

# Project RareQuest: Volunteers Seeking Virginia's Rare Species

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The Virginia Department of Conservation and Recreation Natural Heritage Program manages an inventory of ~9,000 rare plant and animal species and exemplary natural communities.

- Locations of these resources are called "element occurrences" (EOs).
- Approximately 4,000 of these EOs are plant populations.
- Data on EOs is used for buying Natural Area Preserves, directing other natural resource agency conservation efforts, and providing data to ameliorate threats to native species.
- EOs must be regularly monitored to document their current status.
- Using just existing staff, this monitoring is unfeasible, but the data are critical for making informed conservation decisions.



Purple fringeless orchid (*Platanthera peramoena*) is one of the rare species in the EO inventory.

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The Virginia Master Naturalist program can help make the monitoring of EOs more feasible by engaging volunteers in visiting EO sites and collecting data.



VMN basic training includes classroom and field training on a variety of natural history and natural resource topics.  
Photo: Historic Rivers Chapter

- The Virginia Master Naturalist (VMN) program is a corps of volunteers actively engaged in natural resource education, citizen science, and stewardship.
- VMN volunteers make excellent collaborators for this project because:
  - They are eager to volunteer with state natural resource agencies.
  - They are embedded in communities across Virginia and able to provide coverage over many counties.
  - They have basic training in natural history topics, and some volunteers have specialized skills such as plant identification and use of GIS applications.

Project RareQuest is a new citizen science partnership between the Virginia Master Naturalist program and Virginia Natural Heritage, partially funded by a research grant from the Virginia Native Plant Society.

The questions we aim to answer through this project are:

- What is the current status of selected occurrences of rare and threatened plant species throughout Virginia?
- What are the primary threats to these populations?
- Does citizen science increase the capacity of Natural Heritage to monitor these populations?
- Is it feasible to monitor these populations using a citizen science approach?



Virginia  
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Project methods focus on matching volunteers to teams and rare species populations, based on interests, skills, and location.

- In Summer 2015, we **advertised the project** to the VMN volunteer population through newsletter articles, emails, and social media.
- We identified **five volunteer roles**: Plant Identifiers, Bird Identifiers, Butterfly Identifiers, Data Wranglers, and Landowner Liaisons.
- Interested volunteers completed a **survey** to indicate their skills and interests relating to the five volunteer roles on the project, their ability to travel, and their training format preferences.
- In Fall 2015, VDCR Natural Heritage Program staff provided **in-person and online training** to approximately 130 volunteers.
- The training included background on the mission and purpose of the Virginia Natural Heritage Program, field safety, expectations for volunteers, and use of the software application for recording and reporting data.
- The VMN program director **assigned volunteers to teams** based on interests, skills, and location, for a total of 109 volunteers in 37 teams across Virginia.
- The VDCR Natural Heritage Program Chief Biologist **chose element occurrences** to match up with the teams' locations and skills.
- In January 2016, packets were sent to each team containing the relevant information they would need to locate their assigned EOs.
- In 2016, each team will **contact the landowner** for permission (if on private property), and then **visit the site** at least once during the season when it is most likely for their assigned species to be observed.
- Volunteers will use the **ArcGIS Collector application** on mobile devices to record data in the field.
- In order to answer our research questions, we will **evaluate** the volunteers' experiences and the Natural Heritage Program staff experiences. We will also quantify the percentage of assigned EOs successfully visited by volunteers.

In total, 37 RareQuest teams have been assigned 134 element occurrences in 60 counties and independent cities.

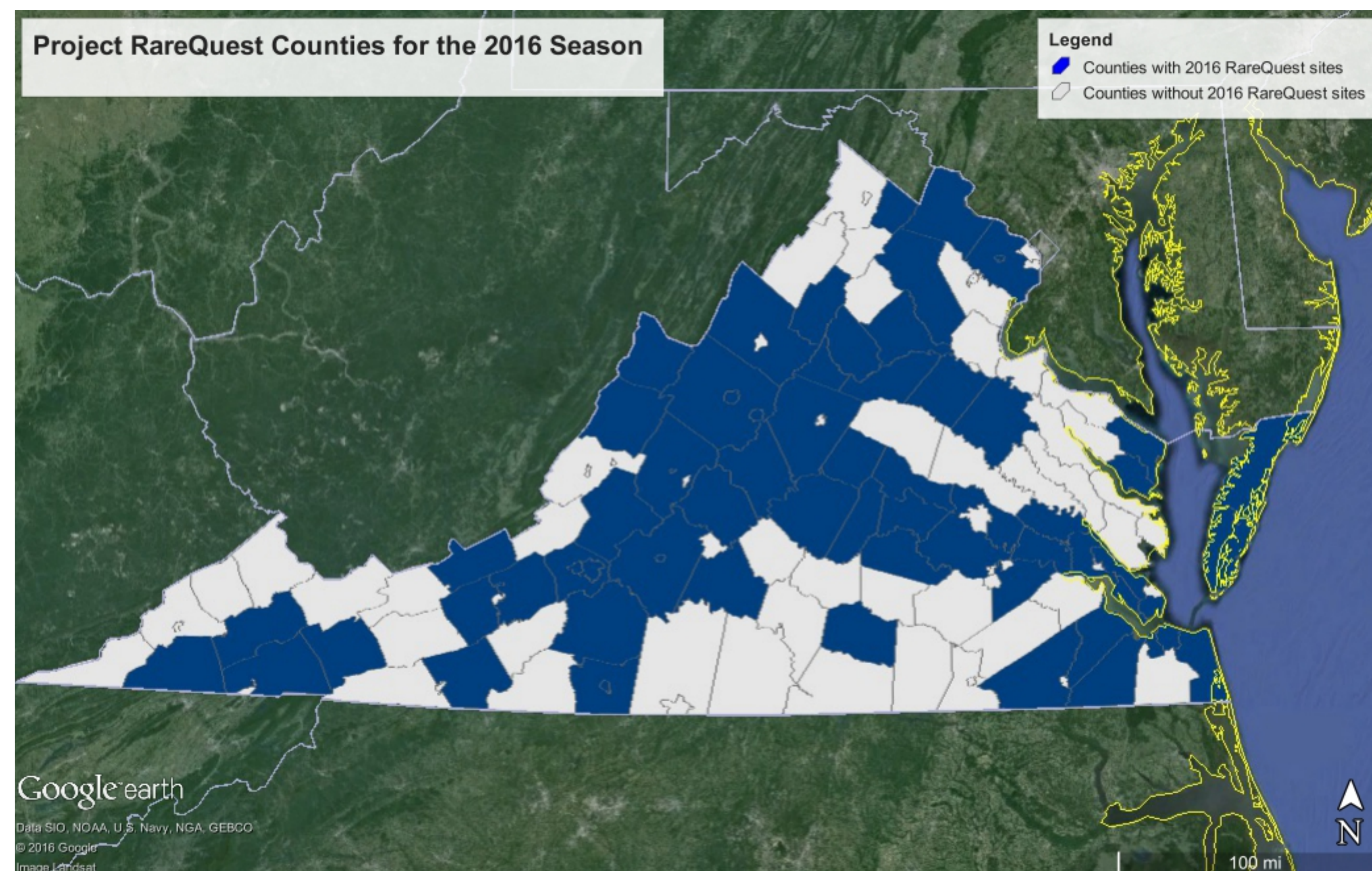


Figure 1. Map of counties with element occurrences assigned to RareQuest teams for 2016.

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The list of species to be documented in 2016 includes 60 plants, along with 10 birds and 2 butterflies.

Group	Latin	Common
Bird	<i>Ardea alba</i>	Great Egret
Bird	<i>Barrania longicauda</i>	Upland Sandpiper
Bird	<i>Dolichonyx oryzivorus</i>	Bobolink
Bird	<i>Lanius ludovicianus</i>	Loggerhead Shrike
Bird	<i>Limothlypis swainsonii</i>	Swainson's Warbler
Bird	<i>Nyctanassa violacea</i>	Yellow-crowned Night Heron
Bird	<i>Regulus satrapa</i>	Golden-crowned Kinglet
Bird	<i>Setophaga magnolia</i>	Magnolia Warbler
Bird	<i>Sitta canadensis</i>	Red-breasted Nuthatch
Bird	<i>Troglodytes hiemalis</i>	Winter Wren
Butterfly	<i>Neonympha helicta</i>	Helicta Skipper
Butterfly	<i>Speyeria idalia</i>	Regal fritillary
Plant	<i>Aeschynomene virginica</i>	Sensitive Joint-vetch
Plant	<i>Alnus incana ssp. Rugosa</i>	Speckled Alder
Plant	<i>Arabis patens</i>	Spreading Rock Cress
Plant	<i>Asclepias purpurascens</i>	Purple Milkweed
Plant	<i>Asclepias rubra</i>	Red Milkweed
Plant	<i>Asplenium bradleyi</i>	Bradley's Spleenwort
Plant	<i>Boechera serotina</i>	Shale Barren Rock Cress
Plant	<i>Buchnera americana</i>	American Bluehearts
Plant	<i>Buckleya distichophylla</i>	Piratebush
Plant	<i>Cabomba caroliniana</i>	Carolina Fanwort
Plant	<i>Calycanthus floridus</i>	Sweet-shrub
Plant	<i>Chelone cuthbertii</i>	Cuthbert's Turtlehead
Plant	<i>Cleistesopsis divaricata</i>	Large Spreading Pogonia
Plant	<i>Clematis addisonii</i>	Addison's Leatherflower
Plant	<i>Clematis occidentalis</i>	Purple Clematis
Plant	<i>Clematis viticulis</i>	Millboro Leatherflower
Plant	<i>Echinacea laevigata</i>	Smooth Coneflower
Plant	<i>Eleocharis compressa var. compressa</i>	Flattened Spikerush
Plant	<i>Eriocaulon parkeri</i>	Parker's Pipewort
Plant	<i>Filipendula rubra</i>	Queen-of-the-Prairie
Plant	<i>Helonias bullata</i>	Swamp-pink
Plant	<i>Iliamna remota</i>	Kankakee Mallow
Plant	<i>Juncus torreyi</i>	Torrey's Rush
Plant	<i>Kalmia carolina</i>	Carolina Laurel
Plant	<i>Lithospermum virginianum</i>	Virginia False Gromwell
Plant	<i>Ludwigia alata</i>	Winged Seedbox
Plant	<i>Ludwigia brevipes</i>	Long Beach Seedbox
Plant	<i>Lythrum alatum</i>	Winged Loosestrife
Plant	<i>Maianthemum stellatum</i>	Starry Solomon's-plume
Plant	<i>Micranthemum umbrosum</i>	Shade Mudflower
Plant	<i>Mimosa microphylla</i>	Little-leaf Sensitive-brier
Plant	<i>Minuartia groenlandica</i>	Mountain Sandwort
Plant	<i>Paxistima canbyi</i>	Canby's Mountain-lover
Plant	<i>Phlox pilosa</i>	Downy Phlox
Plant	<i>Platanthera blephariglossis</i>	Small White Fringed Orchid
Plant	<i>Platanthera peramoena</i>	Purple Fringeless Orchid
Plant	<i>Polanisia dodecandra</i>	Common Clammy-weed
Plant	<i>Polygonum glaucum</i>	Sea-beach Knotweed
Plant	<i>Populus tremuloides</i>	Quaking Aspen
Plant	<i>Pycnanthemum setosum</i>	Awned Mountain-mint
Plant	<i>Quercus macrocarpa</i>	Bur Oak
Plant	<i>Quercus prinoides</i>	Dwarf Chinquapin Oak
Plant	<i>Ranunculus ambigens</i>	Water-plaintain Crowfoot
Plant	<i>Rhynchospora alba</i>	Northern White Beaksedge
Plant	<i>Rudbeckia heliopsis</i>	Sun-facing Coneflower
Plant	<i>Sabatia campanulata</i>	Slender Marsh-pink
Plant	<i>Sabatia difformis</i>	Lance-leaved Rose-gentian
Plant	<i>Sarracenia purpurea</i>	Purple Pitcher Plant
Plant	<i>Scutellaria incana</i>	Hoary Skullcap
Plant	<i>Sibbaldia tridentata</i>	Three-toothed Cinquefoil
Plant	<i>Solidago randii</i>	Rand's Goldenrod
Plant	<i>Solidago rigida var. rigida</i>	Stiff Goldenrod
Plant	<i>Solidago rupestris</i>	Riverbank Goldenrod
Plant	<i>Solidago stricta</i>	Southern Bog Goldenrod
Plant	<i>Stewartia ovata</i>	Mountain Camellia
Plant	<i>Sreptopus amplexifolius</i>	White Mandarin
Plant	<i>Trillium pusillum var. virginianum</i>	Virginia Least Trillium
Plant	<i>Veronica scutellata</i>	Marsh Speedwell
Plant	<i>Viola walteri var. walteri</i>	Prostrate Blue Violet
Plant	<i>Zenobia pulverulenta</i>	Dusty Zenobia

Table 1. List of species with element occurrences assigned to RareQuest volunteers to be visited in 2016.



Queen-of-the-Prairie (*Filipendula rubra*).  
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Swamp-pink (*Helonias bullata*).  
Image by Kerry Wixted, Creative Commons BY 2.0

## Project Collaborators

- Michelle Prysby, Program Director, Virginia Master Naturalist Program
- Chris Ludwig, Chief Biologist, Virginia Natural Heritage Program
- Danielle Kulas, Data Management Specialist, Virginia Natural Heritage Program
- VMN volunteers – 109 volunteers in 25 local chapters
- Virginia Native Plant Society, grantor
- Additional sponsors of the Virginia Master Naturalist Program:

