

EMU Vascular Flora of the Bergton and Criders Communities in Rockingham County, Virginia

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INTRODUCTION

Bergton and Criders are two neighboring communities at the northern tip of Rockingham County, VA (Figure 1) that share a border to the north with Hardy County, WV. The 140.47 square km land area of these combined communities contain nearly an equal amount of both private and federal lands of the George Washington National Forest (USDC, 2020). The climate and topography promote rich biodiversity ranging from mountain to valley habitats.

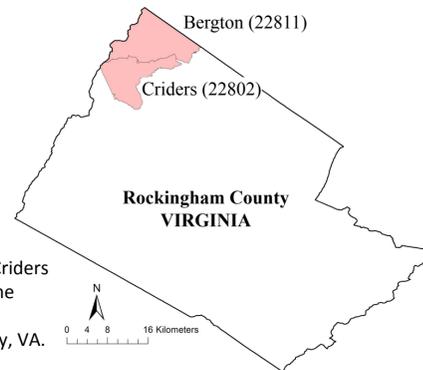


Fig 1. Bergton and Criders are located at the northern tip of Rockingham County, VA.

The proximity of Bergton and Criders to Eastern Mennonite University in Harrisonburg, VA has presented opportunities for faculty and students to learn and contribute to the understanding of the area's biodiversity through projects such as streambed restoration, wood turtle monitoring, macroinvertebrate study, water quality testing, and invasive and endangered species monitoring.

Plants are an important component of this ecological web, and a thorough survey of their species richness will contribute to their appreciation and preservation. Additionally, collected specimens are preserved at EMU's Herbarium (HAVI) which provide material information for future study and research. The specimen records also update the list of known Virginia species on *Digital Atlas of the Virginia Flora*, a collaborative website dedicated to mapping the state's vascular and non-vascular vegetation (Virginia Botanical Associates, 2020).

METHODS

The study site boundaries of Bergton and Criders were demarcated based on their United States postal code areas. Vascular plants were collected on a weekly basis in collecting sites that were accessible during the growing season (March through October), beginning in 2017 and in subsequent years. The project is ongoing, but data in this report was recorded through October 2019 only. Most public sites, public roads, and national forest trails and access roads provided the means to reach much of the study area.

Plant materials were collected by hand using shearing and digging tools, and identified using the Flora of West Virginia field guide (Strausbaugh & Core, 1978), Flora of Virginia field guide (Weakley et al., 2012), and electronic reference apps such as West Virginia Wildflowers (Sullivan, 2018). After collection, they were pressed, dried and mounted according to standard herbarium protocols (Figure 3). The *Digital Atlas of the Virginia Flora* website was later consulted as the taxonomic standard for each identified species, and each new collection was compared to this website's existing distribution records for classifying new county and state records.

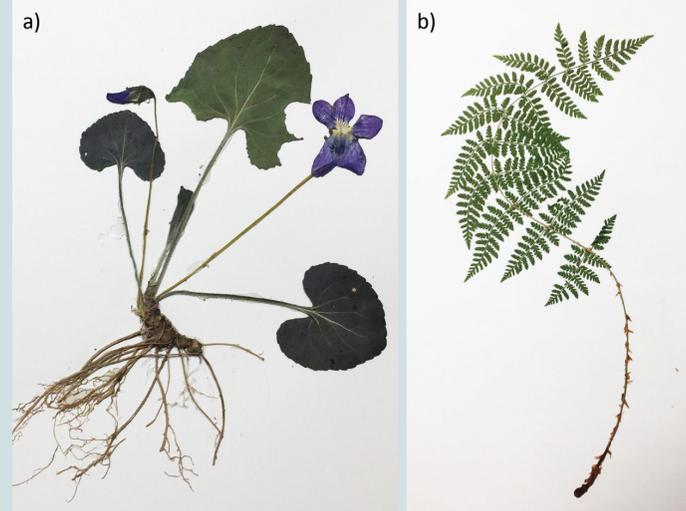


Fig 3. Sample herbarium specimens showing a) *Viola septentrionalis* Greene, a new county record, and b) *Dryopteris intermedia* (Muhl. ex Willd.) Gray.

RESULTS

Currently, the survey identifies 376 vascular plant species collected in the Bergton and Criders communities (Figure 2). Of these, 28 are new records to Rockingham County, including one new Virginia state record (Table 1). One county record, *Geranium robertianum*, is listed rare to uncommon in Virginia by the U.S. Forest Service (Wilson, I.T. and T. Tuberville, 2003).

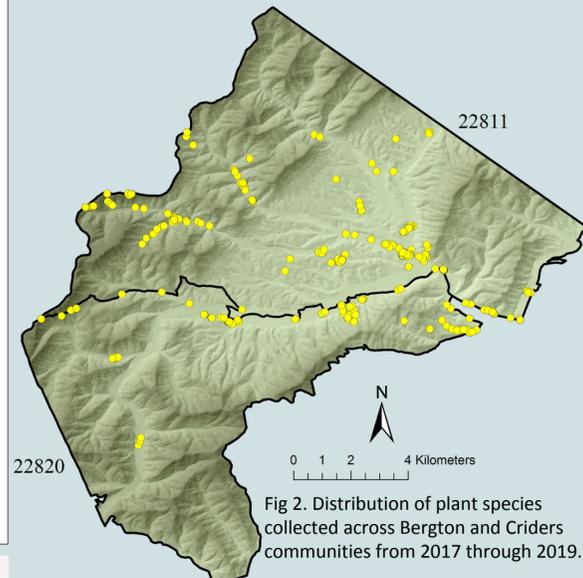


Fig 2. Distribution of plant species collected across Bergton and Criders communities from 2017 through 2019.



Fig 4. *Thymus praecox* Opiz ssp. *arcticus*, a new state record.

Table 1: List of new Rockingham County record species. Asterisk (*) indicates a new Virginia state record.

ALISMATACEAE	<i>Sagittaria graminea</i> Michaux
AMARANTHACEAE	<i>Amaranthus hybridus</i> L.
ARALIACEAE	<i>Hedera helix</i> L.
ASTERACEAE	<i>Eupatorium serotinum</i> Michx.
BRASSICACEAE	<i>Berteroa incana</i> (L.) A. P. DeCandolle
CRASSULACEAE	<i>Sedum acre</i> L.
CYPERACEAE	<i>Carex squarrosa</i> L. <i>Cyperus esculentus</i> L. var. <i>leptostachyus</i> Böckler <i>Cyperus flavescens</i> L.
FABACEAE	<i>Vicia villosa</i> Roth ssp. <i>villosa</i>
GERANIACEAE	<i>Geranium robertianum</i> L.
LAMIACEAE	<i>Galeopsis bifida</i> Boenn. * <i>Thymus praecox</i> Opiz ssp. <i>arcticus</i> (Durand) Jalas
OXALIDACEAE	<i>Oxalis florida</i> Salisbury
PLANTAGINACEAE	<i>Chaenorhynchus minus</i> (L.) Lange <i>Veronica polita</i> Fries
POACEAE	<i>Digitaria ciliaris</i> (Retz.) Koeler <i>Poa autumnalis</i> Muhl. ex Eil.
POLYGONACEAE	<i>Persicaria perfoliata</i> (L.) H. Gross
ROSACEAE	<i>Chaenomeles speciosa</i> (Sweet) Nakai <i>Prunus mahaleb</i> L. <i>Spiraea japonica</i> L. f. <i>Pyrus pyrifolia</i> (Burm. f.) Nakai
RUBIACEAE	<i>Galium pedemontanum</i> (Bellardi) Allioni
SCROPHULARIACEAE	<i>Verbascum phlomoides</i> L.
ULMACEAE	<i>Ulmus pumila</i> L.
VIOLACEAE	<i>Viola affinis</i> Le Conte <i>Viola septentrionalis</i> Greene

CONCLUSION

The most notable collection to date is the *Thymus* species (Figure 4), which is itself a complex state record candidate. Though officially identified as *T. praecox* ssp. *arcticus*, the specimen shares features with the closely related *T. pulegioides*. Very few keys treat the two taxa simultaneously, so diagnosis comes from a combination of sources and characters. Furthermore, the taxonomic history is ambiguous, as *T. praecox* has also been called *T. serpyllum*, a misapplied name that is no longer circulated (USDA, 2020). Ultimately, *T. praecox* ssp. *arcticus* was selected for its comparatively lower growth habit and non-flowering shoots. The specimen may be annotated if new evidence or reference material emerges.

Floral surveys depend on factors such as accessibility of lands, weather conditions, transportation and institutional support. With the alignment of these factors, we have so far collected 376 vascular plant species, which represent a substantial addition to current species distributional records. The continuation of this project will lend more materials to the herbarium, as well as more information to databases and research projects.

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