

1959

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Recommended Citation

Bruggen, Ted Van (1959) "A Report on the Flora of Southcentral Iowa," *Proceedings of the Iowa Academy of Science*: Vol. 66: No. 1 , Article 24.

Available at: <https://scholarworks.uni.edu/pias/vol66/iss1/24>

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A Report on the Flora of Southcentral Iowa

By TED VAN BRUGGEN

Abstract. A field survey of the native and adventive vascular plants of southcentral Iowa was made during the growing seasons 1955 through 1957. Over 4,200 collections were identified and labeled from the area. Herbarium specimens also were carefully checked and annotated. Plants characteristic of three of the more distinctive communities are listed.

A brief description of the area, its topography, geology, and drainage, is included.

A field survey of the vascular plants of southcentral Iowa was made during the growing seasons 1955 through 1957 in order to obtain more data on the flora of that region. The region considered in this investigation consists of approximately 4,350 square miles and includes nine counties. The counties are Clarke, Dallas, Decatur, Jasper, Lucas, Marion, Polk, Warren, and Wayne. This area represents the remaining portion of the southern half of the state, the southwestern and southeastern areas having received recent intensive botanical exploration by Fay (1953) and Davidson (1957).

With the exception of Decatur County and parts of Polk and Jasper counties, this area has received very little attention in the past in the way of systematic collecting. Over 4,200 collections were made, totaling an estimated eight thousand individual specimens. In the herbaria of the State University of Iowa, Iowa State College, and Grinnell College, an investigation was made to check the identification of specimens previously collected in southcentral Iowa. It was found that less than six hundred specimens had been collected in the area and deposited in the above herbaria. A majority of these specimens were collected by T. J. Fitzpatrick and J. P. Anderson over a span of time which extended from the turn of the century until the 1930's.

Of the specimens collected, one complete set will be retained in the Herbarium of the State University of Iowa.

TOPOGRAPHY, GEOLOGY, AND DRAINAGE

The area included in this study is not a natural physiographic area. The northern tier of counties—Dallas, Polk, and Jasper—were more or less covered by the Mankato and Cary lobes of the most recent Wisconsin drift. It is not as maturely dissected as the three tiers of counties to the south, which were covered by the much older Kansan and Nebraskan drifts. Broadly speaking, these represent the two topographic divisions. If the region could be viewed in cross-section, it would appear as a rolling plain sloping gradually from west to east. The highest elevations in southcentral Iowa are

slightly higher than 1,200 feet above sea level in western Clarke and Decatur counties. The lowest elevation, 700 feet, occurs at the level of the Des Moines River in eastern Marion County. Local relief is least in northern Dallas and Polk counties where the drift plain for the most part has been but slightly modified by erosion. In the southern three tiers of counties the relief is more evident. Originally it was a broad drift plain, but it has been modified and changed by the action of stream erosion until now the topography consists of irregular belts of rolling to strongly rolling or hilly land along the streams and more or less level areas between the streams, which retain much of the original character of the surface plain.

A consideration of the geology of southcentral Iowa is of importance only in so far as the drift and loess deposits are concerned. Three glacial drifts are known to have covered southcentral Iowa. The oldest, the Nebraskan, is exposed only in the deeper valleys and roadcuts in southern Decatur and Wayne counties. The Kansan drift is exposed in most of the southern part of the area. The most recent Wisconsin drift covered the northern three-fourths of Dallas and Polk counties and the northwest corner of Jasper county. The South Raccoon River in southern Dallas County marks the southern-most advance of the Cary lobe of the Wisconsin drift. The Wisconsin drift is not covered by loess as are the Nebraskan and Kansan. The geologic maps of Dallas and Polk counties before 1900 show many marshes and small ponds. Since then, however, all of these have been drained, or have dried up, and are now cultivated.

There are several well exposed sandstone bluffs along the Des Moines River in Marion County. This is Des Moines series Pennsylvanian sandstone. These north-facing wooded bluffs on the south side of the Des Moines River are known locally as Red Rock Cliff and Elk Rock. The only limestone known to be exposed in southcentral Iowa is along the Grand River in Decatur County and small areas along the South Raccoon River in southern Dallas County.

The southern parts of southcentral Iowa are drained by the Grand and Chariton basins which are tributaries of the Missouri River. Most of the northern part of the area is drained by the Des Moines River directly or by tributaries of this river. The Des Moines flows into the Mississippi at the southeast corner of the State of Iowa. The North and South Skunk rivers run parallel to the Des Moines through Jasper County and drain all of this county except for the southwest corner. The Skunk rivers are very shallow and have a very wide flood plain. Prior to 1900 the present channel was dredged and leveed. This accounts for its lack of meanders. The original South Skunk River is now broken into marshy tributaries which lead into both sides of the present main channel.

PLANT COMMUNITIES

Several interesting plant communities in southcentral Iowa were discovered in the course of this investigation. Only three of the more distinctive ones are included here with characteristics or common plants of each community. It is hoped that biologists from high schools and colleges in the area will benefit from this information by taking their students on field trips to one or more of the communities listed.

1. Rich wooded sandstone bluffs along the Des Moines River in Marion County.
 - a. Red Rock Cliff, located in the north one-half of Section 3, Union Twp., can be reached by following county trunk U west from Highway 14.
 - b. Elk Rock, located in Section 8, Polk Twp., can be reached by walking west beyond the Knoxville waterworks pumps along the Des Moines River.

Actaea rubra (Ait.) Willd.
Adiantum pedatum L.
Aesculus glabra Willd.
Agrostis perennans (Walt.) Tuckerm.
Amelanchier arborea (Michx. f.) Fern.
Aquilegia canadensis L.
Arabis canadensis L.
Aralia nudicaulis L.
Aralia racemosa L.
Asarum canadense L.
Asplenium rhizophyllum L.
Aster sagittifolius Wed.
Athyrium filix-femina (L.) Roth
Athyrium thelypteroides (Michx.) Desv.
Blephilia hirsuta (Pursh) Benth.
Brachyelytrum erectum (Schreb.) Beauv.
Bromus pürgans L.
Carya ovata (Mill.) K. Koch
Carex albursina Sheldon
Carex cephaloidea Dew.
Carex grisea Wahl.
Carex sprengelii Dew.
Chenopodium standleyanum Aellen
Cinna arundinacea L.
Claytonia virginica L.
Cornus alternifolia L.
Cornus drummondii Meyer
Cornus racemosa Lam.

Cryptotaenia canadensis (L.) DC.
Cystopteris fragilis (L.) Bernh.
Dicentra cucullaria (L.) Bernh.
Diervilla lonicera Mill.
Dioscorea villosa L.
Dryopteris goldiana (Hook.) A. Gray
Dryopteris spinulosa (O. F. Muell.) Watt.
Erigeron philadelphicus L.
Erythronium albidum Nutt.
Euonymus atropurpureus Jacq.
Eupatorium rugosum Houtt.
Festuca obtusa Biehler
Fragaria vesca L. var. *americana* Porter
Fraxinus nigra Marsh.
Galium aparine L.
Galium concinnum Torr. & Gray
Galium triflorum Michx.
Geranium maculatum L.
Gymnocladus dioica (L.) K. Koch
Hepatica acutiloba D.C.
Hydrophyllum appendiculatum Michx.
Isopyrum biternatum (Raf.) T. & G.
Juglans cinerea L.
Lactuca floridana (L.) Gaertn.
Lechea stricta Leggett
Lonicera prolifera (Kirch.) Rehd.
Menispermum canadense L.
Mitella diphylla L.
Monotropa uniflora L.
Morus rubra L.
Osmorhiza claytonii (Michx.) C. B. Clarke
Osmorhiza longistylis (Torr.) DC.
Ostrya virginiana (Mill.) K. Koch
Parietaria pennsylvanica Muhl
Phlox divaricata L.
Poa sylvestris Gray
Podophyllum peltatum L.
Polemonium reptans L.
Polypodium vulgare L.
Prenanthes alba L.
Prunus serotina Ehrh.
Prunus virginiana L.
Quercus alba L.
Quercus rubra L.
Quercus velutina Lam.
Rhus radicans L.

Ribes americanus Mill.
Ribes cynosbati L.
Ribes missouriense Nutt.
Rubus occidentalis L.
Sanguinaria canadensis L.
Silene stellata (L.) Ait. f.
Smilacina racemosa (L.) Desf.
Smilax ecirrhata (Engelm.) S. Wats.
Smilax herbacea L.
Smilax hispida Muhl.
Solidago flexicaulis L.
Solidago ulmifolia Muhl.
Sphenopholis intermedia Rydb.
Staphylea trifolia L.
Thalictrum dasycarpum Fisch. & Lall.
Tilia americana L.
Ulmus americana L.
Uvularia grandiflora Sm.
Viburnum rafinesquianum Schult.
Woodsia obtusa (Spreng.) Torr.

2. Dry, sandy prairie, Polk City Cemetery, Polk County.

Ambrosia coronopifolia T. & G.
Amorpha canescens Pursh
Andropogon gerardi Vitman
Andropogon scoparius Michx.
Androsace occidentale Pursh
Artemisia caudata Michx.
Artemisia ludoviciana Nutt.
Asclepias amplexicaulis Sm.
Asclepias tuberosa L.
Asclepias verticillata L.
Aster sericeus Vent.
Astragalus crassicaarpus Nutt.
Bouteloua curtipendula (Michx.) Torr.
Bouteloua hirsuta Lag.
Cannabis sativa L.
Carex praegracilis W. Boott
Cerastium vulgatum L.
Corydalis micrantha (Engelm.) Gray
Crotalaria sagittalis L.
Cyperus esculentus L.
Delphinium virescens Nutt.
Desmanthus illinoensis (Michx.) MacM.
Desmodium illinoense Gray
Draba reptans (Lam.) Fern.

Erigeron annuus (L.) Pers.
Equisetum laevigatum A. Br.
Euphorbia geyeri Engelm.
Euphorbia glyptosperma Engelm.
Festuca octoflora Walt.
Gaura parviflora Dougl.
Geranium carolinianum L.
Hedeoma hispida Pursh
Helianthus lactiflorus Pers.
Heliopsis helianthoides (L.) Sweet
Hordeum pusillum Nutt.
Juniperus virginiana L.
Lappula redowskii (Hornem.) Greene
Lepidium densiflorum Schred.
Lespedeza capitata Michx.
Leptoloma cognatum (Schult.) Chase
Liatris punctata Hook.
Lithospermum incisum Lehm.
Melica nitens (Scribn.) Hitchc.
Mirabilis hirsuta (Pursh) MacM.
Muhlenbergia cuspidata (Torr.) Rydb.
Oenothera laciniata Hill
Oenothera serrulata Nutt.
Opuntia humifusa Raf.
Oxalis dillenii Jacq.
Panicum scribnerianum Nash
Penstemon grandiflorus Nutt.
Phlox pilosa L.
Physalis heterophylla Ness
Physalis virginiana Mill.
Plantago purshii R. & S.
Potentilla recta L.
Psoralea esculenta Pursh
Rudbeckia hirta L.
Solidago nemoralis Ait.
Solidago rigida L.
Solidago speciosa L.
Sorghastrum nutans (L.) Nash
Sporobolus asper (Michx.) Kunth.
Sporobolus crytandrus (Torr.) Gray
Sporobolus neglectus Nash
Sporobolus vaginiflorus (Torr.) Wood
Stipa spartea Trin.
Trifolium procumbens L.

3. Mesic prairie remnants along railroad right-of-way in Warren County.
 - a. Sections 29 and 30, Jefferson Twp., between the villages of Martensdale and Bevington;
 - b. Section 21, Allen Twp., about eight miles northeast of Indianola.

Amorpha canescens Pursh
Andropogon gerardi Vitman
Anemone canadensis L.
Apocynum sibiricum Jacq.
Asclepias sullivantii Engelm.
Baptisia leucantha T. & G.
Bouteloua curtipendula (Michx.) Torr.
Cacalia tuberosa Nutt.
Calamagrostis canadensis (Michx.) Nutt.
Carex annectens (Bickn.) Bickn.
Carex bicknellii Britt.
Carex brevior (Dew.) Mack.
Carex gravida Bailey
Carex vulpinoidea Michx.
Chamaecrista fasciculata (Michx.) Greene
Cirsium hillii (Canby) Fern.
Comandra umbellata (L.) Nutt.
Desmodium canadense (L.) DC.
Erigeron strigosus Muhl.
Eryngium yuccifolium Michx.
Equisetum laevigatum A. Br.
Festuca paradoxa Desv.
Glycyrrhiza lepidota (Nutt.) Pursh
Helenium autumnale L.
Helianthus grosseserratus Martens
Helianthus laetiflorus Pers.
Heliopsis helianthoides (L.) Sweet
Heuchera richardsonii R. Br.
Koeleria cristata (L.) Pers.
Liatris pycnostachya Michx.
Lilium michiganense Farw.
Lysimachia quadriflora Sims
Oxypolis rigidior (L.) C. & R.
Panicum virgatum L.
Petalostemon candidus (Willd.) Michx.
Petalostemon purpureus (Vent.) Rydb.
Phlox pilosa L.
Psoralea argophylla Pursh
Pycnanthemum tenuifolium Schrad.

Pycnanthemum virginianum (L.) Dr. & Jack.
Ranunculus fascicularis Muhl.
Ratibida pinnata (Vent.) Barnh.
Rudbeckia subtomentosa Pursh
Scutellaria parvula Michx.
Senecio pauperculus Michx.
Silphium intergifolium Michx.
Silphium laciniatum L.
Sisyrinchium campestre Bickn.
Solidago graminifolia (L.) Salisb.
Sorghastrum nutans (L.) Nash
Sphenopholis obtusata (Michx.) Scribn.
Sporobolus asper (Michx.) Kunth.
Sporobolus heterolepis Gray
Stipa spartea Trin.
Veronicastrum virginicum (L.) Farw.
Viola pedatifida G. Don

Several other localities of botanical interest still exist in south-central Iowa, even though almost all the area is well suited for agriculture and is under cultivation. In the southern part of the region, where the topography has become quite dissected due to erosion, the vegetation is composed of woodland with shrubby to open prairie areas on the ridges or high uplands. Excellent examples of this are found in Nine Eagles State Park in southern Decatur County; upland open woods in the north one-half of Section 1, Corydon Twp., Wayne County; and in Stephens State Forest, Lucas County. Except for the marshy depressions and old stream beds in the northern part, there are no natural ponds or lakes in the area.

Several species were collected in southcentral Iowa which are noteworthy due to their rare occurrence in the state. The information concerning these collections is presented here for interested botanists.

Asclepias meadii Torr. Previously known only from Decatur County from a specimen collected by J. P. Anderson in 1905. Dry prairie remnant near Warren-Madison County line, West one-half of Section 7, Linn Twp., Decatur County, June 20, 1957.

Gnaphalium purpureum L. One previous report by Davidson (1957) from Lee County. Collected at two stations. Railroad ballast, one mile west of Davis City, Decatur County, July 2, 1957, and along pond on Hooper Reclamation Farm, Section 26, White Oak Twp., Warren County, June 30, 1957.

Heteranthera reniformis R. & P. Reported by Beal and Monson (1954). Rooted in mud along shore of lake in Red Haw Hill State Park, Lucas County, August 17, 1956.

Jussiaea repens L. var. *glabrescens* Ktze. Reported by Beal and Monson (1954). In shallow water along shore of lake in Red Haw Hill State Park, Lucas County, August 17, 1956.

Veratrum woodii Robbins. A single previous report from Iowa in Van Buren County by Davidson (1957). Deep wooded ravine in Nine Eagles State Park, July 16, 1957; Decatur County and in rich wooded ravine, North one-half of Section 1, Corydon Twp., Wayne County, July 18, 1957.

Viola rafinesquii Greene. An introduced weed apparently unreported for Iowa. Disturbed soil at edge of Polk City Cemetery, Polk County, July 21, 1957.

STATISTICAL SUMMARY

A. Components of the flora:

Major Groups	Genera	Species	
		Native	Introduced
"Pteridophytes"	14	20	0
Conifers	1	1	0
Monocotyledons	104	228	42
Dicotyledons	336	554	179
Total	455	803	221

B. Total number of families: 112

C. Number of species of vascular plants known from southcentral Iowa: 1,024

D. Number of species collected by writer: 899

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