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**Some Geographic Relationships of the Vascular Flora  
of the Oklahoma Ozarks. Studies in the Composition  
and Distribution of the Oklahoma Flora — No. 28.**

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The following comments are based primarily on material collected by Charles S. Wallis during the years 1950-1958, studied by him at Oklahoma State University, and utilized by him in the preparation of a thesis for a Ph.D. which was granted in 1959. Validating specimens may be found in the Herbarium of the Oklahoma State University. General ranges of species, used for determining geographic categories, are those found in floras, manuals, and pertinent monographic works.

Always interesting are the endemic plants of an area, as well as those that are at, or near, the limits of their range. One familiar with the flora of the whole state notes many of the latter category in our Ozarks, species characteristic of eastern forests, or of prairie openings in such forests, not found in the prairie flora which covers much of Oklahoma.

In attempting to categorize these species in some phytogeographic arrangement, difficulties are immediately encountered. For example, not all those we might consider as "eastern" have the same ranges. Those occurring from New England to Florida and westward surely can be so considered; those from New England and southern Canada westward to the prairies can be called "northeastern", and a "southeastern" series can also be distinguished. But even within these categories there are species with more localized ranges, or those overlapping any generalized boundaries.

A few species can be considered Ozarkian endemics. Surely those limited to the Ozarks of northwestern Arkansas, southwestern Missouri and northeastern Oklahoma can be so designated. But what about species found in this area, but also extending southward to eastern Texas and northwestern Louisiana? Or those ranging eastward beyond the Ozarks?

One might list each species separately, discussing its distribution and the implications thereof. This would be a commendable and interesting enterprise, but beyond the limits of the present paper.

Despite these quandaries, it seems that a generalized summary concerning the distributional relationships of the flora might be of value. The following account is such an attempt. Habitat and county distribution will be given in the annotated list which is to be presented as a later paper. In each following category are those species at, or near, the limit of their ranges in Oklahoma.

### Eastern species

*Carex hyalinolepis*, *C. laevivaginata*, *C. lupuliformis*, *C. lurida*, *Scleria pauciflora* v. *caroliniana*, *S. triglomerata*, *Aletris farinosa*, *Dioscorea villosa*, *Iris cristata*, *Calopogon pulchellus*, *Corallorhiza Wisteriana*, *Habenaria lacera*, *Salix humilis* v. *hyporhysa*, *Alnus serrulata*, *Corylus americana*, *Laportea canadensis*, *Polygonum sagittatum*, *Paronychia fastigiata*, *Silene virginica*, *Anemonella thalictroides*, *Isopyrum bifernatum*, *Asimina triloba*, *Dicentra Cucullaria*, *Sanguinaria canadensis*, *Arabis missouriensis*, *Cardamine bulbosa*, *Iodanthus pinnatifidus*, *Heuchera americana* v. *hirsuticaulis*, *Amelanchier arborea*, *Amphicarpa bracteata*, *Staphylea trifolia*, *Acer rubrum*, *A. saccharum*, *Hybanthus concolor*, *Viola pedata*, *V. pennsylvanica*, *V. sagittata*, *Cryptotaenia canadensis*, *Oxypolis rigidior*, *Sanicula gregharia*, *Asclepias purpurascens*, *Cuscuta glomerata*, *Polemonium reptans*, *Myosotis verna*, *Hedeoma pulegioides*, *Castilleja coccinea*, *Pedicularis canadensis*, *Penstemon tubaeformis*, *Seymouria macrophylla*, *Veronicastrum virginicum*, *Phryma leptostachya*, *Hedyotis longiflora*, *H. purpurea*, *Triosteum perfoliatum*, *Actinomeris alternifolia*, *Aster imatifolius*, *Cacalia atriplicifolia*, *C. Muhlenbergii*, *Erigeron pulchellus*, *Krigia virginica*, *Polymnia canadensis*.

### Northeastern species

The following are restricted more to the northeastern part of the United States, and sometimes adjacent Canada. They are at, or near, the western or southwestern limit of their ranges in the Oklahoma Ozarkian area.

*Sparganium androcladum*, *Hystrix patula*, *Carex Grayii* v. *hispidula*, *Arisaema atrorubens*, *Erythronium americanum*, *Polygonatum canaliculatum*, *Iris virginica* v. *Shrevei*, *Comandra Richardiana*, *Asarum canadense* v. *acuminatum*, *Lindera Benzoin*, *Arabis missouriensis*, *Arabis perstellata* v. *Shortii*, *Viola sororia*, *Circaea quadrisulcata* v. *canadensis*, *Angelica venenosa*, *Thaspium trifoliatum*, *Asclepias quadrifolia*, *A. Sullivantii*, *Hydrophyllum virginianum*, *Agastache nepetoides*, *Scutellaria incana*, *Trichostema brachiatum*, *Galium concinnum*, *Galium tinctorium*, *Aster pilosus*, *Ratibida pinnata*, *Rudbeckia triloba*, *Solidago hispida*.

### Southeastern species

The species listed below have their principal ranges in the southeastern quarter of the United States. In our area they are at, or near, the western or northwestern part of their range in Oklahoma.

*Sphenopholis filiformis*, *Carex flaccosperma*, *Scleria ciliata*, *S. oligantha*, *Dioscorea quaternata*, *Quercus nigra*, *Urtica chamaedryoides*, *Aristolochia tomentosa*, *Rivina humilis*, *Silene regia*, *Ranunculus laxicaulis*, *R. pusillus*, *Calyocarpum Lyonii*, *Lindera Benzoin* v. *pubescens*, *Hydrangea arborescens*, *Crotonopsis elliptica*, *Ilex decidua*, *Cuphea petiolata*, *Rhododendron canescens*, *Sabatia angularis*, *Amonia Tabernaemontana*, *Asclepias obovata*, *Cuscuta compacta*, *Heliotropium indicum*, *Myosotis macrosperma*, *Lycopus rubellus* v. *rubellus*, *Salvia lyrata*, *Scutellaria ovata*, *Hedyotis lanceolata*, *Spermacoce glabra*, *Coreopsis pubescens*, *Echinacea purpurea*, *Senecio obovatus* v. *rotundus*, *Solidago rugosa* v. *celtidifolia*.

### Northern species

A few species are northern, in the sense that they range farther west than the northeastern U. S., either in the northern states or southern Canada, or they occur in the northeastern U. S. and also in the Rocky Mountains, sometimes as far north as Alaska.

*Asplenium Trichomanes*, *Smilacina racemosa* v. *cylindrata*, *Physocarpus opulifolius* v. *intermedius*, *Impatiens capensis*, *Lysimachia ciliata*, *Zizia aptera*.

### Southern species

A few species extend farther west than the southeastern part of our country. They are: *Glinus lotoides* and *Eupatorium incarnatum*.

### Endemics

The following species appear to be limited to the Ozark Mountain area. This list does not completely coincide with a recent account of endemics of the entire Ozarks (Steyermark, 1959) as its author included taxa which extend slightly beyond the Ozarks, usually southward or eastward.

*Tradescantia Ernestiana*, *T. ozarkana*, *Castanea ozarkensis*, *Callirhoe digitata* v. *digitata*, *Valerianella Bushii*, *V. ozarkana*.

By extending the area under consideration to include the Ouachita Mountains in southeastern Oklahoma, we find these additional Ozarkian species of only slightly greater range than the first group.

*Saxifraga virginiana* v. *subintegra*, *Hamamelis vernalis* v. *tomentella*, *Callirhoe Papaver* v. *Bushii*, *Onosmodium subsetosum*, *Galium arkansanum*, *Valerianella longiflora*, *V. Nuttallii*, *Specularia lamprosperma*, *Aster anomalus*.

If we include eastern Texas and northwestern Louisiana, or extreme southeastern Kansas, and sometimes a few counties west of the Ozarks in Oklahoma, we add the following Ozarkian species, still of relatively limited distribution.

*Eleocharis obtusa* v. *lanceolata*, *Selenia aurea*, *Streptanthus maculatus*, *Saxifraga texana*, *Limnosciadium pinnatum*, *Amsonia illustris*, *Phacelia hirsuta*, *Collinsia violacea*, *Penstemon arkansana*, *Iva angustifolia*, *Rudbeckia grandiflora*, *Solidago nitida*, *Vernonia crinita*.

The following list of species of relatively limited distribution is obtained by extending the area eastward to include one, or more, of the following states: Alabama, Georgia, Illinois, Iowa, Kentucky, Mississippi, Tennessee. In some instances the areas are contiguous; in others the populations are disjunct.

*Clematis versicolor*, *Draba aprica*, *Philadelphus pubescens*, *Aruncus dioicus* v. *pubescens*, *Cladrastis lutea*, *Cotinus obovatus*, *Hypericum pseudomaculatum*, *Oenothera linifolia*, *Sidopsis hispida*, *Trepocarpus Aethusae*, *Monarda Russeliana*, *M. virgata*, *Physostegia angustifolia*, *Ruellia pedunculata*, *Galium virgatum*, *Sambucus canadensis* v. *submolle*, *Grindelia lanceolata*, *Polymnia Uvedalia*.

Ozarkian species which are essentially Kansas-Texan, often extending several counties west of the Ozarks in Oklahoma are:

*Eryngium Leavenworthii*, *Phacelia strictiflora*, *Chaetopappa asteroides*, *Gaillardia fastigiata*.

### LITERATURE CITED

Steyermark, J. A. 1959. Vegetational History of the Ozark Forest. The University of Missouri Studies. Columbia, Missouri. 1-183.