy Bambooweb.info

purple glabrous spikelets compared to green pubescent spikelets in var. arundinaria. And, in the recent North American Flora, var. tecta is reported to have 2-5 compressed basal internodes compared to 0-1 compressed basal internodes in var.

arundinaria and var. tecta has round internodes compared to sulcate internodes in var. arundinaria. Will check this out but a little leery as another character is that var. arundinaria should have deciduous leaves and var. tecta should have tardily deciduous leaves. All of the native bamboo that I have seen seem to be evergreen?



Arundinaria tecta Photo courtesy Southeasternflora.com

Compressed basal internodes in Phyllostaches aurea. Photo courtesy Bamboo Flora & fauna from around the world http://www.bamboocraft.net/ bamboo



Announcements

Annual LNPS Winter Meeting

The 2014 Winter Meeting will be held Friday, January 31 through Sunday, February 2 at Camp Hardtner.

Agenda and other details will be available in the Winter 2014 newsletter.

2013 LNPS Grant Awards

The 2013 LNPS organization grant recipient is the Friends of Louisiana Wildlife Refuges. A joint project between the St. Tammany Master Gardener Association, Friends of Louisiana Wildlife Refuges, and the U.S. Fish & Wildlife Service will create a garden that features native plants to serve as an outdoor classroom about native plants and their benefits. The native plant garden will be used in formal educational programs conducted by the U.S. Fish & Wildlife Service Park Rangers and volunteers. The native plant garden will be located at the headquarters facility for the Southeast Louisiana National Wildlife Refuges in Lacombe, Louisiana, a 110-acre site previously privately owned and known as Bayou Gardens until 1996 when it became the headquarters site.

The 2013 LNPS student grant recipient is Krislyn Newman. Krislyn's project is to investigate the color and antimicrobial properties of 10 plants native to the Louisiana Cajun Prairie. Krislyn's project has been delayed until 2014. The LNPS grant will be awarded at which time her project resumes.

Congratulations to both recipients.

Capital Area Native Plant Society

Monthly meetings with regular guest speakers on several topics are still continuing for the Baton Rouge Capital Area Native Plant Society Chapter. If you would like to give a special presentation or share a particular skill you have regarding natives (i.e., propagation, native edibles, history of LA botany, anything!) please don't be shy! Contact us. We are always looking for guests!

CANPS has begun field trips in earnest. Our goal is about 4 per year, one around each season. The summer field trip to Abita Creek Flatwoods preserve was a huge success with over 20 attendees. Our most recent trip was to Mary Ann Brown Preserve in the bluff hills of Southeaster Louisiana on Saturday, October 12, 2013 at 9:30am. We have been arranging meet ups for carpooling and that seems to be an effective way to save gas money and make friends.

We are also proud to announce the launching of our brand new website! You can check it out at <u>canps.weebly.com</u>. The website is a repository for a number of new resources that are being developed be various members. Visit the Gardening section to see the "CANPS Native Plant Database", a synthesis of cultivation and landscaping information on a number of local native plants. Under "Gardening" you will also find our CANPS Native Plant Materials Registry, an interactive Google Map featuring native-friendly nurseries in our region. If you are more interested in botany than gardening, check out the Conservation and Science section, where you'll find information on rare and endangered plants and communities of the Greater Baton Rouge Area, the Louisiana Plant Phenology Project (LAPPP) and Herbaria of Louisiana. Oh, and don't forget our "Places to Go" section, where you will find an interactive Google Map with many hiking hubs plotted out for your convenience. Click the link below the map and get a spreadsheet with info on some of the top sites in our area. Just remember, many of these projects are still in progress and they are not exhaustive. There is still much that can be done with these resources. If you like what you see and want to help, please consider becoming a volunteer. These tools will undoubtedly be useful to folks beyond Southeast Louisiana alone. Contact us for more info on how to get involved.

By the way, The LAPPP has reached 803 observations with 499 unique species added to the list! Consider joining the fun today, especially if you regularly take pictures of plants with a camera. It is a great way to manage your field trip photos, keep track of the many species you will likely see over the years all while sharing your observations with others. In addition to the many personal benefits, you will be contributing to a greater understanding of phonological events throughout the state, to the benefit of scientists, birders and native enthusiasts across the state and country!

Matthew and Lauren

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Louisiana Native Plant Society



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The Louisiana Native Plant Society was founded in 1983 as a state-wide, non-profit organization. Its purposes are to preserve and study native plants and their habitats, to educate people on the value of native plants and the need to preserve and protect rare and endangered species, to promote the propagation and use of native plants in the landscape, and to educate people on the relationship between our native flora and wildlife.

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