

INVESTIGATOR'S ANNUAL REPORT
(Natural Sciences Research)

This form is to be completed by the researcher and returned to the Superintendent of the Park by JANUARY 1. See reverse for additional instructions.

TO SUPERINTENDENT	PARK BOWA <i>Booker T Washington NM</i>	REGION MAR
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1. Project Title

Flora Survey

2. Name(s) of Researcher(s) and Institution(s)

VA Western Community College and

Blue Ridge Chapter, VA Wildflower Preservation Society

3. Source(s) and Amount(s) of Funds Other Than NPS, if Any

V.I.P.

4. Starting Date of Project <i>March 29, 1986</i>	5. Percent Completion of Project to Date: <i>60</i>	6. Est. Additional Time Required for Completion Beyond January 1st: <i>2</i> Years <i>0</i> Months
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7. Summary: (a) of progress; (b) of significant findings, if any, to date; (c) recommendations regarding future course, i.e., on basis of work so far, should it proceed as planned, be reoriented, expanded, reduced, time schedule and support level adjusted, etc.;

There were two main activities associated with this survey. One involved simply a listing of the species of plants observed in the Park. I would point out that this is not a complete list of the plants to be found there. Additional field trips need to be taken in other times of the growing season. Our group made two trips - one on March 29, 1986 and the other on May 20, 1986. The walks were near the Jack-O-Lantern Branch and Trail, Gill's Creek and the forested area near the pole building. Plants observed and listed on the first trip were mainly woody or the identifiable remains from plants of the previous growing season.

The second activity involved a transect along a predetermined compass line. We used the quarter-point method of sampling the trees in the forest. Only trees with a DBH of 4 inches or greater were measured and included in the results. The data collected was then worked up and the results are shown in the table in this paper.

(Use Additional Sheets if Necessary)

8. Signature of Investigator <i>Richard W. Crites</i> Crites	Date <i>11/10/86</i>
9. RSP Number <i>BOWAN0004</i>	

All entered -> PR2000 (in dbase as PR2004) + NP Flora

RESULTS AND DISCUSSION

There are two lists and one table showing the results of our work. The two lists are of the plants - shrubs, ferns, and herbaceous plants - identified on two separate field trips. There were no unusual plants found on these trips. However, I would urge that this information be added to listsof plants made from other studies at different times of the year. At that time a more complete assessment can be made of the herbaceous flora.

The table shows the results from the forest transects. The data collected was worked up using the following formulas:

MEAN DISTANCE - $\frac{\text{SUM OF ALL DISTANCES}}{\text{TOTAL NUMBER OF DISTANCES}}$

RELATIVE DENSITY - $\frac{\text{NUMBER OF INDIVIDUALS OF THE SPECIES}}{\text{NUMBER OF INDIVIDUALS OF ALL THE SPECIES}} \times 100$

RELATIVE DOMINANCE - $\frac{\text{TOTAL BASAL AREA OF THE SPECIES}}{\text{TOTAL BASAL AREA OF ALL THE SPECIES}} \times 100$

RELATIVE FREQUENCY - $\frac{\text{NUMBER OF POINTS OF OCCURRENCE OF THE SPECIES}}{\text{NUMBER OF POINTS OF OCCURRENCE OF ALL SPECIES}} \times 100$

IMPORTANCE VALUE INDEX- SUM OF R. DENSITY, R. DOMINANCE, AND R. FREQUENCY

The table shows that the Va. pine and the white oak are the two dominant species in the forest. These trees seemed to be scattered throughout the forest. However, there were some extensive concentrated pine growths. In one area, the pines were so thick it was difficult to walk through the forest. Due to the thick canopy there was very little undergrowth in this area. Since both these species require lots of light, I would assume this forest is the first growth to occur after a field was abandoned. As these trees die off, the shade tolerant species which are now small will replace them.

Other trees of lesser importance, but still prominent, were the pignut hickory, tulip poplar, and the black oak. There were several smaller trees of these species in the forest. Also, not many large red maples were noted in the forest. However, there were numerous small saplings of this species. These will definitely become more important in the future forest as the successional changes occur. Sourwood is an understory tree and will not become a dominant species. The other species listed in the table are scattered and most will eventually drop out of the forest or remain as incidentals.

Some other observations and tree measurements noted are: two wild black cherry trees with DBH of 12.6 in. and 9.3 in., a cucumber tree with a DBH of 12 in., a northern red oak with DBH of 25 in., a black walnut with a DBH of 14 in., a sycamore with DBH of 19.5 in., and a red cedar with a DBH of 13 inches. None of these trees were located in the transect lines. Other trees present were: paw paw located near the creek, sassafras was found near the edge of the forest, and black gum, ash, and alternate leaf dogwood were found as saplings.

TABLE SHOWING RESULTS OF FOREST TRANSECT

	Rel. Dom.	Rel. Density	Rel. Freq.	IVI
~~✓~~ <i>Acer rubrum</i> (red maple)	.81	3.45	5.56	9.82
~~✓~~ <i>Carpinus caroliniana</i> (ironwood)	2.11	3.45	4.17	9.73
~~✓~~ <i>Carya glabra</i> (pignut hickory)	12.12	7.76	11.11	30.99
~~✓~~ <i>Celtis occidentalis</i> (hackberry)	.32	.86	1.39	2.57
~~✓~~ <i>Fagus grandifolia</i> (beech)	3.75	.86	1.39	6.00
~~✓~~ <i>Fraxinus americana</i> (white ash)	1.45	.86	1.39	3.70
~~✓~~ <i>Juniperus virginiana</i> (cedar)	.19	1.72	2.78	4.69
~~✓~~ <i>Liriodendron tulipifera</i> (tulip poplar)	13.55	8.62	11.11	33.28
~~✓~~ <i>Oxydendrum arboreum</i> (sourwood)	1.08	3.45	5.56	10.09
~~✓~~ <i>Pinus virginiana</i> (Va. pine)	22.28	37.07	22.22	81.57
~~✓~~ <i>Platanus occidentalis</i> (sycamore)	.39	.86	1.39	2.64
~~✓~~ <i>Quercus alba</i> (white oak)	23.46	20.69	19.44	63.59
~~✓~~ <i>Quercus coccinea</i> (scarlet oak)	2.09	2.59	4.17	8.85
~~✓~~ <i>Quercus falcata</i> (southern red oak)	6.57	1.72	2.78	11.07
~~✓~~ <i>Quercus velutina</i> (black oak)	9.62	5.17	5.56	20.35
~~✓~~ <i>Robinia pseudoacacia</i> (black locust)	.21	.86	1.39	2.46

The mean distance between the trees was 3.96 meters.

SHRUBS, FERNS, HERBACEOUS PLANTS

March 29, 1986

SHRUBS

- ✓ *Euonymus americana* - strawberry bush
- ✓ *Lindera benzoin* - spice bush
- ✓ *Lonicera japonica* - honeysuckle
- ✓ *Rosa* sp. - wild rose
- ✓ *Rubus occidentalis* - wild raspberry
- ✓ *Smilax glauca* - sawbrier
- ✓ *Smilax rotundifolia* - common greenbrier

FERNS AND ALLIES

- ✓ *Lycopodium flabelliforme* - running cedar
- ✓ *Lycopodium lucidulum* - shining club moss
- ✓ *Botrychium dissectum* - cutleaf grapefern
- ✓ *Asplenium platyneuron* - ebony spleenwort
- ✓ *Polystichum acrostichoides* - Christmas fern

HERBACEOUS PLANTS

- ✓ *Achillea millefolium* - yarrow
- ✓ *Agrimonia gryposepala* - tall agrimony
- ✓ *Anemonella thalictroides* - rue anemone
- ✓ *Aplectrum hyemale* - putty root
- ✓ *Antennaria* sp. - pussy toes
- ✓ *Caltha palustris* - marsh marigold
- ✓ *Cardamine pensylvanica* - Pennsylvania bittercress
- ✓ *Chimaphila maculata* - spotted wintergreen
- ✓ *Chrysogonum virginianum* - green and gold
- ✓ *Claytonia virginica* - spring beauty
- ✓ *Corydalis flavula* - pale corydalis
- ✓ *Dentaria* sp. - toothwort
- ✓ *Dioscorea villosa* - wild yam
- ✓ *Erythronium americanum* - fawn lily
- ✓ *Fragaria virginiana* - wild strawberry
- ✓ *Galium aparine* - bedstraw
- ✓ *Geranium maculatum* - wild geranium
- ✓ *Goodyera pubescens* - rattlesnake orchid
- ✓ *Houstonia caerulea* - bluet
- ✓ *Lamium purpureum* - red henbit
- ✓ *Mertensia virginica* - Va. bluebells
- ✓ *Panicum* sp. - panic grass
- ✓ *Potentilla simplex* - five finger
- ✓ *Prunella vulgaris* - self-heal

- ~~Rumex crispus~~ - curly dock
- ~~Sanguinaria canadensis~~ - blood root
- ~~Saxafraga virginensis~~ - early saxafrage
- ~~Stellaria media~~ - common chickweed
- ~~Taraxacum officinale~~ - dandelion
- ~~Tipularia discolor~~ - cranefly orchid
- ~~Tussilago farfara~~ - colt's foot
- ~~Verbena hastata~~ - blue vervain
- ~~Vicia villosa~~ - vetch
- ~~Viola Rafinesquii~~ - field pansy

SHRUBS, FERNS, AND HERBACEOUS PLANTS

May 20, 1986

SHRUBS

- ✓ *Ceanothus americanus* - New Jersey tea
- ✓ *Menispermum canadense* - moonseed
- ✓ *Parthenocissus quinquefolia* - Virginia creeper
- ✓ *Rhododendron nudiflorum* - pinxter flower
- ✓ *Rhus radicans* - poison ivy
- ← *Rubus* sp. - blackberry
- ✓ *Sambucus canadense* - elderberry
- ✓ *Symphoricarpos orbiculatus* - buckbrush
- ✓ *Vaccinium stamineus* - deerberry
- ← *Vitis* sp. - wild grape

FERNS

- ✓ *Osmunda regalis* - royal fern

HERBACEOUS PLANTS

- ← *Amphicarpa bracteata* - hog peanut →
- ✓ *Brassica nigra* - black mustard
- ✓ *Cerastium vulgatum* - mouse eared chickweed
- ← *Cimicifuga racemosa* - black cohosh →
- ✓ *Cynoglossum virginicum* - wild comfrey
- ✓ *Dactylis glomerata* - orchard grass
- ✓ *Duchesnea indica* - Indian strawberry
- ✓ *Erigeron strigosus* - fleabane
- ✓ *Glechoma hederacea* - ground ivy
- ✓ *Houstonia tenuifolia* - bluets
- ← *Impatiens* sp. - touch-me-nots
- ✓ *Myosotis verna* - spring forget-me-not
- ✓ *Oxalis stricta* - sour grass
- ✓ *Phlox divaricata* - phlox
- ✓ *Podophyllum peltatum* - mayapple
- ✓ *Polygonatum biflorum* - Solomon's Seal
- ✓ *Polygonum persicaria* - widow's thumb
- ✓ *Scutellaria lateriflora* - skullcap
- ✓ *Senecio smallii* - Small's ragwort
- ✓ *Sisyrinchium mucronatum* - blue-eyed grass
- ✓ *Smilacina racemosa* - false Solomon's Seal
- ✓ *Symplocarpus foetidus* - skunk cabbage
- ← *Thalictrum dioicum* - meadow rue →
- ← *Veronica filiformis* - speed well →