

# A PRELIMINARY SURVEY OF PLANT DISTRIBUTION IN OHIO.\*

JOHN H. SCHAFFNER.

The following data are presented as a preliminary basis for field work in determining the natural plant areas of Ohio. It is hoped that the botanists of the State will begin active study of local conditions with a view to determine natural or transition boundaries as well as cataloging local associations. The distribution lists are based on herbarium material and more than 15 years of sporadic botanizing in the state. Of course, distribution at present indicates to a considerable extent merely the distribution of enthusiastic botanists and their favorite collecting grounds. Nevertheless, enough has been done to indicate in a rough way the general character of our plant geography.

The kind of data most important in indicating characteristic areas are as follows:—

1. Meteorological data.
2. Geology, including the nature of the surface rock and soil.
3. Physiography and topography.
4. The actual distribution of characteristic species of plants and to some extent of animals.

In Ohio, the following important maps may be studied in this connection:—

## *Meteorology.*

By Otto E. Jennings in *Ohio Naturalist* 3: 339-345, 403-409, 1903. Maps I-XII.

By J. Warren Smith in *Bull. Ohio Agr. Exp. Station* No. 235, 1912. Figs. 3-14.

## *Geology.*

By J. A. Bownocker, *A Geological Map of Ohio*. 1909.

## *Topography.*

The maps of the topographic survey, not yet completed. Various geological reports.

The eastern half of Ohio is a part of the Alleghany Plateau. The western half belongs to the great interior plain. In Ohio, the Alleghany Plateau consists of a northern glaciated region and a southern non-glaciated region. The latter apparently again divides into an eastern and western plant area.

The interior plain consists of a southern glaciated calcareous region up to the Ohio River—Lake Erie water shed, and north of this of the very flat Great Black Swamp region and its margin. The northwestern corner apparently has a characteristic flora differing in many respects from the Black swamp area, and is probably to be regarded as a distinct region mostly beyond our borders.

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According to Merriam, the northeastern part of Ohio belongs to the Transition Zone and all the rest of the state to the Upper Austral Zone.

In map I are indicated some of the more important physiographic lines in Ohio as follows:

- a-a, Western boundary of the Alleghany Plateau, following closely the eastern limit of the Ohio Shale.
- b-b, The terminal moraine or glacial boundary.
- c-c, Lake Erie Ohio River divide.
- d-d, North-west beach of glacial Lake Erie; the country beyond this is deeply covered with drift underlain with shale.
- e, Edge of the higher hill country.

According to all the data available and the lists of plants given below, Ohio apparently falls into four general regions or areas and for a preliminary survey seven natural plant regions may be recognized. These areas will at present not receive final, distinctive phytogeographic names but be indicated simply by their physiographic character or their geographic position as follows: (See Map II.)

- I. GLACIATED ALLEGHANY PLATEAU, belonging to the "Transition Zone."
- II. NON-GLACIATED ALLEGHANY PLATEAU, eastern division, including most of the Muskingum river basin, and the counties to the east.
- III. NON-GLACIATED ALLEGHANY PLATEAU, western division, containing the highland between the Muskingum and Scioto.
- IV. THE MIAMI AREA, mainly a glaciated calareous region.
- V. THE GREAT BLACK SWAMP AREA and contiguous country.
- VI. THE WILLIAMS COUNTY AREA.
- VII. SANDUSKY BAY AND LAKE ERIE ISLANDS AREA.

The seven areas may be briefly delimited and characterized as follows:—

I. The Glaciated Alleghany Plateau has its southern boundary in the terminal moraine and its western boundary at or a little beyond the limits of the Appalachian highland which approaches the eastern line of the Ohio Shale. As stated this area is recognized as a part of the Transition Zone of Merriam. Interesting plants found in this part of the state are:

- Pinus strobus*
- Calla palustris*
- Xyris flexuosa*
- Lysias orbiculata*
- Pyrola secunda*
- Andromeda polifolia*

Others are named in the list given below of "Northeastern and northern plants having a north-eastern distribution in Ohio."

II. The Eastern Division of the non-glaciated Alleghany Plateau extends eastward from an undetermined transition line west of the Muskingum valley. This area apparently lacks the white pine and tamarack present to the north and also the pitch

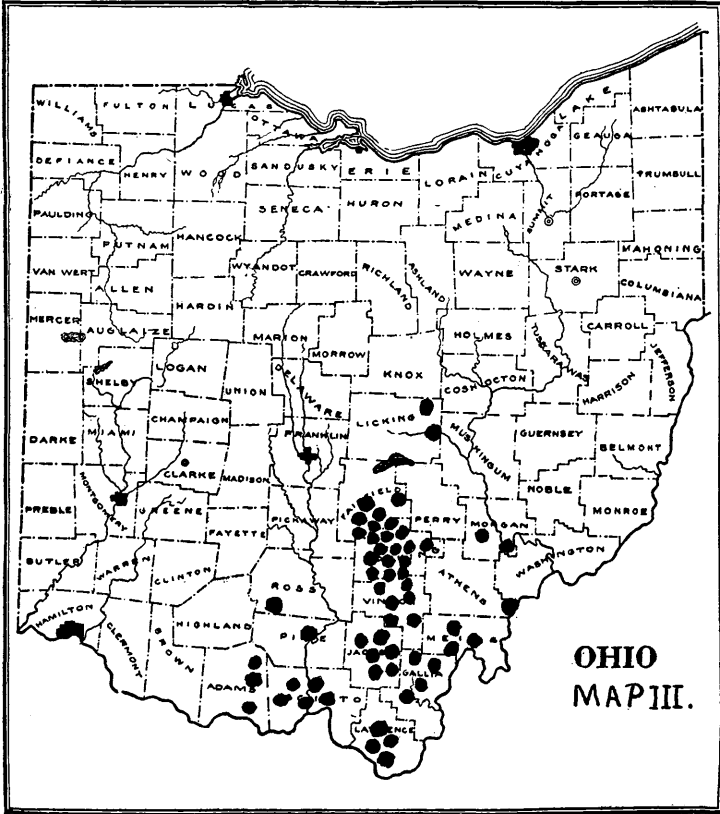


Provisional Phytogeographic Areas of Ohio.

pine and sorrel tree of the rougher highland to the west. The scrub pine is also apparently absent except on the western edge. Isolated localities have *Juniperus virginiana* and *Tsuga canadensis*.

III., The Western Division of the non-glaciated Alleghany Plateau included in this area has its western boundary following closely the eastern limit of the Ohio Shale in southern Ohio and the terminal glacial moraine. It is a rugged hilly upland cut by

numerous deep ravines. Pine barrens, mostly consisting of *Pinus virginiana* are frequent. The distribution of the more important Ohio species, which are mostly if not entirely confined to this area and are rather generally distributed in a considerable part of it are as follows:



Distribution of Nine Species in the Western Part of the Non-glaciated Alleghany Plateau.

**Rather Generally Distributed in a Considerable Part of the Area.**

- Pinus rigida*
- Pinus virginiana*. Extends somewhat beyond.
- Aristida dichotoma*.
- Stylosanthes biflora*.

- Betula nigra*.
- Oxydendrum arboreum*.
- Dasystroma laevigata*.
- Salvia lyrata*.
- Solidago erecta*.

**Other Plants Apparently Confined to the Area and of  
Rarer Distribution.**

Selaginella rupestris.	Gaultheria procumbens. Its southern extension in the State.
Manfreda virginica.	Chionanthus virginica.
Magnolia tripetala.	Anisostichus capreolata.
Viola hirsutula.	Lobelia puberula.
Viola pedata.	Coreopsis major.
Silene rotundifolia.	Chrysopsis mariana.
Sullivantia sullivantii.	Ionactis linariifolius.
Quercus marilandica.	Eupatorium rotundifolium.
Quercus triloba.	Eupatorium aromaticum.
Azalea lutea.	
Rhododendron maximum.	
Epigaea repens. Its southern extension in Ohio.	

IV. The Miami Area is a glaciated area mainly calcareous. It is drained by the big and little Miami rivers and small tributaries of the Scioto and Ohio. The Ohio-Erie divide may be taken as its northern boundary. *Juniperus virginiana* is its only conifer with the exception of a few isolated records of hemlock, except in the eastern part where *Thuja occidentalis* occurs in isolated groups, from Franklin county southward to Adams county. The arbovitae is not known to be native of any other part of the state. *Juniperus virginiana*, which is the only conifer of general distribution in the central deciduous forest region and the prairie of the United States, is rather common especially toward the southwest. A number of southwestern plants occurring in this area are listed below.

V. The Great Black Swamp Area is a great level tract, including most of northwestern Ohio except the extreme corner. It is drained mainly by the Maumee and Sandusky Rivers. The typical black swamp is characterized by the entire absence of conifers except *Larix laricina* which occurs on its margins. Originally there were a number of edaphic prairies in this region like the "Big Spring Prairie" in Hancock, Seneca and Wyandot counties.

VI. The Williams County Area may be bounded in Ohio by the ancient Lake Erie beach, extending in a southwesterly direction. It includes also a small part of Fulton and Defiance counties. The surface is generally rolling with marshes and water-basins, often without natural drainage, presenting the usual features of moraine districts. There are a number of tamarack bogs with the accompanying vegetation. This characteristic area extends westward into Indiana and northward into Michigan and is probably the southern part of the Ann Arbor flora quite distinct from the contiguous Maumee flora.

VII. The Sandusky Bay and Lake Erie Islands Area is a distinctive region where eastern, western, and northern plants meet. In many respects it is an island where isolated species of

plants and animals are common. There are numerous peculiar plant associations on sand hills and prairies and on the lime-stone islands to the north and west of Sandusky Bay. Of interest are fields of *Opuntia* near Sandusky, the Meibomias of Margaretta Ridge, and the prairie plants south of Lakeside. *Stipa spartea* is abundant on Cedar Point and such plants as Bearberry (*Uva-ursi*) and *Prunus pumila* are represented by a few individuals. The flora of the entire region is probably strongly influenced by the climatic conditions of the Bay. A list of distinctive species is given below.

#### Northern Plants With Northern Distribution in Ohio.

<i>Botrychium simplex.</i>	<i>Beckmannia erucaeformis.</i>
<i>Botrychium neglectum.</i>	<i>Sporobolus cryptandrus.</i>
<i>Matteuccia struthiopteris.</i>	<i>Calamagrostis canadensis.</i>
<i>Equisetum variegatum.</i>	<i>Ammophila arenaria.</i>
<i>Equisetum sylvaticum.</i>	<i>Lilium philadelphicum.</i>
<i>Lycopodium obscurum.</i>	<i>Vagnera trifolia.</i>
<i>Larix laricina.</i>	<i>Juncus balticus.</i>
<i>Juniperus communis.</i>	<i>Juncus alpinus.</i>
<i>Juniperus sibirica.</i>	<i>Juncus articulatus.</i>
<i>Taxus canadensis.</i>	<i>Juncus scirpoides.</i>
<i>Sagittaria cuneata.</i>	<i>Pogonia ophioglossoides.</i>
<i>Potamogeton amplifolius.</i>	<i>Coptis trifolia.</i>
<i>Potamogeton friesii.</i>	<i>Anemone cylindrica.</i>
<i>Potamogeton robbinsii.</i>	<i>Actaea rubra.</i>
<i>Vallisneria spiralis.</i>	<i>Sarracenia purpurea.</i>
<i>Sparganium simplex.</i>	<i>Capnoides aureum.</i>
<i>Cyperus schweinitzii.</i>	<i>Arabis brachycarpa.</i>
<i>Eleocharis ovata.</i>	<i>Cakile edentula.</i>
<i>Scirpus torreyi.</i>	<i>Robertiella robertiana.</i>
<i>Carex sartwellii.</i>	<i>Chamaesyce polygonifolia.</i>
<i>Carex siccata.</i>	<i>Hibiscus moscheutos.</i>
<i>Carex setacea.</i>	<i>Hypericum kalmianum.</i>
<i>Carex diandra.</i>	<i>Hypericum ellipticum.</i>
<i>Carex disperma.</i>	<i>Hypericum boreale.</i>
<i>Carex trisperma.</i>	<i>Hypericum majus.</i>
<i>Carex straminea.</i>	<i>Hypericum canadense.</i>
<i>Carex communis.</i>	<i>Tracaulon arifolium.</i>
<i>Carex pedunculata.</i>	<i>Persicaria careyi.</i>
<i>Carex richardsonii.</i>	<i>Potentilla paradoxa.</i>
<i>Carex aurea.</i>	<i>Rubus neglectus.</i>
<i>Carex gracillima.</i>	<i>Sorbus scopulina.</i>
<i>Carex arctata.</i>	<i>Prunus pumila.</i>
<i>Carex virescens.</i>	<i>Lathyrus maritimus.</i>
<i>Carex buxbaumii.</i>	<i>Lathyrus ochroleucus.</i>
<i>Carex lacustris.</i>	<i>Lepargyrea canadensis.</i>
<i>Carex atherodes.</i>	<i>Nemopanthus mucronata.</i>
<i>Carex oederi.</i>	<i>Comptonia peregrina.</i>
<i>Carex monile.</i>	<i>Populus balsamifera.</i>
<i>Carex retrorsa.</i>	<i>Salix lucida.</i>
<i>Carex lupuliformis.</i>	<i>Salix adenophylla.</i>
<i>Panicularia grandis.</i>	<i>Salix candida.</i>
<i>Poa debilis.</i>	<i>Salix petiolaris.</i>
<i>Koeleria cristata.</i>	<i>Salix bebbiana.</i>
<i>Triplasis purpurea.</i>	<i>Salix humilis.</i>

Salix pedicellaris.  
 Ribes lacustre.  
 Chamaenerion angustifolium.  
 Epilobium adenocaulon.  
 Oenothera oakesiana.  
 Chamaedaphne calyculata.  
 Uva-ursi uva-ursi.  
 Vaccinium canadense.  
 Vaccinium atrococcum.  
 Oxycoccus macrocarpus.  
 Gentiana flavida.  
 Apocynum sibiricum.  
 Asclepias pulchra.  
 Dasystoma pedicularia.  
 Otophylla auriculata.  
 Melampyrum lineare.

Utricularia intermedia.  
 Myosotis laxa.  
 Lithospermum carolinense.  
 Aralia nudicaulis.  
 Panax trifolium.  
 Galium boreale.  
 Viburnum pubescens  
 Campanula rotundifolia.  
 Megalodonta beckii.  
 Gnaphalium decurrens.  
 Anaphalis margaritacea.  
 Antennaria neodioica.  
 Solidago hispida.  
 Solidago arguta.  
 Aster ptarmicoides.  
 Hieracium canadense

#### Northeastern and Northern Plants Having a Northeastern Distribution in Ohio.

Botrychium lanceolatum.  
 Phegopteris dryopteris.  
 Dryopteris clintoniana.  
 Dryopteris dilatata.  
 Isoetes braunii.  
 Isoetes foveolata.  
 Lycopodium inundatum.  
 Lycopodium clavatum.  
 Selaginella apus.  
 Pinus strobus.  
 Scheuchzeria palustris.  
 Potamogeton ephydrus.  
 Potamogeton praelongus.  
 Potamogeton obtusifolius.  
 Calla palustris.  
 Eriphorum viridicarinatum.  
 Carex deweyana.  
 Carex alata.  
 Carex flexuosa.  
 Carex flava.  
 Panicularia canadensis.  
 Panicularia torreyana.  
 Danthonia compressa.  
 Deschampsia flexuosa.  
 Milium effusum.  
 Panicum xanthophyllum.  
 Lilium umbellatum.  
 Trillium undulatum.  
 Clintonia borealis.  
 Xyris flexuosa.  
 Limnorchis hyperborea.  
 Lysias orbiculata.  
 Lysias hookeriana.

Ibidium strictum  
 Ibidium plantagineum.  
 Trollius laxus.  
 Aconitum noveboracense.  
 Cardamine pratensis.  
 Lechea stricta.  
 Viola rotundifolia.  
 Blitum capitatum.  
 Comarum palustre.  
 Dalibarda repens.  
 Alnus incana.  
 Grossularia oxyacanthoides.  
 Hottonia inflata.  
 Pyrola secunda.  
 Hypopitys lanuginosa.  
 Ledum groenlandicum.  
 Azalea viscosa.  
 Andromeda polifolia.  
 Chiogenes hispidula.  
 Menyanthes trifoliata.  
 Aralia hispida.  
 Conioselinum chinense.  
 Hydrocotyle americana.  
 Cynoxylon canadense.  
 Viburnum dentatum.  
 Viburnum cassinoides.  
 Viburnum alnifolium.  
 Lonicera canadensis.  
 Lonicera oblongifolia.  
 Linnaea americana.  
 Solidago squarrosa.  
 Aster phlogifolius.  
 Doellingeria infirma.

#### The Plants Having a General Distribution East and South of the State Which Should Have a Southeastern Distribution in Ohio.

Andropogon virginicus.  
 Acalypha ostryaefolia.  
 Ilex opaca.  
 Kalmia latifolia.  
 Scutellaria integrifolia.

Cunila origanoides.  
 Salvia lyrata.  
 Chrysopsis mariana.  
 Solidago erecta.



**Eastern Plants Having Mostly an Eastern Distribution in Ohio.**

<i>Asplenium pinnatifidum.</i>	<i>Chrysosplenium americanum.</i>
<i>Asplenium montanum.</i>	<i>Castanea dentata.</i>
<i>Lycopodium complanatum.</i>	<i>Betula lenta.</i>
<i>Tsuga canadensis.</i>	<i>Betula lutea.</i>
<i>Clintonia umbellulata.</i>	<i>Kneiffia pumila.</i>
<i>Cardamine rotundifolia.</i>	<i>Chimaphila maculata.</i>
<i>Dentaria diphylla.</i>	<i>Epigaea repens.</i>
<i>Linum virginianum.</i>	<i>Polycodium stamineum.</i>
<i>Viola hastata.</i>	<i>Galium pilosum.</i>
<i>Silene caroliniana.</i>	<i>Vernonia noveboracensis.</i>
<i>Rubus odoratus.</i>	<i>Hieracium paniculatum.</i>
<i>Spiraea tomentosa.</i>	<i>Hieracium venosum.</i>

**Plants Mainly South of the State and Which Should Have a Rather General Southern Distribution in Ohio.**

<i>Asplenium resiliens.</i>	<i>Aesculus octandra.</i>
<i>Woodsia obtusa.</i>	<i>Liquidambar styraciflua.</i>
<i>Pinus rigida.</i>	<i>Quercus stellata.</i>
<i>Pinus virginiana.</i>	<i>Quercus marilandica.</i>
<i>Aristida dichotoma.</i>	<i>Quercus triloba.</i>
<i>Panicum bicknellii.</i>	<i>Betula nigra.</i>
<i>Panicum implicatum.</i>	<i>Hydrangea arborescens.</i>
<i>Panicum boscii.</i>	<i>Phoradendron flavescens.</i>
<i>Manfreda virginica.</i>	<i>Oxydendrum arboreum.</i>
<i>Corallorrhiza wisteriana.</i>	<i>Diospyros virginiana.</i>
<i>Magnolia tripetala.</i>	<i>Ipomoea lacunosa.</i>
<i>Delphinium tricorne.</i>	<i>Chionanthus virginica.</i>
<i>Viorna viorna.</i>	<i>Gentiana villosa.</i>
<i>Stylophorum diphyllum.</i>	<i>Gonolobus laevis.</i>
<i>Phyllanthus carolinensis.</i>	<i>Vincetoxicum obliquum.</i>
<i>Hypericum virgatum.</i>	<i>Anisostichus capreolata.</i>
<i>Viola pedata.</i>	<i>Trichostema dichotomum.</i>
<i>Passiflora lutea.</i>	<i>Scutellaria serrata.</i>
<i>Sagina decumbens.</i>	<i>Stachys cordata.</i>
<i>Alsine pubera.</i>	<i>Aralia spinosa.</i>
<i>Silene rotundifolia.</i>	<i>Houstonia purpurea.</i>
<i>Amaranthus spinosus.</i>	<i>Viburnum scabrellum.</i>
<i>Porteranthus stipulatus.</i>	<i>Lobelia puberula.</i>
<i>Chamaecrista nictitans.</i>	<i>Lobelia leptostachys.</i>
<i>Psoralea onobrychis.</i>	<i>Coreopsis major.</i>
<i>Stylosanthes biflora.</i>	<i>Antennaria solitaria.</i>
<i>Rhamnus lanceolata.</i>	<i>Elephantopus carolinianus.</i>
<i>Rhamnus caroliniana.</i>	<i>Mesadenia reniformis.</i>
<i>Ampelopsis cordata.</i>	<i>Lactuca villosa.</i>

**Plants of the Southwestern and Western U. S. Which Should Have a Southwestern Ohio Distribution. Such a distribution is at present indicated by specimens.**

<i>Polypodium polypodioides.</i>	<i>Synthyris bullii.</i>
<i>Hordium nodosum.</i>	<i>Orobanche ludoviciana.</i>
<i>Tradescantia pilosa.</i>	<i>Phacelia bipinnatifida.</i>
<i>Ranunculus micranthus.</i>	<i>Phaethusa helianthoides.</i>
<i>Arenaria patula.</i>	<i>Boebera papposa.</i>
<i>Trifolium stoloniferum.</i>	<i>Grindelia squarrosa.</i>
<i>Lavauxia triloba.</i>	<i>Eupatorium serotinum.</i>
<i>Cuscuta indecora.</i>	

**Plants From the West Which Should Show a General Western Distribution.**

Zanthoxylum americanum.	Mesadenia tuberosa.
Gymnocladus dioica.	Lactuca floridana.
Valeriana pauciflora.	

**Plants of Distinctly Northwestern Distribution and Which Apparently Have Advanced Into Ohio From the West.**

Stipa spartea.	Viola pedatifida.
Chamaesyce serpens.	Salix glaucophylla.

**Plants Known Only From the Sandusky Bay Region, Many of Which May Have a Wider Distribution in the State.**

Botrychium simplex.	Linum sulcatum.
Juniperus sibirica.	Chamaesyce serpens.
Sagittaria cuneata.	Hypericum gymnanthum.
Potamogeton hillii.	Hypericum majus.
Potamogeton friesii.	Hypericum canadense.
Potamogeton interruptus.	Persicaria careyi.
Sparganium simplex.	Polygonum tenue.
Wolffia punctata.	Potentilla paradoxa.
Eleocharis ovata.	Prunus pumila.
Rynchospora cymosa.	Meibomia illinoensis.
Mariscus mariscoides.	Lespedeza nuttallii.
Scleria triglomerata.	Lespedeza stuvei.
Scleria pauciflora.	Ammannia coccinea.
Carex sartwellii.	Rhexia virginica.
Carex siccata.	Salix adenophylla.
Carex setacea.	Opuntia humifusa (also in Scioto County.)
Carex disperma.	Ribes lacustre.
Carex richardsonii.	Oenothera oakesiana.
Carex aurea.	Myriophyllum verticillatum.
Carex meadii.	Uva-ursi uva-ursi.
Carex crawei.	Gentiana puberula.
Carex haydeni.	Gratiola sphaerocarpa.
Carex atherodes.	Otophylla auriculata.
Carex oederi.	Houstonia angustifolia.
Melica nitens.	Galium claytoni.
Panicularia pallida.	Campanula rotundifolia.
Poa debilis.	Bidens discoides.
Koeleria cristata.	Tetaneuris herbacea.
Ammophila arenaria.	Solidago arguta.
Stipa spartea.	Aster dumosus.
Panicum agrostoides.	Aster ptarmicoides.
Panicum philadelphicum.	Vernonia fasciculata.
Lilium superbum.	Vernonia missurica.
Juncus balticus.	Artemisia caudata.
Juncus scirpoides.	Senecio pauperculus.
Capnoides aureum.	Nabalus asper.
Arabis brachycarpa.	
Linum medium.	

**Interesting Plants in the Licking, Fairfield, Hocking County Area.**

Selaginella rupestris.	Azalea lutea.
Wolffiella floridana.	Rhododendron maximum.
Poa autumnalis.	Phlox stolonifera.
Stenanthium robustum.	Phacelia dubia.
Ibidium beckii.	Utricularia minor.
Viola hirsutula.	Eupatorium rotundifolium.
Meibomia marylandica.	Eupatorium aromaticum.
Epilobium strictum.	Lactuca sagittifolia.
Hypopitys americana.	