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COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

November 4, 2022

USDA Forest Service
ATTN: Jay Martin, North Zone NEPA Planner
401 Oakwood Drive
Harrisonburg, VA 22801

Re: Archer Knob Project

Dear Mr. Martin:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

The **Augusta Springs**, the **Forest Stand Improvements** treatment and the **Project Regeneration** treatment areas have intersected the karst bedrock screening layer. Encountering undocumented caves, sinkholes or other sensitive karst features in this area is possible. During every phase of the project, DCR recommends stabilization of the soil around the site. Minimizing surface disturbance, strict use of E&S control measures appropriate for the location and adherence to best management practices appropriate for karst will help to reduce any potential impact to the karst, groundwater and surface water resources as well as any associated fauna and flora.

If karst features such as sinkholes, caves, disappearing streams, and large springs are encountered during the project, please coordinate with Wil Orndorff (540-230-5960, Wil.Orndorff@dcr.virginia.gov) the Virginia DCR, Division of Natural Heritage Karst Protection Coordinator, to document and minimize adverse impacts. Activities such as discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to environmental impacts including surface collapse, flooding, erosion and sedimentation, contamination of groundwater and springs, and degradation of subterranean habitat for natural heritage resources (e.g. cave adapted invertebrates, bats). These potential impacts are not necessarily limited to the immediate project area, as karst systems can transport water and associated contaminants rapidly over relatively long distances, depending on the nature of the local karst system. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for storm water discharge, copies of VDOT Form EQ-120 will suffice.

In addition, DCR-DNH identified two butternut (*Juglans cinerea* G3/S3?/NL/NL) and one Bog twayblade (*Liparis loeselii*, G5/S2/NL/NL) occurrences within the **Project Thinning Treatment Block** during contracted surveys (Figure 1).

Butternut occurs throughout the eastern United States and Southeastern Canada, in Virginia butternut was historically frequent in the Mountains and inner Piedmont region. However, there has been a sharp decline due to the fungal disease Butternut Canker (Nature Serve 2022). Since the 1980s the number of trees has decreased by

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58%, and the volume of trees has decreased by 44% across its range (Morin et al. 2018). One study reported that 77% of butternut trees in the southeastern United States died in a 30 year period (Schlarbaum et al. 1997).

While there have been disease resistant trees found throughout its range, they are generally rare. Butternut wood is highly sought after for woodworking and has prompted “Pre-emptive salvage” cutting, where healthy trees are cut before they become diseased to preserve the full value of the wood. This practice reduces the pool of potentially disease resistant individuals, which can contribute to decline.

Healthy trees throughout range should be conserved where possible, and stands should be monitored so resistant trees can be identified. An individual can be thought of as potentially resistant if it is over 10 inches in diameter at breast height (dbh), it is canker free or has overgrown any cankers, and it is in a stand that is already infected with canker and the possibility of exposure is high (Ostry et. al 1994).

Forest stand management can also play role in decline. Butternut is shade intolerant and needs open and disturbed areas to thrive. Seedlings will not establish under a closed canopy and soil disturbance is needed for reproduction (Nature Serve 2022).

Bog twayblade is a state rare plant species, occurs in the northern United States. This orchid grows in calcareous wetlands, particularly in open shrub swamps and other thinly wooded locations. Usually this is a small orchid, growing less than 6 inches high. It has basally-disposed leaves and dull yellowish-green flowers which bloom in June. In Virginia, there are seventeen documented occurrences; three are historic.

DCR recommends the avoidance of the documented butternut and Bog twayblade occurrences. DCR also recommends avoiding healthy butternut trees and Bog twayblade plants when cutting, road widening, building the fire line, burning areas and any other ground disturbing areas.

Multiple Treatment Types

According to the information currently in our files, the Great North Mountain and Mill Creek Slope Conservation Sites are within multiple treatment areas of the proposed project. Conservation sites are tools for representing key areas of the landscape that warrant further review for possible conservation action because of the natural heritage resources and habitat they support. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element’s conservation. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Both the Great North Mountain Conservation Site and the Mill Creek Slope Conservation site have been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resource of concern at these sites is:

Sword-leaf phlox

Phlox buckleyi,

G2G3/S2/SOC/PT

Sword-leaf phlox is a rhizomatous, perennial herb in the Jacob’s-ladder family (Polemoniaceae) is endemic to western Virginia and eastern West Virginia and grows in woodlands, woodland edges, and roadbanks underlain by shale (Weakley in prep.). Bright pink, five-petaled flowers bloom from May-June in clusters at the top of an erect stem with up to seven pairs of opposite, linear to lanceolate leaves (Gleason and Cronquist 1991). Also present are sterile shoots with evergreen leaves arising from the rhizomes. Surveys should be conducted during the May-June flowering period when the bright pink flowers are highly visible. Threats include mowing, herbicides, road maintenance activities, competition from invasive species, and shading.

Please note that sword-leaf phlox is tracked as a species of concern by the United States Fish and Wildlife Service (USFWS); however, this designation has no official legal status. Sword-leaf phlox is proposed threatened by the Virginia Department of Agriculture and Consumer Services (VDACS). While Sword-leaf phlox will benefit from the increased light from either harvests or fire, DCR recommends avoiding heavy impacts on known source features from proposed road construction and other ground disturbance.

In addition to the occurrences within the conservation sites, DCR-DNH staff has documented an astounding amount of this globally rare species across many of these treatment units.

Furthermore, based on DCR's predicted suitable habitat modeling and review by a DCR biologist, there is a potential for the Rusty patched bumble bee (*Bombus affinis*, G1/S1/LE/NL) in all treatment blocks if suitable habitat exists on site. The Rusty patched bumble bee is listed as endangered under the Endangered Species Act by U.S. Fish and Wildlife Service (USFWS) effective March 21, 2017. Since the late 1990s, the Rusty patched bumble bee has declined throughout its historical range including Virginia and is anticipated to be extinct in all ecoregions by 2030. Threats to the Rusty patched bumble bee include disease, pesticides, climate change, habitat loss and small population dynamics.

DCR recommends the implementation of the following USFWS voluntary measures for the conservation of the Rusty patched bumble bee: avoid pesticide use, avoid herbicide use, and plant native flowers that bloom throughout the spring and summer to support pollinator habitat. Native composites that flower from May to August are particularly important for the Rusty patched bumble bee as is avoiding pesticide use along roadsides. DCR also recommends that any openings created by these treatments not be mowed every year to preserve native plant diversity. Habitat improvements that add sunlight to the forest floor could improve the potential for the Rusty patched bumble bee if these areas are not overgrown with invasive species, of particular concern is Autumn Olive.

DCR recommends avoiding unnecessary soil disturbance and preventing the introduction of invasive species. DCR recommends an invasive species inventory for forest openings as well as new road construction and the development and use of an adaptive management plan for the control of invasive species. DCR recommends the planting of Virginia native plant species including native pollinator species that bloom throughout the spring and summer, to maximize benefits to native pollinators. Guidance on native plant species can be found here: <http://www.dcr.virginia.gov/natural-heritage/solar-site-native-plants-finder>.

In addition, if any portion of a harvested area is not allowed to re-grow to forest, the proposed project will impact Ecological Cores (**C1, C2, and C4**) as identified in the Virginia Natural Landscape Assessment (<https://www.dcr.virginia.gov/natural-heritage/vaconvisvnl>). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: <http://vanhde.org/content/map>.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

If any portion of the harvested area is not allowed to re-grow to forest, the proposed project will impact one or more cores with very high to outstanding ecological integrity. If any portion of a harvested area is not to be

allowed to re-grow to forest (i.e. there is any development and thus permanent fragmentation of the core) further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate direct impacts to cores and habitat fragments and indirect impacts to cores. The final products of this analysis would include an estimate of the total impact of the project in terms of acres. For more information about the analysis and service charges, please contact Joe Weber, DCR Chief of Biodiversity Information and Conservation Tools at Joseph.Weber@dcr.virginia.gov.

Under a Memorandum of Agreement established between the VDACS and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

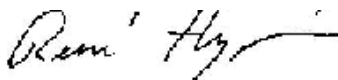
There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from <http://vafwis.org/fwis/> or contact Amy Martin at 804-367-2211 or amy.martin@dwr.virginia.gov. There is potential for the little brown bat (*Myotis lucifugus*), the tri-colored bat (*Perimyotis subflavus*), and the northern long-eared bat (*Myotis septentrionalis*) to occur within the project area. Therefore, DCR recommends coordination with the VDWR, Virginia's regulatory authority for the management and protection of these species to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570). Due to the legal status of the Northern long-eared bat and the associated final 4(d) rule effective February 16, 2016, if tree removal is proposed for the project DCR recommends coordination with the USFWS to ensure compliance with protected species legislation.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

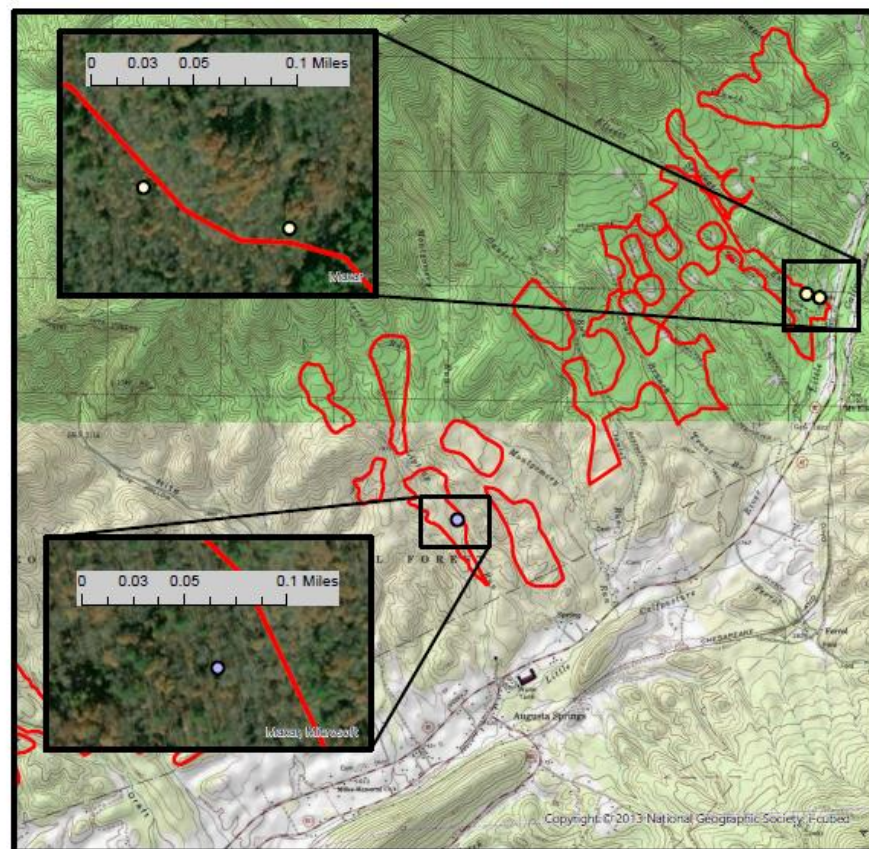


S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Wil Orndorff, DCR-Karst
Troy Andersen, USFWS
Amy Martin, VDWR




Figure 1. Map of Archer Knob Project- Thinning Treatment Area, with locations of Butter and Bog twayblade identified.

Archer Knob Project



 **DCR**
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
Virginia Natural Heritage Program

Map created by DCR-DNH for USFS October 2022

-  Butternut
-  Bog twayblade
-  Project Thinning Treatment Area

Literature Cited

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