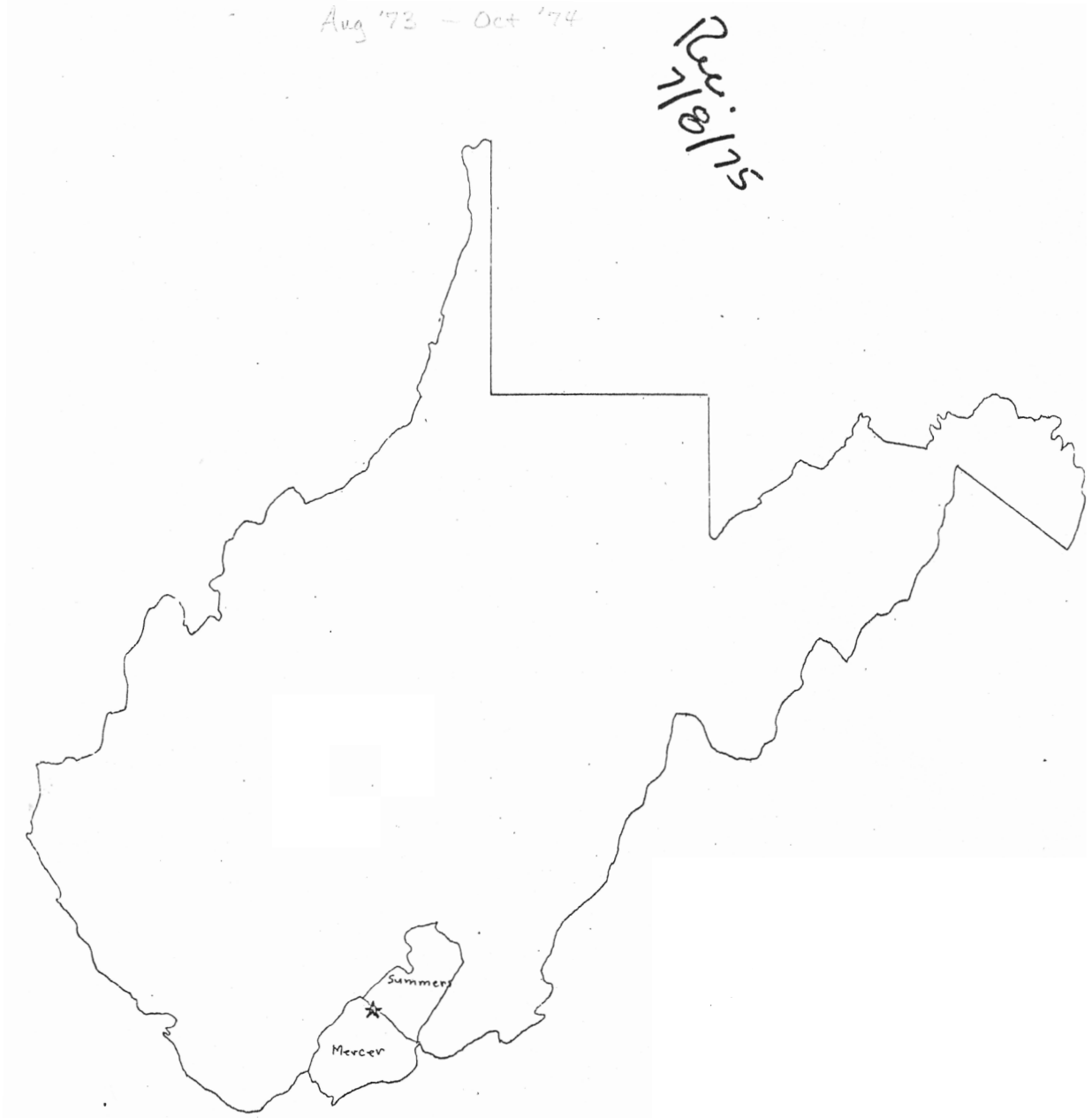


920
312813

Floristics and Vegetation of the Gorge
Region of Indian Branch

Aug '73 - Oct '74

Dr. J. L. 1/25



Edwin Oxley

1974

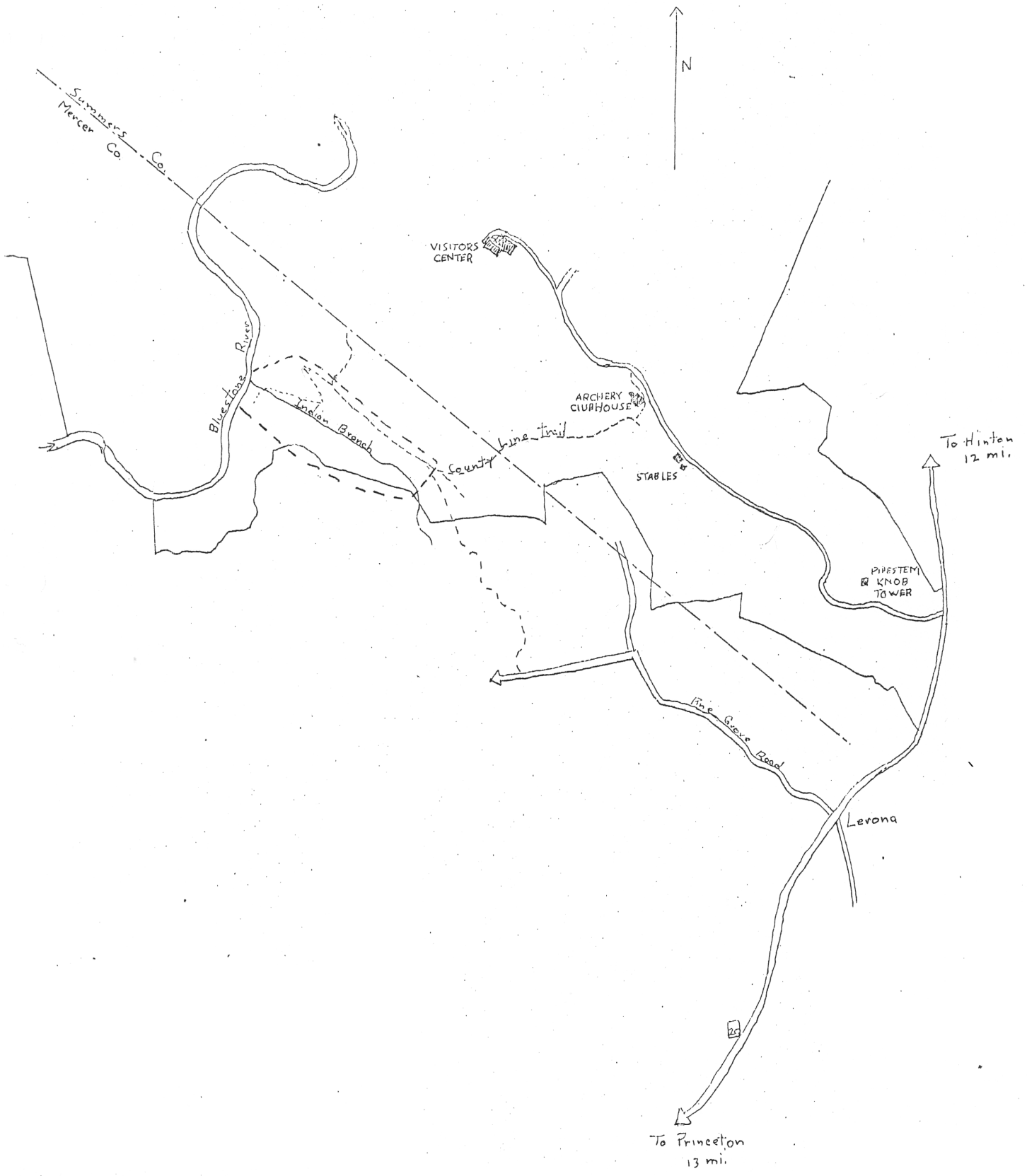
Floristics and Vegetation of the Gorge Region of Indian Branch

The gorge area of Indian Branch is an east-west oriented section of the stream that is cut through several layers of sedimentary rock. This forms a rough valley having a south facing slope and a north facing slope. This area, as in most of West Virginia, has a great number of vegetational communities. These communities are formed when several plants with a similar tolerance to an area's climate, geology and soil, form a distinct, recognizeable zone.

Location

The study area for this project is in Pipestem State Park. The park is in Summers and Mercer counties in southern West Virginia. The park can be reached by traveling north 17 miles on state route 20 from Princeton. To get to Indian Branch, drive through the park to the Nature Center and then walk down the County Line Trail. About three quarters of a mile along this trail is a sign reading, "The Falls of Indian Branch." This is the upper area of the south facing slope of the gorge region. See the accompanying map.

The gorge is about 3200 feet long and 1100 feet wide. The stream drops about 640 feet through this area and empties into the Bluestone River. There are several waterfalls ranging from 2 feet to over 60 feet in height. The elevation is 1630 feet above sea level at the Bluestone River and the elevation is 2360 feet at an arbitrary cut off line about 80 feet in elevation



above the top falls. The arbitrary cut off line was chosen because above this the valley widens so that the vegetation gets ample sun most *of* the day. The sides of the gorge have three distinct layers of exposed rock. These cliffs may be as much as 70 feet high, and some run as far as 150 yards without a break.

Geology

The formation' of this region are from the Paleozic, lower Carboniferious Mauch Chunk series. The Princeton Conglomerate is the top series of exposed rock. This layer is between 20 to 30 feet thick, and is composed of gray sandstone with quartz and limestone pebbles. The next two lower areas of exposed rock are from the Hinton Group. This is composed of red, green or varigated shales; green or gray massive or flaggy sandstone or thin sandy limestone. A few animal *fossils* are present on the shale **cliffs.**¹

Soil

The surface soil of the area is a Dekalb Loam deep phase. Dekalb Loam is derived principally from sandstone weathered in place. For this reason it is fairly retentive of moisture.

The soil is a gray to brown mellow loam about 6 inches deep, grading into a yellow compact, but very friable loam extending to a depth of 18 inches, The subsoil is a yellow friable loam, mottled with streaks of gray sand and rusty-brown silt loam and passes into the rotten sandstone at about 20 to 36 inches. The lower horizon, from 24 to 36 inches, consists of a distinct layer

of grayish-yellow loam, underlain by disintegrated but bedded sandstone. In places both soil and subsoil contain small fragments of partly decomposed sandstone and shale.²

Climate

The climatological data collected at Concord College is the closest station to the gorge and is about 10 miles to the south. The mean low average temperature between 1944 and 1969 for January, the coldest average month, is 23.6°F. The mean high average temperature for this same time span is 81.0°F in July, the hottest average month. The record low was recorded at -16°F and the record high was 96°F. The mean annual precipitation is 37.13 inches. The greatest maximum daily rainfall was 3.50 inches in June, 1949. The heaviest precipitation occurs during summer thunderstorms. There are an average of 35 thunderstorms per year. The relative humidity is highest in the early morning hours and manifests itself by the formation of ground *fog*, particularly during the summer and early fall. There are on the average 120 consecutive frost free days each year.³

Purpose

The purposes of this study are; first, by mapping the vegetational communities, to demonstrate that the zones on the north facing slope and the south facing slope are distinctively different, and secondly to demonstrate that Indian Branch has a rich and diversified array of vascular plants.

Materials and Methods

Every weekend, weather permitting, from August, 1973 to October, 1974, a trip was made through the gorge. All plants found in bloom were collected and pressed. The date, habitat, and location were noted for each specimen. All plants not identified in the field⁴ were collected and identified at Concord College.⁵ If any plant was found that was insect eaten, not in bloom a rare species, or only having one specimen in the station, the identification was made and its location recorded without taking a sample.

A line transect was run with the starting points picked at the top so that a cross section of the gorge would be as deep as possible and yet back from the mouth of the stream far enough so that the morning and evening sun would not have an effect on the types of plants found. The transect was made with 10 meter segments and all vascular plants and their overhang were recorded.

The Vegetational Communities Results

The following list of communities are the 20 basic types found in the gorge. On the maps showing the communities zones, it should be noted that at times the edge of a community can not be clearly defined. The communities zones shown were made by sight and are intended to show only the relative location and size of a community. In determining the communities, trees were mostly used. In some cases herbs, vines, and shrubs were added because of their relative importance. These communities were modeled after Cooper and Hardin, 1970.⁶

✓ River Bank - This community is a strip approximately 30 feet deep, and runs along the Bluestone River and up Indian Branch about 100 yards. This community is dominated by yellow birch (Betula alleghaniensis), river birch (Betula nigra), silky dogwood (Cornus amomum), sycamore (Platanus occidentalis), and black willow (Salix nigra). Bottomland
Moist Mixe
Hard Woods

Lower Stream Bank - This community is very much like the river bank community except that sycamore and river birch are absent. The silky dogwood is more scattered. Maples (Acer sp.) and occasionally tulip tree (Liriodendron tulipifera) and basswood (Tilia sp.) are found away from the stream edge. Moist

Middle Stream Bank - The stream gets rather rough with cascades and small falls all along this section. Basswood, silky dogwood, tulip tree and elderberry (Sambucus canadensis) are common throughout this community. Silky dogwood is found in small patches, scattered along the edge of the stream. Hemlock (Tsuga canadensis) in almost pure stands is found in a couple of places next to the stream edge on the south side. Moist
Mixe

Upper Stream Bank - In this section of the stream, the gorge becomes very narrow. There are two good size waterfalls in this section. The top falls are rough and broken with a drop of about 30 feet. The second waterfall is very clean with undercut rock, giving the water a sheer drop of about 60 feet. The gorge in this section has rockcliffs on both sides. These rockcliffs cause this section to be very damp. Ferns are

abundant especially on the south side of the stream. Basswood, witch hazel (Hamamelis virginiana), alder (Alnus serrulata), and mountain maple (Acer spicatum) are the dominate species. There is a large patch of canadian yew (Taxus canadensis) on the north facing slope below the top falls. Hemlock is also present on the north facing slope.

~~Old Field~~ - A clearly-defined type is found on the flatter areas at the top of both sides of the gorge. These fields were from farms long abandoned before the state purchased the land for the park.

On the north ridge this community is composed of species of goldenrod (Solidago sp.), blackberry (Rubus sp.), and green-brier (Smilax s. ~.). The south side of this field is overgrown with japanese honeysuckle (Lonicera japonica). Several species of hickory (Carya sp.) and maple seedlings are present. Table mountain pine (Pinus pungens) is present on the north side of the field.

On the south ridge there is only a narrow strip of a large field that is in the watershed of the gorge. The ground is more shaly on this side. Sawbrier (Smilax glauca) and black locust (Robinia pseudo-acacia) are the dominate species. Table mountain pine and scrub-pine (Pinus virginiana) are present along the edges.

Xeric Open Trail - There are two sections of this community along the trail on the south facing slope. The upper area **has** aster (Aster sp.), blackberries, redbud (Cercis canadensis), and black locust as dominant species.

The bottom area is along a shale cliff and slide area. The species are the same in this area as in the upper area with fox grape (Vitis labrusca) along the trail and pokeweed (Phytolacca americana) growing in the more open areas.

Mesic Open Trail. - This section is along the wetter areas of the trail on the south facing slope. Some of the dominant plants found here are purple-flowering raspberry (Rubus odoratus), wild black raspberry (Rubus occidentalis), blackberry, pale and spotted touch-me-not (Impatiens sp.), and grapes, Redbud, black locust and smooth sumac (Rhus glabra) are scattered along the upper sections of this community.

✓ Xeric Oak, Hickory, Mountain Laurel - This community is found along the dry areas above the top cliffs mostly on the south facing slope. White oak (Quercus alba) is the dominate species with mountain laurel (Kalmia latifolia) very common in the understory. Hickories are common throughout the community. Blueberries (Vaccinium = -) are present in large scattered patches. OAK - HICKORY

On the north facing slope, out on the point, is a small area of this community. This is the only area on this side of the gorge that is dry enough for this community to survive.

✓ Xeric Deciduous - This community is located along the flat jeep trail and above the trail going down into the gorge on the south facing slope. The dominate species are chestnut oak (Quercus prinus) and black oak (Quercus velutina). There are several species of oak and hickory present but only a few maples. The CHESTNUT

understory has blueberries, grape, flowering dogwood (Cornus florida) and serviceberry (Amelanchier sp.).

Mesic Deciduous #1 - This community is on the south facing slope, with a section along the river bottom on the south side of the stream. Red maple (Acer rubrum) and sugar maple (Acer saccharum) become as important as the hickories in their zone. There are several species of oak with chestnut oak the most common. Basswood and tulip trees are found in the wetter areas.

~~Xeric~~ Mixed - This community is the same as the xeric deciduous #1 on the south facing slope with several pines added. These pines are the pitch pine (Pinus rigida), scrub pine (Pinus virginiana), and white pine (Pinus strobus). DUNE

Mesic Mixed #3 - This community is along the top of the shale cliffs that are adjacent to the trail on the south facing slope. The community is the same on the mesic deciduous #1 with the addition of white pine. This is the only area in the gorge that has mature red cedar (Juniperus virginiana). MIXED MESOPHY

✓ Mesic Mixed #4 - This community is located along an area of exposed rock on the south facing slope that has a permanent seep. The community is like mesic deciduous #1 with a heavy growth of hemlock added. HEMLOCK HARDWOODS

Mesic Deciduous #2 - The north facing slope is the more moist and shady side of the gorge. This community ranges from the top of the study area down to the stream communities all along

this side. It may have pockets of other communities in it or will be associated with other communities. The main difference with this community and the mesic deciduous #1 is the understory. Striped maple (Acer pensylvanicum) and dutchman's pipe vine (Aristolochia durior) are found in abundance on this side.

✓ Mesic Mixed #1 - This is one of the major communities on the north facing slope. It is composed of mesic deciduous #2 and hemlock. The areas where this community is found are above and below the wetter rock cliffs and seeps. HE
HAK

✓ Mesic Mixed #2 - The location of this community is at the upper limits of the study area on the north facing slope. This is a mixture of mesic deciduous #2 and white pine. WHITE
D7

Rhododendron - The main rhododendron (Rhododendron maximum) thickets are found on the north facing slope **along** and above the top of the cliffs at the top of the gorge. Above the top' waterfall these thickets are present along the stream on the north facing slope.

✓ Hemlock - The hemlock communities are found on top of the wet cliffs and along the stream on the north facing slope. HEMLOCK

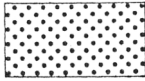
Rhododendron and Hemlock - This community is found on the north facing slope above the rhododendron thicket and in a small zone along the south side of the stream about 50 yards from the river. The rhododendron is much thinner in the community than when growing by itself.

Pine - There is only a small patch of pure pine in the gorge
and is located out near the point on the north facing slope. *ps. 21*

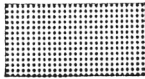
This zone has table mountain pine, pitch pine and scrub pine
in it.

The Keys of Vegetation Types
used on maps 1 & 2

River Bank



Lower Stream Bank



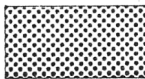
Middle Stream Bank



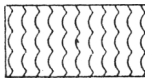
Upper Stream Bank



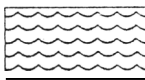
Old Field



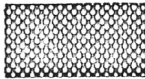
Xeric Open Trail



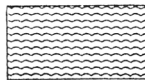
Mesic Open Trail



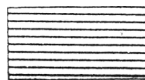
Xeric Oak-Hickory-Mountain Laurel



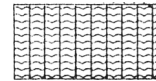
Xeric Deciduous



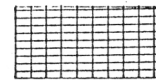
Mesic Deciduous #1



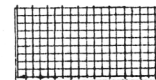
Xeric Mixed



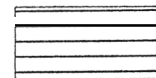
Mesic Mixed #3



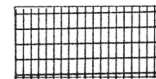
✓ Mesic Mixed #4



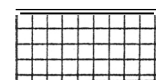
Mesic Deciduous #2



Mesic Mixed #1



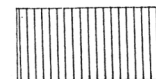
Mesic Mixed #2



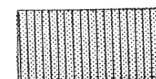
Rhododendron



Hemlock



Rhododendron & Hemlock



Pine



Indian Branch
Vegetational Communities Map #1



10. an branch
Vegetational Communities Map #2



Species Collection Results

The total number of plants found in the gorge was **332**.

There were 210 genera in 75 families.

The following is a list of the species found in the gorge. The list is in the sequence as found in Gray's Manual of Botany by M. L. Fernald.⁷ The number after each listing corresponds with a number on either map #3 or #4 which follows the list. The numbers are to show where each species was found. An "*" has been placed after the number to designate that the plant was identified but not collected.

Species List

Lycopodiaceae	
<u>Lycopodium lucidulum</u> , Michx, Shining Clubmoss	1
<u>Lycopodium tristachyum</u> , Pursh, Ground Pine	2
Selaginellaceae	
<u>Selaginella apoda</u> (L.) Fern, Meadow Spikemoss	3
Ophioglossaceae	
<u>Botrychium virginianum</u> (L.) Sw., Rattlesnake Fern	4
Polypodiaceae	
<u>Cystopteris bulbifera</u> (L.) Bernh, Bulblet Fern	5
<u>Onoclea sensibilis</u> L., Sensitive Fern	6
<u>Dryopteris spinulosa</u> (O. F. Muell) Watt, Spinulose Wood-	7
Fern	
<u>Dryopteris goldiana</u> (Hook) Gray, Goldie's Fern	8
<u>Dryopteris marginalis</u> (L.) Gray, Marginal Wood-Fern	9
<u>Polystichum acrostichoides</u> (Michx) Schott, Christmas Fern	10
<u>Athyrium pycnocarpon</u> (Spreng) Tidestr., Narrow-Leaved	11
Spleenwort	
<u>Athyrium thelypteroides</u> (Michx) Desv., Silvery Spleenwort	12
<u>Camptosorus rhizophyllus</u> (L.) Link, Walking Fern	13
<u>Asplenium resiliens</u> , Kunze, Black-Stem Spleenwort	14
<u>Asplenium trichomanes</u> L., Maidenhair Spleenwort	15

Is this for real?



<u>Asplenium platyneuron</u> (L.) Oakes, Ebony Spleenwort	16
<u>Pellaea atropurpurea</u> (L.) Link, Purple Cliff-Brake	17
<u>Cheilanthes tomentosa</u> , Link, Woolly-Lip Fern	18
<u>Adiantum pedatum</u> L., Maidenhair Fern	19
<u>Polypodium virginianum</u> L., Rook Cap Fern	20
<u>Polypodium virginianum</u> forma acuminatum (Gilbert)-Fern, Rock Cap Fern	21
Taxaceae	
<u>Taxus canadensis</u> , Marsh, American Yew	22
Pinaceae	
<u>Tsuga canadensis</u> (L.), Carr, Canaden Hemlock	23*
<u>Pinus strobus</u> L., White Pine	24*
<u>Pinus virginiana</u> , Mill, Scrub Pine	25*
<u>Pinus rigida</u> , Mill, Pitch Pine	26*
<u>Pinus pungens</u> , Lamb, Table-Mountain Pine	27*
<u>Juniperus virginiana</u> L., Red Cedar	28
Typhaceae	
<u>Typha latifolia</u> L., Common Cat-Tail	29*
Cyperaceae	
<u>Scirpus heterochaetus</u> , Chase, Slender Bullrush	30
Araceae	
<u>Arisaema atrorubens</u> (Ait) Blume, Jack in the Pulpit	31
Liliaceae	
<u>Uvularia perfoliata</u> L., Perfoliate Bellwort	32
<u>Uvularia sessilifolia</u> L., Wild Oats	33
<u>Allium cernuum</u> , Roth, Wild Onion	34
<u>Erythronium americanum</u> , Ker, Trout-Lily	35
<u>Clintonia umbellulata</u> (Michx), Morong, Speckled Wood Lily	36
<u>Smilacina racemosa</u> (L.) Desf, False Solomon's Seal	37
<u>Maianthemum canadense</u> , Desf, Wild Lily-of-the-Valley	38
<u>Disporum lanuginosum</u> (Michx) Nicholson, Yellow Mandarin	39
<u>Polygonatum biflorum</u> (Walt) Ell, Solomon's Seal	40
<u>Convallaria majalis</u> L., Lily-of-the-Valley	41
<u>Trillium erectum</u> L., Purple Trillium	42
<u>Trillium grandiflorum</u> (Michx) Salisb, Large White Trillium	43
<u>Smilax rotundifolia</u> L., Common Greenbrier	44
<u>Smilax glauca</u> , Walt, Sawbrier	45*
Dioscoreaceae	
<u>Dioscorea quaternate</u> (Walt) J F G mel, Wild Yam	46
Orchidaceae	
<u>Cypripedium arietinum</u> var. <u>parviflorum</u> (Salisb) Fern, Small Yellow-Ladies-Slipper	47*
<u>Cypripedium acaule</u> Ait., Common Ladies slipper	48*
<u>Spiranthes lacera</u> Raf, Northern Slender Ladies Tresses	49
<u>Spiranthes cernua</u> (L.) Richard, Nodding Ladies Tresses	50

<u>Goodyera repens</u> (L.) R.Br., Dwarf Rattlesnake-Plantain	51*
<u>Goodyera pubescens</u> (Wild) R.Br., Downy Rattlesnake Plantain	52*
<u>Aplectrum hyemale</u> (Muhl) Torr, Putty-Root	53*
Salicaceae	
<u>Salix nigra</u> , Marsh, Black Willow	54*
Juglandaceae	
<u>Juglans nigra</u> L., Black Walnut	55*
<u>Carya cordiformis</u> , Wang, Bitternut Hickory	56*
<u>Carya ovata</u> (Mill) K. Koch, Shagbark Hickory	57*
<u>Carya tomentosa</u> , Nutt, Mockernut Hickory	58
<u>Carya glabra</u> (Mill) Sweet, Pignut Hickory	59*
Corylaceae	
<u>Corylus americana</u> , Walt, American Hazelnut	60*
<u>Ostrya virginiana</u> (Mill) K. Koch, Hop-Hornbeam	61*
<u>Carpinus caroliniana</u> , Walt, Ironwood	62*
<u>Betula lenta</u> L., Black Birch	63*
<u>Betula alleghaniensis</u> , Britt, Yellow Birch	64*
<u>Betula nigra</u> L., River Birch	65*
<u>Alnus serrulata</u> (Ait) Willd, common Alder	66*
Fagaceae	
<u>Fagus grandifolia</u> , Ehrh, American Beech	67*
<u>Castanea dentata</u> (Marsh) Borkh, A. Chestnut	68*
<u>Quercus alba</u> L., White Oak	69
<u>Quercus stellata</u> , Wang, Post Oak	70*
<u>Quercus prinus</u> L., Chestnut Oak	71
<u>Quercus ruba</u> L., Red Oak	72*
<u>Quercus palustris</u> , Muenchh, Pin Oak	73*
<u>Quercus coccinea</u> , Muenchh, Scarlet Oak	74*
<u>Quercus velutina</u> , Lam, Black Oak	75
Ulmaceae	
<u>Ulmus rubra</u> , Muhl, Slippery Elm	76*
<u>Ulmus americana</u> L., American Elm	77*
Moraceae	
<u>Morus rubra</u> L., Red Mulberry	78
Urticaceae	
<u>Urtica gracilis</u> Ait, Slender Nettle	79
<u>Urtica dioica</u> L., Stinging Nettle	80
<u>Boehmeria cylindrica</u> (L.) Sw., False Nettle	81
Santalaceae	
<u>Pyrularia pubera</u> , Michx, Buffalo Nut	82
Aristolochiaceae	
<u>Asarum virginicum</u> L., Heartleaf Ginger	83
<u>Aristolochia durior</u> , Hill, Dutchman's-pipe Vine	84

Polygonaceae	
<u>Rumex crispus</u> L., Yellow Dock	85*
<u>Rumex obtusifolius</u> L., Bitter Dock	86*
<u>Rumex acetosella</u> L., Sheep Sorrel	87
<u>Tovara virginiana</u> (L.) Rof, Virginia Knotweed	88*
<u>Polygonum persicaria</u> L., Lady's Thumb	89*
<u>Polygonum sagittatum</u> L., Arrow-Leaved Tearthumb	90*
<u>Polygonum scandens</u> L., Climbing False Buckwheat	91*
Phytolaccaceae	
<u>Phytolacca americana</u> L., Pokeweed	92
Portulacaceae	
<u>Claytonia caroliniana</u> , Michx, Carolina Spring Beauty	93
Caryophyllaceae	
<u>Stellaria pubera</u> , Michx, Star Chickweed	94
<u>Cerastium arvense</u> L., Field Mouse-Ear Chickweed	95
<u>Silene cucubalus</u> , Wibel, Bladder Campion	96
<u>Silene caroliniana</u> var. <u>pensylvanica</u> (Michx) Fern, Wild Pink	97
<u>Silene virginica</u> L., Fire Pink	98
<u>Dianthus armeria</u> L., Deptford Pink	99
Ranunculaceae	
<u>Ranunculus sceleratus</u> L., Cursed Crowfoot	100
<u>Ranunculus allegheniensis</u> , Britt	101
<u>Ranunculus recurvatus</u> , Poir	102
<u>Ranunculus hispidus</u> , Michx, Buttercup	103
<u>Thalictrum polygamum</u> , Muhl, Tall Meadow Rue	104
<u>Anemonella thalictroides</u> (L.), Spach, Rue Anemone	105
<u>Hepatica acutiloba</u> DC, Sharp-Lobed Hepatic	106
<u>Anemone quinquefolia</u> L., Wood Anemone	107
<u>Clematis virginiana</u> L., Virgin's Bower	108*
<u>Aquilegia canadensis</u> L., Wild Columbine	109
<u>Actaea pachypoda</u> , Ell, White Baneberry	110
✓ <u>Hydrastis canadensis</u> L., Golden Seal	111"
Berberidaceae	
<u>Caulophyllum thalictroides</u> (L.) Michx, Blue Cohosh	112*
<u>Podophyllum peltatum</u> L., May apple	113
<u>Berberis canadensis</u> , Mill, American Barberry	114
Magnoliaceae	
<u>Magnolia acuminata</u> L., Cucumber Tree	115
<u>Liriodendron tulipifera</u> L., Tulip Tree	116
Lauraceae	
<u>Sassafras albidum</u> (Nutt) Nees, Sassafras	117
<u>Lindera benzoin</u> (L.) Blume, Spicebush	118

Papavevaceae	
<u>Sanguinaria canadensis</u> L., Blood Root	119
<u>Dicentra cucullaria</u> (L.) Bernh, Dutchman's Breeches	120
<u>Dicentra canadensis</u> (Goldie) Walp, Squirrel Corn	121
Cruciferae	
<u>Draba ramosissima</u> Desv., Branched Mustard	122
<u>Brassica rapa</u> L., Bird's Rape	123
<u>Brassica napus</u> L., Turnip	124
<u>Erucastrum gallicum</u> (Wild) O F Schulz, French Mustard	125
<u>Alliaria officinalis</u> , Andrz, Garlic-Mustard	126
<u>Nasturtium officinale</u> , R.Br., True Water Cress	127
<u>Barbarea vulgaris</u> B., Common Winter Cress	128
<u>Barbarea verna</u> (Mill) hschers, Early Winter Cress	129
<u>Dentaria diphylla</u> , Michx, Pepperroot	130
<u>Dentaria laciniata</u> , Muhl	131
<u>Dentaria heterophylla</u> , Nutt	132
<u>Cardamine bulbosa</u> (Schreb) B S P, Spring Cress	133
<u>Cardamine pensylvanica</u> , Muht, Bitter Cress	134
<u>Arabis laevigata</u> (Muhl) Poir, Smooth R'ockcress	135
Crassulaceae	
<u>Sedum ternatum</u> , Michx, Stonecrop	136
Saxifragaceae	
<u>Saxifraga virginensis</u> , Michx, Early Saxifrage	137
<u>Tiarella cordifolia</u> L., Foam Flower	138
<u>Heuchera americana</u> L., Rock Geranium	139
<u>Mitella diphylla</u> L., Coolwort	140
<u>Hydrangea arborescens</u> L., Wild Hydrangea	141
<u>Ribes cynosbati</u> L., Pasture Gooseberries	142
Hamamelidaceae	
<u>Hamamelis virginiana</u> L., Witch Hazel	143
Plantanaceae	
<u>Platanus occidentalis</u> L., Sycamore	144*
Rosaceae	
<u>Physocarpus opulifolius</u> (L.) Maxim, Ninebark	145*
<u>Aruncus diocus</u> (Walt) Fern, Goats Beard	146
<u>Gillenia trifoliata</u> (L.) Moenoh, Bowman's Root	147
<u>Amelanchier arborea</u> (Michx. f.) Fern, Common Serviceberry	148
<u>Amelanchier laevis</u> , Wieg, Smooth Serviceberry	149*
<u>Crataegus padifolia</u> , Sarg, Cherry Leaved Hawthorn	150
<u>Fragaria virginiana</u> , Duchesne, Strawberry	151
<u>Waldsteinia fragarioides</u> (Michx) Tatt, Barren Strawberry	152*
<u>Potentilla simplex</u> , Michx, Old Field Cinquefoil	153
<u>Rubus odoratus</u> L., Purple Flowering Raspberry	154
<u>Rubus phoenicolasius</u> , Maxim, Wineberry	155*
<u>Rubus occidentalis</u> L., Black Raspberry	156
<u>Rubus flagellaris</u> , Willd, Dewberry	157*
<u>Rubus allegheniensis</u> , Porter, Sow-Teat Blackberry	158
<u>Rosa multiflora</u> , Thunb, Multiflora Rose	159
<u>Rosa carolina</u> L., Pasture Rose	160

<u>Prunus persica</u> (L.) Batsch, Peach	161*
<u>Prunus americana</u> , Marsh, Wild Plum	162
<u>Prunus serotina</u> , Ehrh, Black Wild Cherry	163
Leguminosae	
<u>Cercis canadensis</u> L., Redbud	164
<u>Trifolium pratense</u> L., Red Clover	165
<u>Trifolium repens</u> L., White Clover	167
<u>Trifolium procumbens</u> L., Low Hop Clover	168
<u>Melilotus alba</u> , Desr, White Sweet Clover	169
<u>Robinia pseudo-acacia</u> L., Black Locust	170*
<u>Desmodium canadensis</u> (L.) D C, Tick Trefoil	171
<u>Desmodium glabellum</u> (Michx) D C, Smooth Tick Trefoil	172
<u>Lespedeza intermedia</u> (S. Wats.) Britt, Bush Clover	173
<u>Vicia caroliniana</u> , Walt, Wood Vetch	174
<u>Vicia villosa</u> , Roth, Hairy Vetch	175
Oxalidaceae	
<u>Oxalis montana</u> , Raf, Common Wood-Sorrel	176
Geraniaceae	
<u>Geranium maculatum</u> L., Spotted Cranesbill	177
Polygalaceae	
<u>Polygala paucifolia</u> , Willd, Fringed Polygala	178
<u>Polygala senega</u> L., Seneca Snakeroot	179*
Anacardiaceae	
<u>Rhus typhina</u> L., Staghorn Sumac	180
<u>Rhus glabra</u> L., Smooth Sumac	181
<u>Rhus radicans</u> L., Poison Ivy	182
Aquifoliaceae	
<u>Ilex opaca</u> , Ait, American Holly	183*
Celastraceae	
<u>Celastrus scandens</u> L., Climbing Bittersweet	184*
Aceraceae	
<u>Acer spicatum</u> , Lam, Mountain Maple	185
<u>Acer pensylvanicum</u> L., Striped Maple	186
<u>Acer saccharum</u> , Marsh, Sugar Maple	187
<u>Acer rubrum</u> L., Red Maple	188*
<u>Acer negundo</u> L., Box-Elder	189*
Hippocastanaceae	
<u>Aesculus octandra</u> , Marsh, Sweet Buckeye	190
Balsaminaceae	
<u>Impatiens pallida</u> , Nutt, Pale Touch-me-Not	191
<u>Impatiens capensis</u> , Meerh, Spotted Touch-me-Not	192

Pyrolaceae	
<u>Chimaphila maculata</u> (L.) Pursh, Spotted Vintergreen	221
<u>Chimaphila umbellata</u> (L.) Bart, Pipsisewa	222
<u>Monotropa uniflora</u> L., Indian-Pipe	223
Ericaceae	
<u>Rhododendron maximum</u> L., Great Rhododendron	224
<u>Rhododendron calendulaceum</u> (Michx) Torr, Flame Azalea	225"
<u>Rhododendron nudiflorum</u> (L.) Torr, Pine Honeysuckle	226*
<u>Rhododendron roseum</u> (Loisel) Rehol, Early Azalea	227*
<u>Menziesia pilosa</u> (Michx) Juss, Minnie-Bush	228
<u>Kalmia latifolia</u> L., Mountain Laurel	229
<u>Oxydendrum arboreum</u> (L.) D C, Sourwood	230*
<u>Epigaea repens</u> L., Trailing Arbutus	231
<u>Vaccinium stamineum</u> L., Deerberry	232
<u>Vaccinium vacillans</u> , Torr, Early Low Blueberry	233
<u>Gaultheria procumbens</u> L., Teaberry	234
Diapensiaceae	
<u>Galax aphylla</u> L., Galax	235*
Primulaceae	
 <u>Lysimachia tonsa</u> , Wood, Loosestrife	236
Oleaceae	
<u>Fraxinus americana</u> L., White Ash	237*
<u>Chionanthus virginicus</u> L., Fringe-Tree	238
Gentianaceae	
<u>Gentiana quinquefolia</u> L., Stiff Gentian	139*
Asclepidaceae	
<u>Asclepias tuberosa</u> L., Butterfly Weed	240
<u>Asclepias incarnata</u> L., Swamp Milkweed	241
<u>Asclepias quadrifolia</u> , Jacq, Pour-Leaved Milkweed	242
<u>Asclepias syriaca</u> L., Common Milkweed	243
Polemoniaceae	
<u>Phlox subulata</u> L., Mountain Phlox	244
<u>Phlox stolonifera</u> , Sims, Creeping Phlox	245
<u>Phlox paniculata</u> L., Fall Phlox	246
Hydrophyllaceae	
<u>Hydrophyllum virginianum</u> L., Virginia Waterleaf	247
Labiatae	
<u>Scutellaria serrata</u> , Andr, Showy Skullcap	248
<u>Scutellaria nervosa</u> , Pursh	249
? <u>Scutellaria leonardi</u> (Epling) Fern	250
<u>Meehania cordata</u> , Nutt, Britt	251
<u>Prunella vulgaris</u> L., Heal-All	252
<u>Monarda fistulosa</u> L., Wild Bergamot	253
<u>Monarda punctata</u> L., Horsemint	254

<u>Satureja vulgaris</u> (L.) Fritsch, Wild Basil	255
<u>Cunila origanoides</u> (L.) Britt, Common Dittany,	256
<u>Collinsonia canadensis</u> L., Richweed	257

Solanaceae

<u>Solanum carolinense</u> L., Horse Nettle	258*
<u>Physalis heterophylla</u> , Nees, Common Ground Cherry	259*
<u>Datura stramonium</u> L., Jimsonweed	260*

Scrophulariaceae

<u>Verbascum thapsus</u> L., Common Mullen	261
<u>Verbascum blattaria</u> L., Math Mullen	262
<u>Chelone glabra</u> L., Turtlehead	263
<u>Veronica americana</u> (Raf) Schwein, A Brooklime	264
<u>Veronica serpyllifolia</u> L., Thyme-leaved speedwell	265
<u>Veronica officinalis</u> L., Common Speedwell	266
<u>Pedicularis canadensis</u> L., Wood-Betony	267

Orobanchaceae

<u>Epifagus virginiana</u> (L.) Bart, Beech Drops	268*
<u>Conopholis americana</u> (L.) Wallr, Squawroot	269
<u>Orobanche uniflora</u> L., One-Flowered Cancer Root	270

Plantaginaceae

<u>Plantago lanceolata</u> L., English Plantain	271
---	-----

Rubiaceae

<u>Galium aparine</u> L., Cleavers	272
<u>Mitchella repens</u> L., Partridge Berry	273*
<u>Houstonia caerulea</u> L., Bluets	274
<u>Houstonia tenuifolia</u> , Nutt	275

Caprifoliaceae

<u>Lonicera canadensis</u> , Bartr, Fly Honeysuckle	276
<u>Lonicera japonica</u> , Thunb, Japanese Honeysuckle	277
<u>Lonicera dioica</u> L., Smooth Honeysuckle	278*
<u>Viburnum prunifolium</u> L., Smooth Blackhaw	279*
✓ <u>Viburnum dentatum</u> L., Southern Arrowwood	280*
<u>Viburnum acerifolium</u> L., Maple-Leaved Viburnum	281
<u>Sambucus canadensis</u> L., Common Elderberry	282
<u>Sambucus pubens</u> , Michx, Real Elderberry	283

Campanulaceae

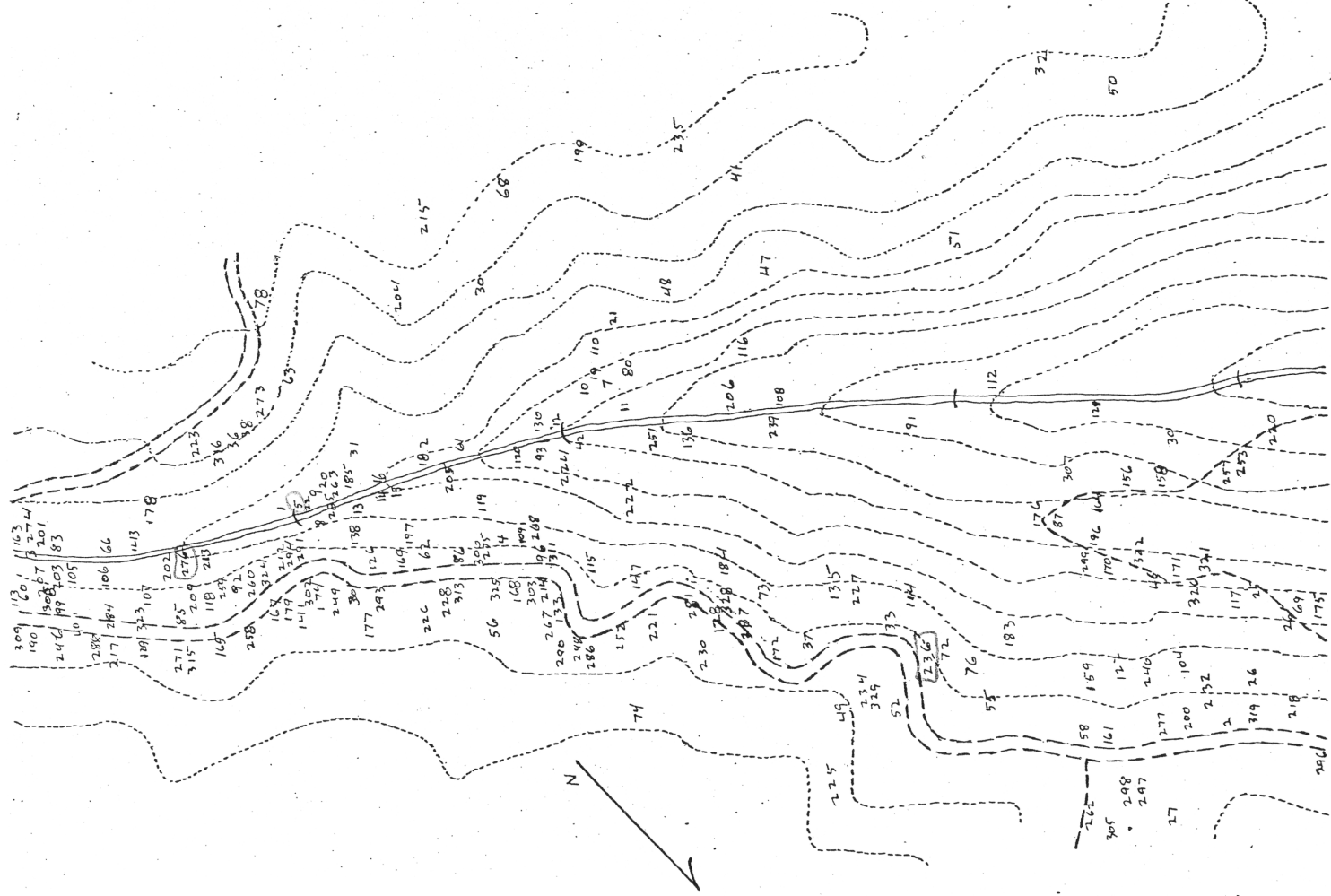
<u>Campanula divaricata</u> , Michx, Southern Harebell	284
<u>Lobelia cardinalis</u> L., Cardinal Flower	285
<u>Lobelia siphilitica</u> L., Great Lobelia	286
<u>Lobelia inflata</u> L., Indian Tobacco	287

Compositae

<u>Vernonia noveboracensis</u> (L.) Michx, N Y Ironweed	288
<u>Eupatorium fistulosum</u> , Barratt, Hollow Joe-Pye-Weed	289
<u>Eupatorium perfoliatum</u> L., Thoroughwort	290
<u>Eupatorium rugosum</u> , Houtt, White Snakeroot	291
<u>Chrysopsis mariana</u> (L.) Ell, Maryland Golden Aster	292

<u>Solidago caesia</u> L., Blue-Stem Goldenrod	293
<u>Solidago bicolor</u> L., White Goldenrod	294
<u>Solidago nemoralis</u> , Ait, Wood Goldenrod	295
<u>Solidago ulmifolia</u> , Muhl, Elm Leaved Goldenrod	296
<u>Solidago altissima</u> L., Tall Goldenrod	297
<u>Solidago gigantea</u> , Ait, Late Goldenrod	298
<u>Aster divaricatus</u> L.	299
<u>Aster prenanthoides</u> , Muhl	300
<u>Aster dumosus</u> L.	301
<u>Erigeron pulchellus</u> , Michx, Robin's Plantain	302
<u>Antennaria plantaginifolia</u> (L.) Hook, Plantain-Leaved	303
Pussvtoes	
<u>Anaphalis margaritacea</u> (L.) C. B. Clark, Pearly Everlasting	304
<u>Ambrosia trifida</u> L., Great Ragweed	305
<u>Ambrosia artemisiifolia</u> L., Common Ragweed	306
<u>Rudbeckia laciniata</u> L., Greenheaded Coneflower	307
<u>Rudbeckia hirta</u> L.	308
<u>Helianthus divaricatus</u> L.	309
→ <u>Helianthus laevigatus</u> , T & G	310
<u>Cereopsis major</u> , Walt, Large Tickseed	311
<u>Bidens frondosa</u> L., Beggar Ticks	312*
<u>Bidens bipinnata</u> L., Spanish Needles	313
<u>Helenium autumnale</u> L., Sneezeweed	314
<u>Achillea millefolium</u> L., Yarrow	315
<u>Tussilago farfara</u> L., Coltsfoot	316
<u>Cacalia suaveolens</u> L., Pale Indian Plantain	317
a <u>Senecio robbinsii</u> , Oakes, Robbins Ragwort <u>S. aureus</u> ??	318
¹ <u>Senecio aureus</u> L., Golden Ragwort	319
<u>Arctium lappa</u> L., Great Burdock	320
<u>Cirsium altissimum</u> (L.) Spreng, Tall Thistle	321
<u>Centaurea maculosa</u> , Lam, Spotted Starthistle	322
<u>Circhorium intybus</u> L., Chicory	323
<u>Taraxacum officinale</u> , Weber, Dandelion	324
<u>Lactuca floridana</u> (L.) Gaertn, Blue Lettuce	325
<u>Prenanthes alba</u> L., White Lettuce	326
<u>Prenanthes serpentaria</u> , Pursh, Gall-of-the-Earth	327
<u>Hieracium floribundum</u> , Wimm & Grab, Smooth Hawkweed	328
<u>Hieracium venosum</u> L., Poor Robin's Plantain	329
<u>Hieracium gronovii</u> L., Hairy Hawkweed	330

Ingram Blanch
Species Collection
Map #3



Topographic map showing contour lines and elevation data. The map includes a straight line labeled "Line, Transit + N.E.S." and a dashed line. The river is labeled "Blue Stone River". Numerical values are scattered across the map, including 101, 127, 132, 149, 153, 155, 157, 160, 172, 186, 187, 188, 193, 194, 195, 197, 198, 208, 210, 211, 212, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354. A north arrow is located in the bottom left corner.

Line Transect Results

The ecological data on Chart #1 was gathered on November 9 with the help of the Hinton High School Ecology Club. By using several people, simultaneous readings of the temperatures were collected. The depth of the litter and humus were also recorded.

In the next series of charts, all of the plants found along the line transect have been listed according to their classification as either a tree, tree seedlings, herb, vine, shrub, or fern. The spot designates the presence of a plant in a segment. If the spot is hollow it designates the plant as being dominate in that segment.

Chart #1

NFS 1 NFS 6 NFS 11 NFS 12 NFS 22 SFS 16 SFS 11 SFS 2 SFS 1

Temp surface level °C 12 0 15 12 4 11 8 9 8 0 9 5 18 2 13 5 12 0

Temp ground level °C 11 5 10 11 7 10 9 8 9 0 9 0 20 14 5 13 0

Temp. soil (4 cm) °C 11.0 9 8 5 8 8 13 7 0 10 75 14 5 15 5 12 0

Depth of litter (cm) 6.0 7.5 7.5 8.8 20.5 8.0 6.0 6.0 4.0 3.0

Depth of humus (cm) 3 2 7 5 13 5 20 2 25 5 1 5 1 0 3 5 4 0 4 0

N F S

S E S

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Trees

Ash, White
 Basswood sp.
 Birch, American
 Birch, Black
 Buckeye, Sweet
 Cherry, Wild Black
 Dogwood, Flowering
 Elm, American
 Gum, Black
 Hawthorn sp.
 Hemlock, Eastern
 Hickory, Mockernut
 Hickory, Shagbark
 Hickory, Smooth
 Locust, Black
 Magnolia, Southern
 Maple, Red
 Maple, Striped
 Maple, Sugar
 Oak, Black
 Oak, Chestnut
 Oak, Pin
 Oak, Red
 Oak, White
 Pine, White
 Plum, Wild
 Redbud
 Sassafras sp.
 Sycamore, Striped
 Tulip Tree

[illegible]

[illegible]

[illegible]

Discussion

By choosing carefully the criteria for a set of vegetational communities, definite zones can be seen. The zones are different⁺ on the north facing slope and the south facing slope. The cause of this appears to be the amount of direct sunlight and moisture these communities receive.

The north facing slope with its shade and moisture has a large number of ferns and mosses. The moisture dependent plants like hemlock, striped maple and dutchman's pipe vine are present. None of these plants are found on the south facing slope with any regularity.

The south facing slope receives direct sunlight most of the day. This side is much drier as a result and the plants growing here are of the type that grow best under these conditions. Some of the plants that are found in abundance on this side are white oak, mountain laurel; goldenrods, asters, and sourwood.

Bibliography

1. Riger, D. B., Price, P. H., and White, I. C., West Virginia Geological Survey, County Reports, 1926, Mercer, Monroe and Summers Counties, Wheeling News **Litho.** Co., 1926.
 2. Goke, H. W., U.S. Dept. of Agriculture, Bureau of Chemistry and Soil, Soil Survey Mercer County, WV, U.S. Government Printing Office, 1928.
 3. Hill, R. T., Associate Professor of Geography, Concord College, Athens, WV; Personal communication on climatological data.
 4. Cobb, B., A Field Guide to the Ferns, Houghton Mifflin Co., 1963.

Peterson, R. T. and McKenny, M. A., A Field Guide to Wildflowers, Houghton Mifflin Co., 1968.

Petrides, G. H., A Field Guide to the *Trees* and Shrubs, second edition, Houghton Mifflin Co., 1972.
 5. Gleason, H. A., The New Britton and Brown Illustrated Flora of the Northeastern **U.S.** and Adjacent Canada, Vol. 1, 2, 3, Hofner Publishing Co., 1963.

Strausbaugh, P. D., and Core, E. L., Flora of West Virginia Vol. IV first edition, Vol. I, 11, III second edition, West Virginia University, 1968-1973.
 6. Cooper, A. W. and Hardin, J. W., 1970, Floristics and Vegetation of the Gorges on the Southern Blue Ridge escarpment in Holt, P. C. ed., 1970. The distributional history
-

of the biota of Southern Appalachian Part 11; Flora, Blacks-
burg, VA, Virginia Polytechnic Institute, **Res.** Div. Manager
2.

7. Fernald, M. L., Grays Manual of Botany, eighth edition,
American Book Co., 1950.