

**ENDANGERED, THREATENED, AND SENSITIVE SPECIES
LIKELIHOOD OF OCCURRENCE**
Reflecting 2003 RFSS changes and species account updates

**LOWER CLOVER ENVIRONMENTAL ASSESSMENT
APPENDIX A**

9/15/2004

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
Threatened / Endangered					
Mammals					
Gray wolf	<i>Canis lupus</i>	LE/GE/N4/SX	High spruce forest and associated northern mixed hardwood/coniferous forest. Considered extirpated from WV since 1900 when the last wolf was killed in the state. ^{1, 41}		Considered extirpated from WV. ^{1, 41}

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
Eastern cougar	<i>Puma concolor cougar</i>	LE/G5TH/NH/SH	Very large, remote, undisturbed, mountainous areas. Hardwood or mixed forest.	Presence in West Virginia is unconfirmed at this time. ^{1, 41} The last documented eastern cougar is one shot in Pendleton Co. in 1887 but as late as 1936 there were reported tracks in Pocahontas Co. ⁴¹	Presence in West Virginia is unconfirmed at this time. ^{1, 41}
WV northern flying squirrel	<i>Glaucomys sabrinus fuscus</i>	LE/G5T2/N2/S2	Associated with boreal habitats, especially spruce-fir and northern hardwood forests. Elevations from 2600-4600'. Northern hardwood forests that contain a conifer component. ^{2, 26, 45}	Extends southwestward, following the Allegheny Mt., from Canaan Heights and the northwestern edge of the Dolly Sods Wilderness Area (Tucker Co.) in the north to Briery Knob (Pocahontas Co.) and Rabbit Run (Greenbrier Co.) in the south. Also encompassing areas in Randolph, Webster, and Pendleton Co.	There is no Suitable WVNFS habitat within or adjacent to the Lower Clover project area.

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Indiana bat	<i>Myotis sodalis</i>	LE/G2/N2/S1	<p>Winter in caves or mines that satisfy their highly specific need for cold temperatures during hibernation. During summer, roost in trees and forage primarily in riparian and upland forests.^{4, 45} Cave Hollow/Arbogast cave (Tucker Co.) has been designated as Critical Habitat by USFWS. Significant status is based on Federal Caves Resources Protection Act of 1988.</p> <table border="1"> <thead> <tr> <th>Cave Name</th> <th>Cave Status</th> <th>Approximate Distance to watershed (mi)</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Big Springs</td><td>Gated, significant</td><td>4.0</td><td>FS</td><td>Parsons</td></tr> <tr><td>Bob Gee</td><td>Within proclamation boundary</td><td>85</td><td>Private</td><td>Trout</td></tr> <tr><td>Bowden</td><td>Significant</td><td>13</td><td>Private</td><td>Bowden</td></tr> <tr><td>Cass</td><td>Within proclamation boundary</td><td>50</td><td>Private</td><td>Cass</td></tr> <tr><td>Cave Hollow/Arbogast</td><td>Critical, Gated, significant</td><td>8</td><td>FS</td><td>Mozark</td></tr> <tr><td>Coal Run</td><td></td><td>5.4</td><td>Private</td><td>Mozark</td></tr> <tr><td>Falling Spring</td><td>Within proclamation boundary</td><td>48</td><td>Private</td><td>Mingo</td></tr> <tr><td>Fortlick</td><td>Within 5 miles of Proc boundary</td><td>40</td><td>Private</td><td>Valley Head</td></tr> <tr><td>Gooseberry</td><td>Within 5 miles of Proc boundary</td><td>32</td><td>Private</td><td>Adolph</td></tr> <tr><td>Hellhole</td><td>Critical, Within proc boundary</td><td>28</td><td>Private</td><td>Onego</td></tr> <tr><td>Higginbotham's #1 - #4</td><td>Within 5 miles of Proc boundary</td><td>89</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Izaak Walton</td><td>Within proclamation boundary</td><td>23</td><td>Private</td><td>Beverly East</td></tr> <tr><td>Lobelia Saltpeter</td><td>Within 5 miles of Proc boundary</td><td>73</td><td>Private</td><td>Lobelia</td></tr> <tr><td>Martha's</td><td>Within 5 miles of Proc boundary</td><td>73</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Minor Rexroad</td><td>Gated, fenced, outside Proc. Bdry</td><td>41</td><td>Private</td><td>Sugar grove</td></tr> <tr><td>Schoolhouse</td><td>Within proclamation boundary</td><td>27</td><td>Private</td><td>Upper Tract</td></tr> <tr><td>Simmons Mingo</td><td>Within proclamation boundary</td><td>47</td><td>Private</td><td>Mingo</td></tr> <tr><td>Smoke Hole</td><td>Within proclamation boundary</td><td>27</td><td>Private</td><td>Upper Tract</td></tr> <tr><td>Snedegers</td><td>Restricted access</td><td>77</td><td>Private</td><td>Droop</td></tr> <tr><td>Stewart Run</td><td>Within proclamation boundary</td><td>40</td><td>Private</td><td>Snyder Knob</td></tr> <tr><td>Trout</td><td>Within 5 miles of Proc boundary</td><td>38</td><td>Private</td><td>Sugar Grove</td></tr> <tr><td>Tub</td><td>Within 5 miles of Proc boundary</td><td>66</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Two Lick Run</td><td>Signed, significant</td><td>7</td><td>FS</td><td>Bowden</td></tr> <tr><td>Upper Martha's</td><td>Within 5 miles of Proc boundary</td><td>73</td><td>Private</td><td>Hillsboro</td></tr> </tbody> </table> <p>Possible roosting habitat within project area.</p>	Cave Name	Cave Status	Approximate Distance to watershed (mi)	Ownership	Quad	Big Springs	Gated, significant	4.0	FS	Parsons	Bob Gee	Within proclamation boundary	85	Private	Trout	Bowden	Significant	13	Private	Bowden	Cass	Within proclamation boundary	50	Private	Cass	Cave Hollow/Arbogast	Critical, Gated, significant	8	FS	Mozark	Coal Run		5.4	Private	Mozark	Falling Spring	Within proclamation boundary	48	Private	Mingo	Fortlick	Within 5 miles of Proc boundary	40	Private	Valley Head	Gooseberry	Within 5 miles of Proc boundary	32	Private	Adolph	Hellhole	Critical, Within proc boundary	28	Private	Onego	Higginbotham's #1 - #4	Within 5 miles of Proc boundary	89	Private	Williamsburg	Izaak Walton	Within proclamation boundary	23	Private	Beverly East	Lobelia Saltpeter	Within 5 miles of Proc boundary	73	Private	Lobelia	Martha's	Within 5 miles of Proc boundary	73	Private	Hillsboro	Minor Rexroad	Gated, fenced, outside Proc. Bdry	41	Private	Sugar grove	Schoolhouse	Within proclamation boundary	27	Private	Upper Tract	Simmons Mingo	Within proclamation boundary	47	Private	Mingo	Smoke Hole	Within proclamation boundary	27	Private	Upper Tract	Snedegers	Restricted access	77	Private	Droop	Stewart Run	Within proclamation boundary	40	Private	Snyder Knob	Trout	Within 5 miles of Proc boundary	38	Private	Sugar Grove	Tub	Within 5 miles of Proc boundary	66	Private	Hillsboro	Two Lick Run	Signed, significant	7	FS	Bowden	Upper Martha's	Within 5 miles of Proc boundary	73	Private	Hillsboro		
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Birds					
Bald Eagle	<i>Haliaeetus leucocephalus</i>	LT/G4/S1	Typically found along the shores of large rivers and lakes, as main prey is fish and waterfowl. Nests in tall trees or on cliffs near large rivers or lakes. ⁶	Grant, Hampshire, Mineral and Hardy Co. Migratory routes traverse areas of the MNF Ranger Districts.	Unlikely, no suitable breeding habitat within project area. Individuals may be seen during migration periods along the Cheat River, but no confirmed nests have been documented.
Amphibian					
Cheat Mountain Salamander	<i>Plethodon nettingi</i>	LT/G2/S1	Moist spruce or mixed spruce/deciduous forests, including, but not limited to, shaded or moist coves, possibly with rhododendron and/or small emergent rocks within spruce or hemlock forest. Spruce stands containing Bazzania (a liverwort). ⁷	Minimum elevation is 2600' on the Cheat district, and 2940' on the Potomac and Greenbrier districts. Range extends east of McGowan Mt. (Randolph Co.) to Dolly Sods (Tucker Co.), south to Spruce Knob (Pendleton & Pocahontas Co.), southwest to Thorny Flat (Pocahontas Co.), north to Barton Knob (Randolph Co.). Not known to occur on the Gauley, Marlinton, or White Sulphur districts.	There is no suitable Cheat Mountain salamander habitat within or adjacent to the Lower Clover project area.
Reptiles & Fish					
None					
Plants					
Small-whorled pogonia	<i>Isotria medeoloides</i>	LT/G2/S1	Mixed deciduous or mixed-deciduous/coniferous forest in generally second or third growth successional stages; occurs in both fairly young forests and in maturing stands. Majority of occupied sites have: sparse to moderate ground cover; relatively open understory, proximity to logging roads, streams or other features that create long persisting breaks in canopy; associated species -- witch-hazel, striped maple, hazelnut, serviceberry; highly acidic nutrient-poor soil. ¹⁷	Occurs on only one site in WV in Greenbrier County, White Sulphur District	Possible. Potential habitat may be found in project area, however, no plants have been located during botany surveys.
Shale Barren	<i>Arabis serotina</i>	LE/G2/S2	Biennial herb found mostly on shale	Grant, Greenbrier, and Pendleton	Unlikely, no shale

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Rockcress			barrens of eastern counties of WV. ⁸	counties.	barrens found within project area.
Virginia Spirea	<i>Spiraea virginiana</i>	LT/G2/S1	Clonal shrub found on damp, rocky banks of larger high gradient streams. Flood-scoured mouths of side streams, rocky isles, and seasonally flooded side channels, in shrub thickets between the river and forest. Full sun or shade. ⁹	Known from Greenbrier Co. near Greenbrier Youth Camp; National Park Service land in Nicholas Co.	Unlikely. Known populations are found further south on the forest.
Running Buffalo Clover	<i>Trifolium stoloniferum</i>	LE/G3/S2	Perennial clover found on rich, fertile (limestone geology & soils), semi-shaded habitats. Open, savannah-like forests; lightly disturbed areas such as old logging roads. Also old farmsteads and cemeteries. ⁹	Logging roads on the Fernow Experimental Forest; Swecker Ridge, McGowan Mt., Cheat Mt. (Chestnut Ridge), Shavers Fork (Randolph and Tucker Co.). Also found in Greenbrier and Pendleton Co.	Occurs within the Lower Clover Watershed area, but not within the analysis area or activity units.
Sensitive Species					
Mammals					
Southern rock vole	<i>Microtus chrotorrhinus carolinensis</i>	G4T3/S2 (SOC)	Moist rocky areas or mossy rocks and logs in spruce & mixed deciduous-coniferous forests ⁴⁸ , often with birch, other hardwoods & hemlock components. Dense ground cover of mosses, ferns, & northern herbs. Unvegetated talus, grass balds, recent clearcuts, & road-fills. Highly associated with surface or subsurface water. ^{10, 48}	Tucker, Randolph, Pendleton, Pocahontas, & Greenbrier Co.	Unlikely, rock voles like a higher elevation, mossy, birch environment usually above 2500' elevation.
Eastern small-footed bat	<i>Myotis leibii</i>	G3/S1(SOC)	Hibernates in caves, sometimes under stones or in deep crevices. Summer roosts and maternity sites in buildings, caves, rock crevices, tunnels or under bridges. It is thought that rock outcrops are important for this species. Forages over ponds and streams. Summer habitat may or may not be in proximity to hibernation sites. ^{11, 42}	Preston, Tucker, Grant, Randolph, Pendleton, Pocahontas, and Greenbrier Co.	Possible. Suitable foraging habitat present within watershed however, surveys completed within the watershed area did not document small-footed bats within Lower Clover watershed
Allegheny woodrat	<i>Neotoma magister</i>	G3G4/S3 (SOC)	Extensive rocky areas in deciduous or mixed forests, outcrops, cliffs, rocky talus slopes, caves, riverbanks with sandstone rocks and boulders ¹² and	Widespread across the Monongahela in rocky areas and around many caves	Unlikely. There are no rocky areas, cliffs or outcrops within the project area.

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			buildings ^{47, 45} .		
Southern water shrew	<i>Sorex palustris punctulatus</i>	G5T3/S1 (SOC)	Found near streams or other bodies of water. Heavy vegetative cover and plentiful logs, rocks, crevices, or other sources of shelter that offer high humidity and overhead protection ⁴⁷ . Dominant trees often yellow birch and red maple with dense rhododendron and laurel understory. ¹³	Preston, Tucker, Randolph, Pendleton, and Pocahontas Co.	Possible. Suitable habitat present within watershed, however presence is unconfirmed.
Birds					
Northern Goshawk	<i>Accipiter gentilis</i>	G5/S1B,S1N(SOC)	Coniferous, deciduous, & mixed forests; utilizes a variety of forest types, structural conditions, and successional stages. Usually nests in trees greater than 12" DBH. WV is on the southern extent of range. ^{15, 21}	Pocahontas, Randolph, Webster, Tucker Co. They also may be found nesting at elevations above 2500-3000 feet in Grant, Greenbrier, Mineral, Nicholas, and Preston Co.	Unlikely. Area is not secluded enough for Goshawk habitat and there is very little conifer in the area.
Peregrine falcon	<i>Falco peregrinus anatum</i>	G4/S1B2SN	Nest sites on cliffs, prominent high spots, buildings and bridges. Needs isolation from human disturbance. ⁵	Historic nest sites in Grant, Pendleton, and Greenbrier Co. Known nests found on North Fork Mountain and Gauley Gorge.	No suitable habitat within project area.
Migrant Loggerhead shrike	<i>Lanius ludovicianus migrans</i>	G4T3Q/S1BS2N	Most numerous in dry, open, eastern valleys (Shenandoah Valley). Prefers open farm and pasture, usually perching on scattered trees or wires. Favored nesting site: dense brush, most often with thorn trees. ^{21, 22}	May be found almost any summer in Hampshire, Grant, Pendleton, Greenbrier, and Monroe Co. Rare and local in Nicholas, Pocahontas, Tucker, and Hardy Co. Confirmed nesting in Berkley, Grant, Greenbrier, Monroe, and Mercer Co. ²¹	Possible. Habitat provided within Forest Service hayfields or pastures on private land adjacent to project area.
Reptiles					
Timber rattlesnake	<i>Crotalus horridus</i>	G4/S3	Rough mountainous terrain where brushy ridges and rocky hillsides with ledges abound. Common in wooded areas, but may occur in valleys, along streams and among slab piles around old sawmill sites. ¹⁷	In WV, range extends from the Eastern Panhandle across the Alleghenies south into Mercer and Mingo counties.	Possible. Suitable habitat present within analysis area, however presence is unconfirmed.
Amphibians					
Green salamander	<i>Aneides aeneus</i>	G3G4/S3 (SOC)	Smaller deeper crevices in rock faces, well-shaded and moist, but not wet, or under bark on trees, rotting logs, etc. Usually below 3000' in northern MNF; below 3500' in southern MNF. ^{17, 23}	Droop Mtn.; Blackwater Falls State Park; Tucker, Pocahontas, Randolph, Webster, and Nicholas Co. ³⁰	Possible. Suitable habitat present within analysis area, however presence is unconfirmed.
Hellbender	<i>Cryptobranchus</i>	G3G4/S2	Cool, clear, larger permanent	Tucker, Randolph, Pocahontas,	Occurs in Cheat

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	<i>alleghaniensis</i>	(SOC)	streams. Found throughout the Ohio River drainage. They spend most of their time under flat rocks, emerging at night to forage for food. ^{17, 23}	Webster, Nicholas, and Greenbrier Co.	River, within the Lower Clover watershed area. Possible habitat within Left and Right Forks of Clover run, however presence has not been confirmed.
Fish					
Redside dace	<i>Clinostomus elongatus</i>	G4/S1S2	Clear, cool streams, in small pools or backwater areas; most often found over gravel or cobble substrates and not typically found in association with aquatic vegetation. Found in the Monongahela River basin, the upper main channel of the Ohio River, and Middle Grave Creek; patchily distributed and uncommon.	Species has not been taken within MNF boundaries. The closest known localities are from Blackwater River above the falls (i.e. Canaan Valley), and Laurel Creek in Preston Co. ^{24, 25}	Absent. Outside of known range.
Candy darter	<i>Etheostoma osburni</i>	G3/S2(SOC)	Occupies rocky riffles, appears to be most common in cool to cold sections of moderate to small streams. Widely distributed, locally common endemic of lower New River drainage. ^{49, 18}	Gauley & New River drainages.	Absent. Outside of known range.
Pearl dace	<i>Margariscus margarita</i>	G5/S3S4	Small, clear, cold streams; often near springs over fine gravel substrates ⁴⁹ ; frequently occupies bogs and ponds created by beaver dams.	In WV restricted to the Potomac and Monongahela Rivers; most abundant in Shavers Fork of the Cheat River and the two eastern-most tributaries of the Potomac River. ²⁵	Absent. Outside of known range.
New River shiner	<i>Notropis scabriceps</i>	G4/S2	Pools or slow runs in small or medium-sized streams, usually over bedrock or gravel substrates.	An endemic species with patchy distribution in the northern tributaries of the New River and definitely located within boundaries of the MNF. Has almost disappeared from the Gauley River drainages, but can still be found in the eastern tributaries. Is still fairly common in the Greenbrier River waters. ^{24, 25}	Absent. Outside of known range.
Cheat minnow	<i>Pararhinichthys bowseri</i>	G1G2/S1S2(SOC)	Most often found in deep runs over gravel/rubble substrate. ²⁰	Found only in the Monongahela River drainages of the Ohio River	Absent. Outside of known range.

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				Basin in WV and in waters on the Appalachian Plateau and Allegheny Mt. Provinces.	
Appalachia darter	<i>Percina gymnocephala</i>	G4/S3	Pools and runs of mid-sized to large streams and rivers.	New River, Greenbrier and Gauley Rivers, East Fork of the Greenbrier River and Laurel Creek, Gauley drainage. ²⁵	Absent. Outside of known range.
Kanawha minnow	<i>Phenacobius teretulus</i>	G3G4/S1 (SOC)	Endemic to New (upper Kanawha) River drainage. Juveniles and adults typically occupy riffles and runs of gravel, rubble and boulder in cool to warm medium to large streams ⁴⁹ . Apparently has a preference for soft water ¹⁹ .	Upper Gauley River & New River tributaries. Pocahontas, Webster and Greenbrier Counties. May only inhabit the east and west forks of the Greenbrier River.	Absent. Outside of known range.

Mollusks

Elktoe	<i>Alasmidonta marginata</i>	G4/S2(SOC)	A freshwater mussel requiring a fish host. Typically found in smaller streams, but occurs in large to medium stream. Described as a riffle species that is found in swift current in firmly paced fine to course gravel. ⁵¹	Present in Greenbrier River, Cloverlick down through Hosterman to the mouth of the Greenbrier and into the New River.	Absent. Outside of known range.																											
Organ cavesnail	<i>Fontigens tartarea</i>	G2/S2	Small freshwater cave snail. Inhabits cave streams under flat rocks. ⁴³ <small>30</small>	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Bazzele</td> <td>Private</td> <td>Harman</td> </tr> <tr> <td>Bowden</td> <td>FS</td> <td>Bowden</td> </tr> <tr> <td>Bowden/Bear Heaven</td> <td>FS</td> <td>Bowden</td> </tr> <tr> <td>Dreen</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Harper</td> <td>Private</td> <td>Mozark Mt.</td> </tr> <tr> <td>Martha's</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> <tr> <td>Simmons-Mingo</td> <td>Private</td> <td>Mingo</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Bazzele	Private	Harman	Bowden	FS	Bowden	Bowden/Bear Heaven	FS	Bowden	Dreen	Private	Mingo	Harper	Private	Mozark Mt.	Martha's	Private	Hillsboro	Piddling Pit	Private	Edray	Simmons-Mingo	Private	Mingo	Absent. No known caves in project area.
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Green floater	<i>Lasmigona subviridis</i>	G3/S2(SOC)	Fine gravel and sand in backwater and slower water. Patchy occurrence in small to large rivers away from fast current and large boulders.	Currently in Greenbrier River & Clover Creek. Past record from New River drainage. Any Greenbrier River tributary is potential habitat. Two sites on west fork of Greenbrier above Durbin. From Cass south on Greenbrier is good potential. ^{14, 26}	Absent. Outside of known range.																											

Insects

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A tiger beetle	<i>Cicindela ancocisconensis</i>	G3/S3	Habitat specialist. Prefers open sand or a matrix of sand and cobble along permanent streams or medium-sized rivers. Usually found along rocky mountain streams and small rivers in partially shaded areas such as sand banks and sand bars. Apparently prefers to breed in sandy loam and adults are usually on sandy patches. ⁵¹		Possible. Suitable habitat present within watershed, however presence is unconfirmed.																																																						
Barren's tiger beetle	<i>Cicindela patruela</i>	G3/S2S3	Terrestrial habitats include: bare rock/talus and woodland-conifer, woodland-hardwood mix. Specialized to sandy/coarse gravel or eroding sandstone. Open mixed or deciduous (mainly oak) woodlands where open ground exists, such as along trails, outcrops or on ridge summit openings dominated by lichen and dry mosses. ⁵¹		Possible. Suitable habitat present within watershed, however presence is unconfirmed.																																																						
A cave beetle	<i>Pseudanopthalmus fuscus</i>	G2G3/S2	Usually near damp or wet places under rocks or rotting wood near cave streams. ³⁵ ³⁰		Absent. No known caves in project area																																																						
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Timber Ridge cave beetle	<i>Pseudanopthalmus hadenoecus</i>	G1/S1	Twilight zone or deeper in caves; on moist soil, often near streams or drip areas. Probably do burrow some; often found under rocks or debris. ³¹	Occurs in Mystic Cave, Pendleton Co., Onego Quad (right on Proclamation Boundary). ³⁰	Absent. No known caves in project area																																																						
A cave beetle	<i>Pseudanopthalmus hypertrichosis</i>	G3/S3	Damp clay banks in caves. ⁴³ ³⁰		Absent. No known caves in project area																																																						
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Dry Fork Valley cave beetle	<i>Pseudanopthalmus montanus</i>	G1/S1(SOC)	Twilight zone or deeper in selected caves, in or on moist soil, often near streams or drip areas, often under rocks or debris.	Known from only four WV caves in Tucker and Randolph Co. The only MNF cave is Cave Hollow/Arbogast Cave, Tucker	Absent. No known caves in project area																																																						

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A beetle (unnamed)	<i>Pseudanophthalmus sp. 2</i>	G1/S1		Bowden cave ⁵²	Absent. No known caves in project area																																																			
Gandy Creek cave springtail	<i>Pseudosinella certa</i>	G1/S1	Clay banks, damp places on or near organic debris in caves. ³³	Occurs within 5 miles of the Proclamation Boundary in Stillhouse Cave, Randolph Co., Sinks of Gandy quad. ³⁰	Absent. No known caves in project area																																																			
A springtail	<i>Pseudosinella gisini</i>	G3G4/S3	Found in damp places on or near bits of organic material in caves. ³³		Absent. No known caves in project area																																																			
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Appalachian Grizzled skipper	<i>Pyrgus wyandot</i>	G2/S1	Shale barrens, pastures and powerlines on south to west facing shale slopes always with much bare rock or soil. ⁵¹ Distribution based on available natural heritage records from Greenbrier, Hampshire, Hardy, Kanawha, Mineral and Pendleton counties. Greenbrier Mountain ⁵²		Absent. No shale barrens present within planning area.																																																			
A springtail	<i>Sinella agna</i>	G2G3/S1	Damp places in caves on or near bits of organic material. ³³		Absent. No known caves in project area																																																			
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Diana fritillary	<i>Speyeria diana</i>	G3/S2S3	Inhabits mountainous areas in WV; prefers moist and well-shaded forest covers with rich soils; utilizes small openings and roadsides in search of nectar plants but will not stray far from woods; usually found nectaring along woodland edges. Nectar sources: milkweeds, thistles, butterfly weed, wild bergamot, Joe-pye-weed and	Found in the southern third of the state, south from lower Pocahontas Co., and west to Kanawha and Lincoln Co.; may also occur occasionally in other surrounding counties, as well as the southern counties, with no records to date. ³⁷	Possible. Suitable habitat present within watershed, however presence is unconfirmed.																																																			

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			ironweed. Larval host – woodland violets. ³⁷																							
Invertebrates																										
Dry Fork Valley cave pseudoscorpion	<i>Apochthonius paucispinosus</i>	G1/S1	Damp leaf litter in caves	Bennett Cave, Mozark Mountain Quad, Tucker Co. (within Proclamation Boundary) ³⁰	Absent. No known caves in project area																					
Cheat Valley Cave Isopod	<i>Caecidotea cannula</i>	G2/S1(SOC)	Found under flat rocks in subterranean streams and pools in caves. May also be found in springs flowing out of caves.	Only known to occur in southern Tucker and northern Randolph Counties. MNF caves are Bowden cave* and Cave Hollow/Arbogast cave.	Absent. No known caves in project area																					
Greenbrier Valley cave isopod	<i>Caecidotea holsingeri</i>	G3/S3	The most common and widespread troglobitic isopod in WV. In cave stream gravel, under rocks, on decaying wood in streams, and occasionally in drip pools.	Only MNF cave known to harbor the species is Bowden cave*, Randolph Co. Also found in one cave in Virginia and one in Maryland.	Absent. No known caves in project area																					
An isopod	<i>Caecidotea simonini</i>	G1/S1	Cave pools. ³³ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Flower Pot</td> <td>Private</td> <td>Whitmer</td> </tr> <tr> <td>Stillhouse</td> <td>Private</td> <td>Sinks of Gandy</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Flower Pot	Private	Whitmer	Stillhouse	Private	Sinks of Gandy	Absent. No known caves in project area												
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An isopod	<i>Caecidotea sinuncus</i>	G1/S1	Under flat rocks in cave streams ³³	Within Proclamation Boundary, Blowhole, Keel spring, and Mystic caves, Onego Quad, Pendleton Co. ³⁰	Absent. No known caves in project area																					
An Underground crayfish	<i>Cambarus nerterius</i>	G2G3/S1	WV's only cave crayfish. Generally in subterranean streams, but small specimens have been collected from dry streambeds (but nearly saturated humidity). ^{28, 29} ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Buckeye Creek</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Clyde Cochrane Sinks</td> <td>Private</td> <td>Droop</td> </tr> <tr> <td>Ludington</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Matt's Black</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>McClung</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>My Cave</td> <td>Private</td> <td>Mingo</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Buckeye Creek	Private	Williamsburg	Clyde Cochrane Sinks	Private	Droop	Ludington	Private	Williamsburg	Matt's Black	Private	Williamsburg	McClung	Private	Williamsburg	My Cave	Private	Mingo	Absent. No known caves in project area
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Hoffmaster's cave flatworm	<i>Macrocotyla hoffmasteri</i>	G2G3/S3	In first order and small second order streams of caves. ²⁷ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Bazzle</td> <td>Private</td> <td>Harman</td> </tr> <tr> <td>Harper</td> <td>Private</td> <td>Mozark Mt</td> </tr> <tr> <td>Levisay</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>McClung</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Mystic</td> <td>Private</td> <td>Onego</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Bazzle	Private	Harman	Harper	Private	Mozark Mt	Levisay	Private	Williamsburg	McClung	Private	Williamsburg	Mystic	Private	Onego	Piddling Pit	Private	Edray	Absent. No known caves in project area
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A cave obligate planarian	<i>Phagocata angusta</i>	G1G3/SU	A sub-aquatic, subterranean obligate. WV Heritage records from Tucker Co. ⁵¹		Absent. No known caves in project area																																																												
Greenbrier Valley cave millipede	<i>Pseudotremia fulgida</i>	G2G3/S2	Mud/clay banks in caves; sometimes associated with organic debris. 30	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Allison's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Arbuckle</td><td>Private</td><td>Lewisburg</td></tr> <tr><td>Blue Springs</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Clyde Cochrane Sinks</td><td>Private</td><td>Droop</td></tr> <tr><td>Durbin</td><td>Private</td><td>Durbin</td></tr> <tr><td>Friars Hole</td><td>Private</td><td>Droop</td></tr> <tr><td>Friels</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Higginbotham's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Hughes Creek</td><td>Private</td><td>Lobelia</td></tr> <tr><td>Ludington</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Martha's</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>McClung</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Overholt Blowing</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> <tr><td>Poor Farm</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Poor Farm</td><td>Private</td><td>Denmar</td></tr> <tr><td>Rapp's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Steam</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>The Hole</td><td>Private</td><td>Anthony</td></tr> </tbody> </table>	Cave	Ownership	Quad	Allison's	Private	Williamsburg	Arbuckle	Private	Lewisburg	Blue Springs	Private	Hillsboro	Clyde Cochrane Sinks	Private	Droop	Durbin	Private	Durbin	Friars Hole	Private	Droop	Friels	Private	Hillsboro	Higginbotham's	Private	Williamsburg	Hughes Creek	Private	Lobelia	Ludington	Private	Williamsburg	Martha's	Private	Hillsboro	McClung	Private	Williamsburg	Overholt Blowing	Private	Hillsboro	Piddling Pit	Private	Edray	Poor Farm	Private	Hillsboro	Poor Farm	Private	Denmar	Rapp's	Private	Williamsburg	Steam	Private	Hillsboro	The Hole	Private	Anthony	Absent. No known caves in project area
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Culver's planarian	<i>Sphalloplana culveri</i>	G1/S1	In small streams under rocks and pieces of wood in caves. ³³		Absent. No known caves in project area																																																												
Culver's cave isopod	<i>Stygobromus culveri</i>	G1G2/S1	Seep and drip pools or in small streams in caves. ³³ 30	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Flower Pot</td><td>Private</td><td>Whitmer</td></tr> <tr><td>Red Run</td><td>FS</td><td>Mozark Mountain</td></tr> <tr><td>Stillhouse</td><td>Private</td><td>Sinks of Gandy</td></tr> </tbody> </table>	Cave	Ownership	Quad	Flower Pot	Private	Whitmer	Red Run	FS	Mozark Mountain	Stillhouse	Private	Sinks of Gandy	Absent. No known caves in project area																																																
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Greenbrier cave amphipod	<i>Stygobromus emarginatus</i>	G3/S3	In caves under gravel in streambeds and occasionally in pools. Most abundant in smallest trickles of water. Primarily in tiny first and second order headwater cave streams. ^{27, 35} ³⁰		Absent. No known caves in project area																																																									
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Sharps	Private	Mingo																																																												
The Hole	Private	Anthony																																																												
Upper Martha's	Private	Hillsboro																																																												
Pocahontas cave amphipod	<i>Stygobromus nanus</i>	G1/S1	Mud bottoms of small streams and seep pools in caves. ³³	Occurs within Proclamation Boundary in Pocahontas Co., Edray Quad – Piddling Pit cave. ³⁰	Absent. No known caves in project area																																																									
Minute cave amphipod	<i>Stygobromus parvus</i>	G1G2/S1	Found in mud-bottomed, drip and seep pools in caves; tolerant of substrate, but prefers standing water. ³⁴ ³⁰		Absent. No known caves in project area																																																									
				<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Bonner</td><td>Private</td><td>Mozark Mt.</td></tr> <tr><td>Cassell</td><td>Private</td><td>Cass</td></tr> <tr><td>Crawford #2</td><td>Private</td><td>Valley Head</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> </tbody> </table>	Cave	Ownership	Quad	Bonner	Private	Mozark Mt.	Cassell	Private	Cass	Crawford #2	Private	Valley Head	Piddling Pit	Private	Edray																																											
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WV blind cave millipede	<i>Trichopetalum krekeleri</i>	G1/S1	In selected caves, under rocks, around organic debris or on damp silt banks near streams.	Known from only 5 WV caves. The only MNF cave is Bowden cave*, Randolph Co.	Absent. No known caves in project area																																																									

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																				
Grand Caverns blind cave millipede	<i>Trichopetalum weyeriense</i>	G3Q/S2	Damp areas in caves on organic debris. ³³ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Arbuckle</td><td>Private</td><td>Lewisburg</td></tr> <tr><td>Cass</td><td>Private</td><td>Cass</td></tr> <tr><td>Dreen</td><td>Private</td><td>Mingo</td></tr> <tr><td>Higginbotham's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Kenny Simmons</td><td>Private</td><td>Moatstown</td></tr> <tr><td>Linwood</td><td>Private</td><td>Mingo</td></tr> <tr><td>Ludington</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>McClung</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>My Cave</td><td>Private</td><td>Mingo</td></tr> <tr><td>Mystic</td><td>Private</td><td>Onego</td></tr> <tr><td>The Hole</td><td>Private</td><td>Anthony</td></tr> </tbody> </table>	Cave	Ownership	Quad	Arbuckle	Private	Lewisburg	Cass	Private	Cass	Dreen	Private	Mingo	Higginbotham's	Private	Williamsburg	Kenny Simmons	Private	Moatstown	Linwood	Private	Mingo	Ludington	Private	Williamsburg	McClung	Private	Williamsburg	My Cave	Private	Mingo	Mystic	Private	Onego	The Hole	Private	Anthony	Absent. No known caves in project area
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Luray Caverns blind cave millipede	<i>Trichopetalum whitei</i>	G2G3Q/S1	Damp areas in caves on or near organic debris. ³³ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Hellhole</td><td>Private</td><td>Onego</td></tr> <tr><td>Stratosphere Balloon</td><td>Private</td><td>Onego</td></tr> <tr><td>Trout</td><td>Private</td><td>Sugar Grove</td></tr> </tbody> </table>	Cave	Ownership	Quad	Hellhole	Private	Onego	Stratosphere Balloon	Private	Onego	Trout	Private	Sugar Grove	Absent. No known caves in project area																								
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Plants

Fraser fir	<i>Abies fraseri</i>	G2	Coniferous tree, generally found above 4500'.	Known from Blister Run, and Beaverdam Run, Randolph Co. According to Heritage Program records, is not native to WV. All known sites in WV are planted. ³⁶	Absent.
White monkshood	<i>Aconitum reclinatum</i>	G3/S3	Perennial herb found in mesic northern hardwood forests with acidic bedrock, 2500-4000' elev. Common on NE aspects, especially in coves. In wet but not flooded soil in partial shade, often in a seep at the edge of a road or river where the soil has been worn away (e.g. clay content) by the water moving down the hill. Also along high elevation roads. Most commonly on Cateache soils with Mauch Chunk geology.	Gay Knob Area (Edray), Chestnut Ridge (Paddy Knob), Spruce Knob Roadside 112 (Spruce Knob), & side slope of Laurel Run (Sharp Knob); occurs in Pocahontas, Randolph, Preston, Pendleton, Grant and Tucker Co.	Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Arctic bentgrass	<i>Agrostis mertensii</i>	G5/S1	Open riparian at high elevations. Peaty or rocky soil. ^{38,46,47}	Known along the upper Shavers Fork above Cheat Bridge on the Mower tract. ³⁰	Absent. Outside of known range.
Lillydale onion	<i>Allium oxyphilum</i>	G2Q/S2	Odiferous herb with bulb; endemic to acidic shale or sandstone geology mainly on shale barrens.	Found in White Sulphur Springs, & Greenbrier, Pendleton, & Grant Co.	Absent. No shale barrens present within planning area.
Spreading	<i>Arabis patens</i>	G3/S2	Moist, rocky woods, limestone	In the Eastern panhandle; Jordan	Unlikely. No

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
rockcress			outcrops and shady riverbanks	Run Road, Grant Co.; "Dry Trough" Hampshire Co.; Wardensville, Hardy Co.; and Terrapin Neck, Jeff. Co.	limestone soils or outcrops present within planning area.
Cooper's milkvetch	<i>Astragalus neglectus</i>	G4/S1	Annual herb found on drier, limestone-based soils in the eastern part of the state.	Only known site is on Cave Mt., Grant Co., in what is considered a prairie extant community	Unlikely. No limestone soils or outcrops present within planning area.
Lance-leaf grapefern	<i>Botrychium lanceolatum</i> v. <i>angustisegmentum</i>	G5T4/S1	Subarctic and boreal plant of mountain slopes and meadows. Occurs in moist shady woods and margins of swamps. ⁴⁷	Collected in Greenbrier, Pocahontas, Preston, Randolph, and Upshur Co. ³⁸	Occurs within Lower Clover watershed area, but not within the Analysis area or project activity units.
Blunt-lobed Grapefern	<i>Botrychium oneidense</i>	G4Q/S1	Mostly occurs in low, wet, acid, secondary woods and swamps. ⁵¹		Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Showy lady's slipper	<i>Cypripedium reginae</i>	G4/S1	June-Sept. Low, downy, perennial herb occurring in swamps and woods	Rare in WV, known to occur on MNF only near White Sulphur Springs, Greenbrier Co. ³⁸	Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Tall larkspur	<i>Delphinium exaltatum</i>	G3/S2(SOC)	Perennial herb found in open limestone woods, mainly in the mountains in the eastern part of the state.	Found at Smokehole in Pendleton Co., Hardy and Greenbrier Co.	Unlikely. No limestone soils or outcrops present within planning area.
Yellow buckwheat	<i>Eriogonum allenii</i>	G4/S2	Perennial herb found on the most sterile and barest of sites on shale barrens.	Greenbrier Co.; Ugly Mt., Pendleton Co.	Unlikely. No shale barrens present within planning area.
Darlington's spurge	<i>Euphorbia purpurea</i>	G3/S2(SOC)	Annual herb with milky juice found in mountain glades and swampy woods (particularly where 2 river points come together, e.g. where Warner Run flows into Gandy Creek). Possibly mountain bogs, riparian areas. Moist to saturated soils.	Known from Blister Swamp, Pocahontas Co.; Terra Alta, Preston Co.; Laurel Fork, Randolph Co.; Tucker Co.; Canaan Valley, Laurel Fork Wilderness (N&S), McGowan Mt., Cunningham Knob, Yokum Knob, Narrow Ridge, Blue Knob (Cranberry Glades Bog Area).	Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Box huckleberry	<i>Gaylussacia</i>	G3/S2	Smooth shrub found in acidic sandy	Largest population on border of	Unlikely. No

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
	<i>brachycera</i>		soil within submesic forests & on woodland slopes. Under hardwoods, with mixed pine, mt. laurel & other heaths in understory.	GWNF and MNF in the eastern part of the state. In Greenbrier & Pocahontas Co., North Fork Mt., Redman Run Trail & Smokehole.	suitable habitat within activity units and was not found during botany surveys.
Appalachian oak fern	<i>Gymnocarpium appalachianum</i>	G3/S1	Primarily occurs in rocky maple-birch-hemlock woods on mountain slopes and summits, on moist sandstone, talus slopes or bouldery colluvium. Requires a cool, moist microclimate and typically occurs on north-facing slopes with cold air seepage at elevations above 2,000 ft.; occasionally at lower elevations, particularly on the fringes of its range. ³⁹	Endemic to the Appalachian region, most common in Virginia (the center of its range), where it occurs at 30-100 localities. Pendleton Co. ³⁰	Unlikely. Outside of known range and was not found during botany surveys.
Sweet-scented Indian plantain	<i>Hasteola suaveolens</i>	G3/S2	Widely but irregularly distributed in eastern US. Found on riverbanks and floodplains.	Found near Otter Creek cabin ⁵²	Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
White alumroot	<i>Heuchera alba</i>	G2Q/S2	Erect perennial herb found in dry, open woods in the eastern part of the state. Found on sandy soils with Tuscarora sandstone (e.g. North Fork Mt.), on rock outcrops within the woods (Gay Knob, Edray Quad) & on rock outcrops on roadside (Rd. 112, Spruce Knob, Pendleton Co.).	Found in higher elevations of North Fork Mt., Grant Co.; Spruce Knob, Pendleton Co.; Crouch Knob, Randolph Co.; Cass, Pocahontas Co	Unlikely, no rock outcrops within activity areas and was not found during botany surveys.
Crested coralroot	<i>Hexalectris spicata</i>	G5/T4T5/S1	July-Aug. A leafless herb occurring in rich woods.	Smoke Hole, Pendleton Co.; approaching the northern limit of its range. ³⁸	Unlikely, outside of known range and was not found during botany surveys.
Blue Ridge St. John's wort	<i>Hypericum mitchellianum</i>	G3/S1	Endemic to southern Appalachians. Has been found in seepage areas at high elevations or high elevation balds.	Found near Cheat bridge. ⁵²	Unlikely, no suitable habitat present and was not found during botany surveys.
Long-stalked holly	<i>Ilex collina</i>	G3/S3	Deciduous shrub or tree found in riparian areas along high-energy streambanks at higher elevations.	Selected sites on Cheat, Greenbrier and Gauley RDs. Along Gauley and Cranberry	Present in two locations within ½-1 mile of project

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			Moist soil; wet meadows and bogs.	Rivers	boundary. Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Butternut	<i>Juglans cinerea</i>	G3G4/S3 (SOC)	Deciduous shade-intolerant tree found in rich loamy soils, mixed hardwood forests, shade intolerant, regeneration in open fields, riparian zones, along ridges, or in edge habitat. Found in association with hawthorn on Greenbrier River shoreline in Greenbrier Co.	From valley to 3200'. Along streams (Laurel & Shavers Forks), & near the Gay Knob area (USFS Road 201) of Randolph Co.; also found in similar areas in adjacent counties. Also found on Landis Trail of North Fork Mt., Pendleton Co., and in Webster Co.	Occurs within the Lower Clover watershed area, but not within the analysis area or project activity units. No additional individuals were found during botany surveys.
Thread rush	<i>Juncus filiformis</i>	G5/S2	June-Aug. Perennial grass-like herb occurring in bogs	Canaan Valley, elev. 3,000', Tucker Co.; and near Cheat Bridge, Randolph Co. – the southernmost known localities for this species. ³⁸	Unlikely. Project area is outside known range and no suitable habitat present
Highland rush	<i>Juncus trifidus</i>	G5/S1	Rock crevices and alpine meadows. ⁴⁷	Known only from the rocky cliff tops on North Fork Mountain. Global range is Europe and NE America south to mtns. of Virginia and North Carolina. ^{30, 46}	Unlikely. Project area is outside known range and no suitable habitat present
Turgid gay feather	<i>Liatris turgida</i>	G3/S2	Erect perennial herb in xeric environments associated with clay soils, gravel, shale barrens, & rocky outcrops; can also colonize road cuts. Occurs in shale barrens in WV. Associates include mt. laurel, black gum, red pine, chestnut oak, & sassafras.	(E.g. Slaty Fork TNC Reserve in Monroe Co.) & along roadside (McDowell Co.) White Sulphur Springs, Greenbrier, & Nicholas Co.	Unlikely. Project area is outside known range and no suitable habitat present
Large-flowered Barbara's buttons	<i>Marshallia grandiflora</i>	G2/S2(SOC)	Smooth perennial aster found on sandy or rocky river banks of larger (3rd to 4th order) streams in mountains. Requires hydrology of flood-scouring and full sun, with little competition. Also found in bedrock crevices and sparsely vegetated shores with small stones.	Along the western slopes of Alleghenies. Shaver's Mt., Cheat Mt., Hopkin's Mt., Shaver's Fork, Cherry River, Horse Ridge, Gun Powder Ridge, Huttonsville; Blue Bend (Greenbrier Co.), along lower Gauley River, Nicholas Co.; Cheat River, Preston Co.	Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Bog buckbean	<i>Menyanthes trifoliata</i>	G5/S1	April-June. Smooth, perennial marsh	Backbone Mt., Tucker Co.;	Unlikely, no suitable

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			herb occurring in bogs and marshy places.	Cranberry Glades, Pocahontas Co.; historic site at Cranesville, Preston Co. ³⁸	habitat present and was not found during botany surveys.
Smokehole bergamot	<i>Monarda fistulosa v. brevis</i>	G5T1/S1(SOC)	Perennial, aromatic herb found only on limestone-derived communities of Cave Mt. ecosystem including the south branch of Potomac side slopes, cedar glades and rock outcrops.	Cave Mountain	Unlikely. Project area is outside known range.
Canada Mountain rice grass	<i>Oryzopsis canadensis = Piptatherum canadense</i>	G5/S1	June-July. A perennial grass occurring on sandy barrens	Summit of Panther Knob, Pendleton Co., elev. 4,500', the southernmost station known for the species. ³⁸	Unlikely. Project area is outside known range and no suitable habitat present
Silver Nailwort	<i>Paronychia argyrocoma</i>	G4/S3	July-Sept. Low perennial herb occurring on White Medina sandstone	New Creek Mt., Grant Co.; Lost River State Park, Hardy Co.; Seneca Rocks, North Fork Mt., Pendleton Co. ³⁸	Unlikely. Project area is outside known range and no suitable habitat present
Yellow nailwort	<i>Paronychia virginica v. virginica</i>	G4/S1(SOC)	Perennial mat-like, wiry plant found on limestone-based rocky cliffs, sandstone banks, crevices along riverbanks, & cedar glades.	Cave Mtn., Eagle Rock & Ship Rock in the Smokehole, Pendleton Co.	Unlikely. Project area is outside known range and no suitable habitat present
Canby's Mountain lover	<i>Paxistima canbyi</i>	G2/S2(SOC)	Low evergreen shrub found in dry open woods. Calcareous rocks and slopes in the mountains.	Found only in Potomac and New-Kanawha watersheds in Grant, Pendleton and Greenbrier Co.	Unlikely. Project area is outside known range.
Swamp lousewort	<i>Pedicularis lanceolata</i>	G5/S2	Aug.-Oct. Herb occurring in swampy places, often calcareous.	Altona Marsh, Jefferson Co.; Buckeye, Dunmore & Minnehaha Springs, Pocahontas Co.; Sweet Springs, Monroe Co.; near Elkins, Randolph Co. – only known colonies in state. ³⁸	Unlikely. Project area is outside known range and no suitable habitat present
Sword-leaved phlox	<i>Phlox buckleyi</i>	G2/S2	Perennial herb found on shale slopes in eastern woods. Road banks, open woods.	E. Pocahontas Co. near WV55 and WV39, and in Greenbrier Co.	Unlikely. Project area is outside known range.
Jacob's ladder	<i>Polemonium van-bruntiae</i>	G3/S2	Perennial herb found in swamps and sphagnum bogs and along riparian zones at higher elevations.	Pocahontas and Preston Co. Southernmost population in Cranberry Glades bog. Also, in Canaan Valley, Tucker Co.	Unlikely. No swamps or bogs or high elevation sites within activity area.
Tennessee pondweed	<i>Potamogeton tennesseensis</i>	G2/S1	Aquatic herb found in standing or slow-flowing shallows of rivers.	Greenbrier, Pocahontas, Preston, and Webster Co.	Unlikely, Not known to occur within Tucker Co. and was not found during

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
					botany surveys.
Rock skullcap	<i>Scutellaria saxatilis</i>	G3/S2	Perennial herb found on wooded rocky hillsides, moist cliffs, 2,500+'; talus slopes/bluffs; moist openings such as riverbanks or talus.	Greenbrier, Pocahontas & Tucker Co.	Unlikely, no suitable habitat and was not found during botany surveys.
Robust fire pink	<i>Silene virginica v. robusta</i>	G5T1Q/S1 (SOC)	Narrow endemic perennial herb in dry open woods or riparian areas of Smokehole Rec. Area. Associated with limestone.	Petersburg Gap in Grant and Pendleton Co.	Unlikely. Project area is outside known range.
Ammon's tortula	<i>Syntrichia ammoniana</i>	G1/S1(SOC)	Moss found on wet, cool rock outcrops on cliff overhangs adjacent to waterfalls. Sandstone walls.	Falls of Hills Creek, Pocahontas Co. ⁴⁰	Unlikely. Project area is outside known range.
Appalachian bristle fern	<i>Trichomanes boschianum</i>	G4/S1	Delicate fern occurring on dripping rocks. The gametophytes will probably be found in deep shaded recesses of sandstone and quartzite rocks. In the Appalachians it is more common and widespread than the sporophyte, but is overlooked because it resembles a filamentous alga.	Kanawha State Forest, Kanawha Co.; Webster Springs, Webster Co. This represents a northeastern extension of the range of this species. ³⁸	Unlikely. Project area is outside of known range and was not found during botany surveys.
Kate's Mountain clover	<i>Trifolium virginicum</i>	G3/S3	Perennial, non-stoloniferous clover found on south-facing slopes of very sterile shale barrens and in dry-shale soils.	Eastern portion of the MNF including: Kate's Mt., Greenbrier Co.; Smokehole (above Big Bend campground); Hardy, Nicholas (Devonian shale's), Pendleton Co.	Unlikely. Project area is outside known range and no suitable habitat present.
Nodding pogonia	<i>Triphora trianthophora</i>	G3G4/S2	Aug.-Sept. Rich woods, infrequent.	Short Creek, Fayette Co.; Spring Hill, Kanawha Co.; Mt. Lookout, Nicholas Co.; French Creek, Upshur Co.; and Holly River State Park, Webster Co. ³⁸	Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Appalachian blue violet	<i>Viola appalachiensis</i>	G3/S2S3	Short perennial stoloniferous herb (mat-forming). Moist floodplains of high-energy streams, alluvial pond shores, old logging roads, and old mounds of up-rooted cherry trees.	Found on all districts. Grant, Hardy, Nicholas, Pendleton, Pocahontas, Preston, Randolph, Tucker, and Webster Co.	Possible. Suitable habitat present within watershed, however presence was not found during botany surveys.
Sand grape	<i>Vitis rupestris</i>	G3/S1	Brushy, shrub-like grape found climbing on calcareous or gravelly banks, river bottoms, streambeds,	Found in Grant, Greenbrier, Pendleton and Preston Co	Unlikely. Project area is outside known range.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			washes, and scoured boulders and cobbles.		
Netted chain fern	<i>Woodwardia areolata</i>	G5/S1	Large fern occurring in swamps and wet woods, chiefly in acid soil.	In WV, known only from Clay, Greenbrier, Mineral, Nicholas, Pocahontas, and Upshur counties. Species is distributed principally in the coastal plain and its occurrence in this state suggests that it is a remnant of the Cretaceous flora that occupied the territory prior to the uplift of the Appalachian Plateau. <small>38</small>	Unlikely. Outside of known range and was not found during botany surveys.

Species Rank: US ESA Status/Global Heritage Status/National Conservation Status/ State Status

ESA Status: LE: Legally Endangered
LT: Legally Threatened

Global Heritage Status: G: Global conservation
T: Subspecies, varieties and populations

Global Status		State Conservation Status	
GX or TX	Presumed Extinct	SX	Presumed Extirpated
GH or TH	Historical	SH	Historical
G1 or T1	Critically Imperiled	S1	Critically Imperiled
G2 or T2	Imperiled	S2	Imperiled
G3 or T3	Vulnerable	S3	Vulnerable
G4 or t4	Apparently Secure	S4	Apparently Secure
G5 or t5	Secure	S5	Secure
GU or TU	Unrankable	SZ	Zero Occurrences
G? or T?	Not Yet Ranked	SU	Unrankable
		SR	Reported
		S?	Not yet ranked
		B	Breeding
		N	Non-breeding

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Vertebrate Species of Concern in WV: Green salamander, page 41A; Northern goshawk, page 69A; Bald eagle, page 72A; Peregrine falcon, page 73A; Small-footed myotis, page 91A; Virginia Big-eared bat, page 95A