

**ENDANGERED, THREATENED, AND SENSITIVE SPECIES
LIKELIHOOD OF OCCURRENCE**

Reflecting 2003 changes and species account updates

**For the EA for “Adjustments to Management and Improvements on Four Grazing Areas”
4/7/2004**

	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}
Virginia big-eared bat	<i>Corynorhinus townsendii virginianus</i>	LE/G4T2/N2/S2	Uses caves during summer (maternity sites) and winter (hibernacula). These caves are typically located in karst regions dominated by oak-hickory or beech-maple-hemlock forest associations. Forage in patchy mosaic habitats ^{3, 45} Cave Mountain cave (Pendleton Co.) and Cave Hollow/Arbogast cave (Tucker Co.) have been designated as Critical Habitat by USFWS. Significant status is based on Federal Caves Resources Protection Act of 1988. Forest Plan amendment calls for creation of MP 837 for areas 200' from VBEB caves. Reference Forest Plan Amendment.	Known from 30 caves in the state. Some of these caves are just used as hibernacula, some just as summer maternity sites, and some for both. Only 5 of the 30 caves are on National Forest land.	Likely to occur. Only the Queens allotment (project area) is within 6 miles of a known VBEB hibernacula. (Big Springs cave) This cave is not a VBEB summer maternity cave.
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}

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
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.	Unlikely. The project areas are primarily non-forested. Not habitat for WVNFS Only the Allegheny Battlefield allotment is above 2600 ft. at approx. 4250 ft. There are no known locations for VNFS near these project areas.
Indiana bat	<i>Myotis sodalis</i>	LE/G2/N2/S1	Winters 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. Forest Plan amendment calls for Indiana bat habitat to be designated MP 838. Reference Forest Plan Amendment.	Known from 23 caves in the state. All are hibernaculums for this species.. Only 3 of the 23 are on National Forest lands.	Likely to occur. The Queens allotment (project area) <u>only</u> is within 5 miles of two different Indiana bat hibernacula. These are Big Springs cave and Two Lick Run cave.
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. The only allotment near a river is the Queens allotment. It is near the Shavers Fork. There have been no reports of eagles nesting along the Shavers Fork. No cliffs are near these

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
					allotments.
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.	Unlikely, all grazing areas are mostly non-forested. They receive direct sun. Not moist. Only area above 2940 ft. is the Allegheny Battlefield allotment. This allotment is outside and east of the known range of this species.
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	Unlikely. All project areas are mostly non-forested. No habitat for this species in project areas. No project areas are near the known site.
Shale Barren Rockcress	<i>Arabis serotina</i>	LE/G2/S2	Biennial herb found mostly on shale barrens of eastern counties of WV. ⁸	Grant, Greenbrier, and Pendleton counties.	Unlikely. No shale barren habitat occurs within or nearby the project areas.
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	Known from Greenbrier Co. near Greenbrier Youth Camp; National Park Service land in Nicholas Co.	Unlikely. There are no large, high gradient streams within any of the project areas.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			thickets between the river and forest. Full sun or shade. ⁹		Project areas are outside the known range of this species.
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.	Unlikely. The habitat in the project areas is marginal for this species and allotments are not in areas of limestone geology. The cemetery at Allegheny Battlefield allotment is fenced out. Most of the project areas are in full sun light. Seasonal grazing over many years would likely have eliminated this preferred forage from project areas, if it ever occurred there. No known populations of RBC are in allotments.
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. Project areas do not provide suitable habitat for this species. Project areas are primarily non-forested, are not moist, and only one of the four project areas is at high 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	Preston, Tucker, Grant, Randolph, Pendleton, Pocahontas, and Greenbrier Co.	Likely to occur. GIS analysis indicates a mist net

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			buildings, caves, rock crevices, tunnels or under bridges. It is thought that rock outcrops are important for this species. Forages over ponds and streams mostly in wooded areas. Summer habitat may or may not be in proximity to hibernation sites. ^{11, 42}		capture site for this species 3.1 miles from the Callison/Clark pasture.
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 buildings ^{47, 45} .	Widespread across the Monongahela in rocky areas and around many caves	Unlikely. Preferred habitat for this species does not occur within the project areas.
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.	Unlikely. The project areas do not contain suitable habitat for this species.
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.	Likely to occur. Although the closest known nest site to any of the project areas is 9.3 miles this species is mobile and has a large home range.
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.	Unlikely. The project areas do not contain suitable nesting habitat. Known nesting sites are on North Fork Mountain. None of the project areas are near here. No cliffs in project areas.
Migrant Loggerhead	<i>Lanius ludovicianus migrans</i>	G4T3Q/S1B,S2N	Most numerous in dry, open, eastern valleys (Shenandoah Valley). Prefers	May be found almost any summer in Hampshire, Grant, Pendleton,	Unlikely. The only project area with

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
shrike			open farm and pasture, usually perching on scattered trees or wires. Favored nesting site: dense brush, most often with thorn trees. ^{21, 22}	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	open farm and pasture with thorn trees is the Allegheny Battlefield allotment. However, this area is a high elevation ridge rather than a valley area. AB allotment is in Pocahontas Co. where the species is rare and local and not known to nest..
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.	Unlikely. Project areas do not provide sufficient hiding cover or other suitable habitat for this species.
Amphibians					
Green salamander	<i>Aenides 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	Unlikely. Project areas are primarily non-forested, exposed to direct sunlight and to warm and dry for this species.
Hellbender	<i>Cryptobranchus alleghaniensis</i>	G3G4/S2 (SOC)	Cool, clear, larger permanent 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}	Tucker, Randolph, Pocahontas, Webster, Nicholas, and Greenbrier Co.	Likely to occur in that waters flowing off the project areas flow into the Ohio River drainage. .
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	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}	Unlikely. Waters from Project areas do not flow to the closest known localities on the Forest.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			Middle Grave Creek; patchily distributed and uncommon.		
Candy darter	<i>Etheostoma osburni</i>	G3/S3(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. In the East Fork and West Fork of the Greenbrier River.	Likely to occur in streams adjacent to or downstream of the Rimel, Allegheny Battlefield and Callison/Clark Tract grazing areas.
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 Cheat Rivers; in the Dry Fork tributary of the Cheat River and the two eastern-most tributaries of the Potomac River. ²⁵	Unlikely. No waters from the four project areas flow into the Potomac River. Waters from the Queens allotment flows into the Shavers Fork tributary of the Cheat River, but not into the Dry Fork tributary of the Cheat River.
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, including the East Fork and the West Fork. ^{24, 25}	Likely to occur in streams adjacent to, or downstream of the Rimel, Allegheny Battlefield and the Callison/Clark grazing areas
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	Likely to occur in streams adjacent to or downstream of the Rimel, Allegheny Battlefield, and the Callison/Clark grazing areas..
Kanawha minnow	<i>Phenacobius teretulus</i>	G3G4/S1 (SOC)	Endemic to New (upper Kanawha) River drainage. Juveniles and adults	Upper Gauley River & New River tributaries. Pocahontas, Webster	Likely to occur in larger streams

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																											
			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 .	and Greenbrier Counties. May only inhabit the east and west forks of the Greenbrier River.	downstream from the Allegheny Battlefield allotment..																											
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 Basin in WV and in waters on the Appalachian Plateau and Allegheny Mt. Provinces.	Likely to occur in the Shavers Fork which is adjacent to the Queens allotment.																											
Mollusks																																
Elktoe	<i>Alasmidonta marginata</i>	G4/S2(SOC)	A freshwater mussel requiring a fish host. Typically found in smaller streams, but occurs in medium to large streams also. Described as a riffle species that is found in swift current in firmly packed fine to coarse gravel.	Present in Greenbrier River, Hosterman down through Cloverlick, to the mouth of the Greenbrier and into the New River.	Likely to occur in that waters from the Rimel, Callison/Clark and Allegheny Battlefield grazing areas flow into the Greenbrier River.																											
Organ cavesnail	<i>Fontigens tartarea</i>	G2/S2	Inhabits cave streams under flat rocks. ⁴³ ₃₀	<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	Unlikely. No caves in or nearby the project areas.
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																														
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}	Likely to occur from the standpoint that waters from the Rimel, Callison/Clark and Allegheny Battlefield grazing areas flow into the Greenbrier River.																											
Insects																																

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																						
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 . Known from South Branch of the Potomac (Redman Run, Big Bend) Shirk Gap, Elk River, and the Cheat Bridge of the Shavers Fork. ⁵²		Unlikely. No open sand or other suitable habitat occurs within project areas. Project areas are not near known sites.																																																						
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 moss. ⁵¹ . Known from North Fork Mountain Trail and Brushy Run Road in Onego. ⁵²		Unlikely. Project areas do not contain suitable habitat for this species and are not near known sites.																																																						
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		Unlikely. No caves within or nearby the project areas.																																																						
				<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Blue Springs</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Bolling</td> <td>Private</td> <td>Denmar</td> </tr> <tr> <td>Fox</td> <td>Private</td> <td>Droop</td> </tr> <tr> <td>Higginbotham's</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>McClung</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Blue Springs	Private	Hillsboro	Bolling	Private	Denmar	Fox	Private	Droop	Higginbotham's	Private	Williamsburg	McClung	Private	Williamsburg	Piddling Pit	Private	Edray																																		
Cave	Ownership	Quad																																																									
Blue Springs	Private	Hillsboro																																																									
Bolling	Private	Denmar																																																									
Fox	Private	Droop																																																									
Higginbotham's	Private	Williamsburg																																																									
McClung	Private	Williamsburg																																																									
Piddling Pit	Private	Edray																																																									
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	Unlikely. No caves within or nearby the project areas.																																																						
A cave beetle	<i>Pseudanopthalmus hypertrichosis</i>	G3/S3	Damp clay banks in caves. ⁴³ ³⁰		Unlikely. No caves within or nearby the project areas.																																																						
				<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>Blue Springs</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Bolling</td> <td>Private</td> <td>Denmar</td> </tr> <tr> <td>Cass</td> <td>Private</td> <td>Cass</td> </tr> <tr> <td>Crawford#1</td> <td>Private</td> <td>Valley Head</td> </tr> <tr> <td>Devils Kitchen</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Dreen</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Friels</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Grimes</td> <td>Private</td> <td>Cass</td> </tr> <tr> <td>Linwood</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Martens</td> <td>Private</td> <td>Lobelia</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>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> <tr> <td>Simmons-Mingo</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Simmons-Mingo</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Tub</td> <td>Private</td> <td>Hillsboro</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Arbuckle	Private	Lewisburg	Blue Springs	Private	Hillsboro	Bolling	Private	Denmar	Cass	Private	Cass	Crawford#1	Private	Valley Head	Devils Kitchen	Private	Mingo	Dreen	Private	Mingo	Friels	Private	Hillsboro	Grimes	Private	Cass	Linwood	Private	Mingo	Martens	Private	Lobelia	Martha's	Private	Hillsboro	McClung	Private	Williamsburg	Piddling Pit	Private	Edray	Simmons-Mingo	Private	Mingo	Simmons-Mingo	Private	Mingo	Tub	Private	Hillsboro	
Cave	Ownership	Quad																																																									
Arbuckle	Private	Lewisburg																																																									
Blue Springs	Private	Hillsboro																																																									
Bolling	Private	Denmar																																																									
Cass	Private	Cass																																																									
Crawford#1	Private	Valley Head																																																									
Devils Kitchen	Private	Mingo																																																									
Dreen	Private	Mingo																																																									
Friels	Private	Hillsboro																																																									
Grimes	Private	Cass																																																									
Linwood	Private	Mingo																																																									
Martens	Private	Lobelia																																																									
Martha's	Private	Hillsboro																																																									
McClung	Private	Williamsburg																																																									
Piddling Pit	Private	Edray																																																									
Simmons-Mingo	Private	Mingo																																																									
Simmons-Mingo	Private	Mingo																																																									
Tub	Private	Hillsboro																																																									

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																			
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 Co. ³⁰	Unlikely. No caves within or nearby the project areas.																																																			
A beetle (unnamed)	<i>Pseudanopthalmus sp. 2</i>	G1/S1		Bowden cave ⁵²	Unlikely. Project areas are not near Bowden Cave.																																																			
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	Unlikely. No caves in or nearby the project areas.																																																			
A springtail	<i>Pseudosinella gisini</i>	G3G4/S3	Found in damp places on or near bits of organic material in caves. ³³ ₃₀	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Allison</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Arbuckle</td><td>Private</td><td>Lewisburg</td></tr> <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>Friars Hole</td><td>Private</td><td>Droop</td></tr> <tr><td>Friels</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Fuels Fruit</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Grimes</td><td>Private</td><td>Cass</td></tr> <tr><td>Higginbotham's</td><td>Private</td><td>Williamsburg</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>Piddling Pit</td><td>Private</td><td>Edray</td></tr> <tr><td>Rapp's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>The Hole</td><td>Private</td><td>Anthony</td></tr> <tr><td>Tub</td><td>Private</td><td>Hillsboro</td></tr> </tbody> </table>	Cave	Ownership	Quad	Allison	Private	Williamsburg	Arbuckle	Private	Lewisburg	Buckeye Creek	Private	Williamsburg	Clyde Cochrane Sinks	Private	Droop	Friars Hole	Private	Droop	Friels	Private	Hillsboro	Fuels Fruit	Private	Williamsburg	Grimes	Private	Cass	Higginbotham's	Private	Williamsburg	Ludington	Private	Williamsburg	McClung	Private	Williamsburg	My Cave	Private	Mingo	Piddling Pit	Private	Edray	Rapp's	Private	Williamsburg	The Hole	Private	Anthony	Tub	Private	Hillsboro	Unlikely. No caves in or nearby the project areas.
Cave	Ownership	Quad																																																						
Allison	Private	Williamsburg																																																						
Arbuckle	Private	Lewisburg																																																						
Buckeye Creek	Private	Williamsburg																																																						
Clyde Cochrane Sinks	Private	Droop																																																						
Friars Hole	Private	Droop																																																						
Friels	Private	Hillsboro																																																						
Fuels Fruit	Private	Williamsburg																																																						
Grimes	Private	Cass																																																						
Higginbotham's	Private	Williamsburg																																																						
Ludington	Private	Williamsburg																																																						
McClung	Private	Williamsburg																																																						
My Cave	Private	Mingo																																																						
Piddling Pit	Private	Edray																																																						
Rapp's	Private	Williamsburg																																																						
The Hole	Private	Anthony																																																						
Tub	Private	Hillsboro																																																						
Appalachian Grizzled skipper	<i>Pyrgus wyandot</i>	G2/S1	Shale barrens, pastures and power lines 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		Unlikely. Project areas do not contain suitable habitat for this species.																																																			
A springtail	<i>Sinella agna</i>	G2G3/S1	Damp places in caves on or near bits of organic material. ³³ ₃₀	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <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>Just</td><td>Private</td><td>Mingo</td></tr> <tr><td>My Cave</td><td>Private</td><td>Mingo</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> </tbody> </table>	Cave	Ownership	Quad	Dreen	Private	Mingo	Harper	Private	Mozark Mt.	Just	Private	Mingo	My Cave	Private	Mingo	Piddling Pit	Private	Edray	Unlikely. No caves within or nearby the project areas.																																	
Cave	Ownership	Quad																																																						
Dreen	Private	Mingo																																																						
Harper	Private	Mozark Mt.																																																						
Just	Private	Mingo																																																						
My Cave	Private	Mingo																																																						
Piddling Pit	Private	Edray																																																						
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	Found in the southern third of the state, south from lower Pocahontas Co., and west to	Unlikely. The Rimel and the Callison/Clark																																																			

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence									
			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 ironweed. Larval host – woodland violets. ³⁷	Kanawha and Lincoln Co.; may also occur occasionally in other surrounding counties, as well as the southern counties, with no records to date. ³⁷	project areas are within the range of this species. However, these areas are not small openings. They are in valley bottoms and are not moist, well-shaded forest covers with rich soils.									
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	Unlikely. No caves within or nearby the project areas.									
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.	Unlikely. No caves within or nearby the project areas.									
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.	Unlikely. No caves within or nearby the project areas.									
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	Unlikely. No caves within or nearby the project areas.
Cave	Ownership	Quad												
Flower Pot	Private	Whitmer												
Stillhouse	Private	Sinks of Gandy												
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	Unlikely, No caves within or nearby the project areas.									

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																												
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		Unlikely. No caves within or nearby the project areas.																																																												
				<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																																								
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																																																															
Hoffmaster's cave flatworm	<i>Macrocotyla hoffmasteri</i>	G2G3/S3	In first order and small second order streams of caves. ²⁷ ³⁰		Unlikely. No caves within or nearby the project areas.																																																												
				<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																																								
Cave	Ownership	Quad																																																															
Bazzle	Private	Harman																																																															
Harper	Private	Mozark Mt																																																															
Levisay	Private	Williamsburg																																																															
McClung	Private	Williamsburg																																																															
Mystic	Private	Onego																																																															
Piddling Pit	Private	Edray																																																															
A cave obligate planarian	<i>Phagocata angusta</i>	G1G3/SU	A sub-aquatic, subterranean obligate. WV Heritage records from Tucker Co. ⁵¹ . Harper Cave, Tucker Co. ⁵² .		Unlikely. Project areas are not near Harper Cave.																																																												
Greenbrier Valley cave millipede	<i>Pseudotremia fulgida</i>	G2G3/S2	Mud/clay banks in caves; sometimes associated with organic debris. ³⁰		Unlikely. No caves within or nearby the project areas.																																																												
				<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	
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																																																															

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																									
Germany Valley cave millipede	<i>Pseudotremia lusciosa</i>	G1/S1	Mud/clay banks in caves; sometimes associated with organic debris. ³³ 30	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Hell Hole</td> <td>Private</td> <td>Onego</td> </tr> <tr> <td>Schoolhouse</td> <td>Private</td> <td>Upper Tract</td> </tr> <tr> <td>Seneca Caverns</td> <td>Private</td> <td>Onego</td> </tr> <tr> <td>Stratosphere Balloon</td> <td>Private</td> <td>Onego</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Hell Hole	Private	Onego	Schoolhouse	Private	Upper Tract	Seneca Caverns	Private	Onego	Stratosphere Balloon	Private	Onego	Unlikely. No caves within or nearby the project areas.																																										
Cave	Ownership	Quad																																																												
Hell Hole	Private	Onego																																																												
Schoolhouse	Private	Upper Tract																																																												
Seneca Caverns	Private	Onego																																																												
Stratosphere Balloon	Private	Onego																																																												
South Branch Valley cave millipede	<i>Pseudotremia princeps</i>	G1/S1	Mud/clay banks in caves; sometimes associated with organic debris. ³³ 30	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Kenny Simmons</td> <td>Private</td> <td>Moatstown</td> </tr> <tr> <td>Mystic</td> <td>Private</td> <td>Onego</td> </tr> <tr> <td>Peacock</td> <td>Private</td> <td>Petersburg</td> </tr> <tr> <td>Smoke hole</td> <td>Private</td> <td>Upper Tract</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Kenny Simmons	Private	Moatstown	Mystic	Private	Onego	Peacock	Private	Petersburg	Smoke hole	Private	Upper Tract	Unlikely. No caves within or nearby the project areas.																																										
Cave	Ownership	Quad																																																												
Kenny Simmons	Private	Moatstown																																																												
Mystic	Private	Onego																																																												
Peacock	Private	Petersburg																																																												
Smoke hole	Private	Upper Tract																																																												
Culver's planarian	<i>Sphalloplana culveri</i>	G1/S1	In small streams under rocks and pieces of wood in caves. ³³ Within Proclamation Boundary in Harper Cave, Mozark Mt. Quad, Tucker Co. ³⁰	Unlikely. No caves within or nearby the project areas.																																																										
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	Unlikely. No caves within or nearby the project areas.																																													
Cave	Ownership	Quad																																																												
Flower Pot	Private	Whitmer																																																												
Red Run	FS	Mozark Mountain																																																												
Stillhouse	Private	Sinks of Gandy																																																												
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	<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>Big Springs</td> <td>FS</td> <td>Parsons</td> </tr> <tr> <td>Bonner Pit</td> <td>Private</td> <td>Mozark Mtn</td> </tr> <tr> <td>Bowden</td> <td>FS</td> <td>Bowden</td> </tr> <tr> <td>Clay Pit</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Dreen</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Flower Pot</td> <td>Private</td> <td>Whitmer</td> </tr> <tr> <td>Harper</td> <td>Private</td> <td>Mozark Mtn</td> </tr> <tr> <td>Levisay</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Linwood</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Martha's</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>My Cave</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</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>Sharps</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>The Hole</td> <td>Private</td> <td>Anthony</td> </tr> <tr> <td>Upper Martha's</td> <td>Private</td> <td>Hillsboro</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Bazzle	Private	Harman	Big Springs	FS	Parsons	Bonner Pit	Private	Mozark Mtn	Bowden	FS	Bowden	Clay Pit	Private	Mingo	Dreen	Private	Mingo	Flower Pot	Private	Whitmer	Harper	Private	Mozark Mtn	Levisay	Private	Williamsburg	Linwood	Private	Mingo	Martha's	Private	Hillsboro	My Cave	Private	Mingo	Piddling Pit	Private	Edray	Poor Farm	Private	Denmar	Rapp's	Private	Williamsburg	Sharps	Private	Mingo	The Hole	Private	Anthony	Upper Martha's	Private	Hillsboro	Unlikely. No caves within or nearby the project areas.
Cave	Ownership	Quad																																																												
Bazzle	Private	Harman																																																												
Big Springs	FS	Parsons																																																												
Bonner Pit	Private	Mozark Mtn																																																												
Bowden	FS	Bowden																																																												
Clay Pit	Private	Mingo																																																												
Dreen	Private	Mingo																																																												
Flower Pot	Private	Whitmer																																																												
Harper	Private	Mozark Mtn																																																												
Levisay	Private	Williamsburg																																																												
Linwood	Private	Mingo																																																												
Martha's	Private	Hillsboro																																																												
My Cave	Private	Mingo																																																												
Piddling Pit	Private	Edray																																																												
Poor Farm	Private	Denmar																																																												
Rapp's	Private	Williamsburg																																																												
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.,	Unlikely. No caves within or nearby the																																																									

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																				
				Edray Quad – Piddling Pit cave. 30	project areas.																																				
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		Unlikely. No caves within or nearby the project areas.																																				
			<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																							
Cave	Ownership	Quad																																							
Bonner	Private	Mozark Mt.																																							
Cassell	Private	Cass																																							
Crawford #2	Private	Valley Head																																							
Piddling Pit	Private	Edray																																							
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.	Unlikely. No caves within or nearby the project areas.																																				
Grand Caverns blind cave millipede	<i>Trichopetalum weyeriensis</i>	G3Q/S2	Damp areas in caves on organic debris. 33 30		Unlikely. No caves within or nearby the project areas.																																				
			<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		
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																																							
Luray Caverns blind cave millipede	<i>Trichopetalum whitei</i>	G2G3Q/S1	Damp areas in caves on or near organic debris. 33 30		Unlikely. No caves within or nearby the project areas.																																				
			<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																										
Cave	Ownership	Quad																																							
Hellhole	Private	Onego																																							
Stratosphere Balloon	Private	Onego																																							
Trout	Private	Sugar Grove																																							
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	Unlikely. Project areas are outside the known locations for this species, are primarily non-forested and have not been planted to conifer species.																																				
White monkshood	<i>Aconitum reclinatum</i>	G3/S3	Perennial herb found in mesic northern hardwood forests with acidic	Gay Knob Area (Edray), Chestnut Ridge (Paddy Knob), Spruce	Unlikely. Project areas are mostly low																																				

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence	
			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.	Knob Roadside 112 (Spruce Knob), & side slope of Laurel Run (Sharp Knob); occurs in Pocahontas, Randolph, Preston, Pendleton, Grant and Tucker Co.	elevation, mostly non-forested, Soils are not Cateache. Project areas do not provide suitable habitat for this species.	
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	Unlikely. Project areas are not near the known locations and do not contain open riparian areas at high elevations.	
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.	Unlikely. Project areas do not provide suitable habitat for this species.	
Spreading rockcress	<i>Arabis patens</i>	G3/S2	Moist, rocky woods, limestone outcrops and shady riverbanks	In the Eastern panhandle; Jordan Run Road, Grant Co.; "Dry Trough" Hampshire Co.; Wardensville, Hardy Co.; and Terrapin Neck, Jeff. Co.	Unlikely. Project areas are outside the known range of this species, are primarily non-forested and do not contain limestone outcrops..	
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. Project areas do not provide suitable habitat and are not near the known location of the species.	
Lance-leaf grapefern	<i>Botrychium lanceolatum</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	Unlikely. Project areas are primarily non-forested and do not contain swamps (wooded wetlands).	
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	Unlikely. The one known population is not within or close to	

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
					the nearest project area (Callison/Clark tract).
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. Project areas do not provide suitable habitat for this species.
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. Project areas do not provide suitable habitat for this species.
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).	Likely to occur. Project areas do not contain swampy woods or bogs, but the Queens and Allegheny Battlefield allotment do contain some moist to saturated soils or wetlands.
Box huckleberry	<i>Gaylussacia brachycera</i>	G3/S2	Smooth shrub found in acidic sandy soil within submesic forests & on woodland slopes. Under hardwoods, with mixed pine, mt. laurel & other heaths in understory.	Largest population on border of GWNF and MNF in the eastern part of the state. In Greenbrier & Pocahontas Co., North Fork Mt., Redman Run Trail & Smokehole.	Unlikely. Project areas do not provide suitable habitat for this species.
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. None of the project areas are in Pendleton Co. Habitat for this species does not occur within the project areas.
Sweet-scented Indian plantain	<i>Hasteola suaveolens</i>	G3/S2	Dry to moist ground at the edges of rivers and streams. High energy floodplains on the banks of rivers subject to scour and flooding.	Found near Otter Creek shelter in Otter Creek Wilderness.	Unlikely. Project areas are not near Otter Creek shelter or Wilderness.
White alumroot	<i>Heuchera alba</i>	G2Q/S2	Erect perennial herb found in dry,	Found in higher elevations of	Unlikely. No

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			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.).	North Fork Mt., Grant Co.; Spruce Knob, Pendleton Co.; Crouch Knob, Randolph Co.; Cass, Pocahontas Co	sandstone rock outcrops occur within the project areas. .
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. Project areas do not provide suitable habitat. .
Blue Ridge St. Johns's wort	<i>Hypericum mitchellianum</i>	G3/S1	Seepage areas at high elevation.	Found near Cheat bridge. ⁵²	Unlikely. Project areas are not near Cheat Bridge.
Long-stalked holly	<i>Ilex collina</i>	G3/S3	Deciduous shrub or tree found in riparian areas along high-energy streambanks at higher elevations. Moist soil; wet meadows and bogs.	Selected sites on Cheat, Greenbrier and Gauley RDs. Along Gauley and Cranberry Rivers	Unlikely. Only one of the project areas is high elevation and it does not contain a high energy streamside or a bog.
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.	Unlikely. Project areas do not contain rich loamy soils and are mostly non-forest. Only the Battlefield allotment contains significant hawthorn but is at elevation 4250.
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. The wetlands within the Queens and Allegheny Battlefield allotments are not bogs (spagnum). No suitable habitat is available for this species in the project areas.
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	Unlikely. Suitable habitat for this species does not occur within these

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
				and North Carolina. ^{30, 46}	projects areas.
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. There are no shale barrens within or close to the project areas.
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.	Unlikely. There are no 3 rd or 4 th order streams within the project areas.
Bog buckbean	<i>Menyanthes trifoliata</i>	G5/S1	April-June. Smooth, perennial marsh herb occurring in bogs and marshy places.	Backbone Mt., Tucker Co.; Cranberry Glades, Pocahontas Co.; historic site at Cranesville, Preston Co. ³⁸	Unlikely. All known sites are sphagnum bogs. There are no sphagnum bogs within the project areas.
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 areas are not near the Cave Mountain Ecosystem and do not provide suitable habitat.
Canada Mountain rice grass	<i>Oryzopsis Canadensis</i> = <i>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 areas do not contain suitable habitat for this species.
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 Mountain, Pendleton Co.	Unlikely. Project areas do not provide suitable habitat for this species.
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, and cedar glades.	Cave Mtn., Eagle Rock and Ship Rock in the Smokehole, Pendleton Co.	Unlikely. Project areas are well away from the known locations of this species and there is

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence	
					no suitable habitat within the project areas for this species..	
Canby's Mountain lover	<i>Pachistima 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 areas lack suitable habitat for this species.	
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. There are no calcareous swampy (forested wetland) areas within the four project areas.	
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 areas do not provide suitable habitat for this species.	
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. There are no swamps (a forested wetland), or sphagnum bogs, within the project areas.	
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. No suitable habitat for this species occurs within the project areas.	
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. Project areas do not provide suitable habitat for this species.	
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 areas are outside the range of this species and do not provide suitable habitat.	
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 areas do not provide suitable habitat for	

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
					this species.
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 an filamentous algae.	Kanawha State Forest, Kanawha Co.; Webster Springs, Webster Co. This represents a northeastern extension of the range of this species. ³⁸	Unlikely. Project areas are primarily non-forested, exposed to the sun, and do not provide suitable habitat for this species. .
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 areas do not provide suitable habitat for this species.
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	Unlikely. Project areas do not contain suitable habitat for this species.
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.	Unlikely. Project areas do not contain suitable habitat for this species.
Rock grape	<i>Vitis rupestris</i>	G3/S1	Brushy, shrub-like grape found climbing on calcareous or gravelly banks, river bottoms, streambeds, washes, and scoured boulders and cobbles.	Found in Grant, Greenbrier, Pendleton and Preston Co	Unlikely. Project areas do not contain suitable habitat for this species.
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. ³⁸	Unlikely. Project areas do not provide suitable habitat for this species. Swamps are wooded wetlands. There are no wooded wetlands within the four project areas.

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

REFERENCES

1. West Virginia Division of Natural Resources (WVNDR). 1988. Mammals of West Virginia, A Field Checklist. WVDNR, Nongame Wildlife Program, Elkins, WV
2. Stihler, C.W., J.L. Wallace, E.D. Michael and H. Pawelczyk. 1995. Range of (*Glaucomys sabrinus fuscus*), a federally endangered subspecies of the Northern Flying Squirrel, in West Virginia. In: Proc. WV Acad. Sci; Vol. 67, No. 2,3,4:13-20.
3. U.S. Department of the Interior, Fish & Wildlife Service. 1984. A Recovery Plan for the Ozark Big-eared bat and the Virginia Big-eared bat. USFWL, Region III, Twin Cities, MN. 56 p.
4. U.S. Department of the Interior, Fish & Wildlife Service. Agency Draft 1998. Indiana Bat, Revised Recovery Plan. USFWS, Region III, Minneapolis, MN, 61 p.
5. The Nature Conservancy. 1989. Element Stewardship Abstract for Peregrine Falcon. NC Natural Heritage; Dept. of Natural Resources and Community Development; Division of State Parks and Recreation; Box 27687, Raleigh, NC 27611.
6. The Nature Conservancy. 1989. Element Stewardship Abstract for Southern Bald Eagle. NC Natural Heritage; Dept. of Natural Resources and Community Development; Division of State Parks and Recreation; Box 27687, Raleigh, NC 27611.
7. Pauley, Thomas K. 1994. Surveys of the Cheat Mountain Salamander (*Plethodon nettingi*) in the potential impact area of Corridor H Build and Improved Roadway Alternatives.
8. U.S. Fish and Wildlife Service. 1991. Shale Barren Rock Cress (*Arabis serotina*) Recovery Plan. Newton Corner, MA, 40 pp.
9. West Virginia Natural Heritage Program. 1991. Wildlife Resources Section. The Status of Federally Endangered and Threatened Plant Species in West Virginia.
10. The Nature Conservancy. 1992. Element Stewardship Abstract for Rock Vole. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241
11. The Nature Conservancy. 1992. Element Stewardship Abstract for Eastern Small-Footed Myotis. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241
12. The Nature Conservancy. 1992. Element Stewardship Abstract for Allegheny Woodrat. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241.

13. The Nature Conservancy. 1992. Element Stewardship Abstract for Water Shrew. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241.
14. Clayton, J. WVDNR. Personal communication re green floater. Elkins, WV.
15. Brinker, David F. 1998. Intimidation tactics of a rare bird: The fierce northern goshawk. Wonderful West Virginia. June.
16. Green, N.B. and T.K. Pauley. 1987. Amphibians & Reptiles in West Virginia. Pittsburgh, PA; University of Pittsburgh Press. 241 pp.
17. US Fish & Wildlife Service. Small Whorled Pogonia (*Isotria medeoloides*) Recovery Plan. First Revision. USFWS, Region Five, Newton Corner, MA
18. WVDNR. 1996. Element Stewardship Abstract for the Candy Darter. Elkins, WV 26241
19. WVDNR. 1996. Element Stewardship Abstract for the Kanawha Minnow. Elkins, WV 26241
20. WVDNR. 1996. Element Stewardship Abstract for the Cheat Minnow. Elkins, WV 26241
21. Buckelew, Jr., A.R., and G.A. Hall. 1994. The West Virginia Breeding Bird Atlas. University of Pittsburgh Press.
22. Hall, G.A. 1983. West Virginia Birds. Distribution and Ecology. Special Publication of Carnegie Museum of Natural History, Number 7.
23. Pauley, T. 1994. Known status of the Eastern Hellbender (*Cryptobranchus A. alleghaniensis*) and the Green Salamander (*Aenides aeneus*) in the Monongahela National Forest.
24. Cincotta, D.A. WVNDR. 26 Jan. 2000. Letter to Jo Wargo re fish species.
25. Stauffer Jr., J.R., J.M. Boltz, and L.R. White. 1995. The Fishes of West Virginia. Reprinted from Proc. Acad. Nat. Sci. of Phil. 146:1-389
26. Tolin, W. USDA F&W Service. Personal communication re: the green floater, and the Va. northern flying squirrel.
27. Culver, D.C., W.K. Jones, D.W. Fong, and T.C. Kane. 1994. Organ Cave Karst Basin Groundwater Ecology. pp. 451-473. WVDNR Records, Elkins, WV
28. Fitzpatrick, J.F. 1992. Invertebrate Characterization Abstract (Global) *Cambarus nerterius*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV

29. Jezerinac, R. F.; G.W. Stocker and D.C. Tarter. 1995. Crayfishes (Decapoda; Cambaridae) of West Virginia. Ohio Biol. Surv. Bull. New Series. Vol. 10 No. 1. X+193p.
30. Element Occurrence Log Sheet. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV Individual log sheets included: *Apochthonius paucispinosus*; *Caecidotea simonini*; *Cambarus nerterius*; *Gymnocarpium appalachianum*; *Pseudanophthalmus fuscus*; *Pseudanophthalmus hadenoecus*; *Pseudanophthalmus hypertrichosis*; *Pseudosinella certa*; *Pseudosinella gisini*; *Pseudotremia fulgida*; *Pseudotremia lusciosa*; *Pseudotremia princeps*; *Sinella agna*; *Stygobromus culveri*; *Stygobromus emarginatus*; *Stygobromus nanus*; *Stygobromus parvus*; *Trichopetalum weyeriense*; *Trichopetalum whitei*. (19 Jan 2000). *Agrostis mertensii*; *Aenides aeneus*; *Caecidotea sinuncus*; *Fontigens tartarea*; *Juncus trifidus*; *Macrocotyla hoffmasteri*; *Pseudanophthalmus montanus*; *Sphalloplana culveri*. (3/14/00).
31. Schweitzer, D.F. 1991. Invertebrate Characterization Abstract (Global) *Pseudanophthalmus hadenoecus*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
32. Schweitzer, D.F. 1991. Invertebrate Characterization Abstract (Global) *Pseudosinella certa*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
33. Holsinger, J. 14 March 2000. Personal communication.
34. Fitzpatrick, J.F. 1993. Invertebrate Characterization Abstract (Global) *Stygobromus parvus*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
35. Holsinger, J.R. Section V. Biology. WVDNR Records, Elkins, WV
36. Beck, D.E. 1990. *Abies fraseri* Fraser Fir. In: Silvics of North America. Vol. I, Conifers. USDA FS Agr. Handbook 654. pp. 47-51
37. Allen, T.J. 1997. The Butterflies of West Virginia and Their Caterpillars. University of Pittsburgh Press, Pittsburgh, PA 15261
38. Strausbaugh, P.D., and E.L. Core. 1977. Flora of West Virginia. Second Edition. Seneca Books, Inc., Morgantown, WV
39. Pryer. 1997. Plant Characterization Abstract (Global) *Gymnocarpium appalachianum*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
40. Risk, A.C., and J. Kiser. 1991. Report on a survey of the Falls of Hills Creek Scenic Area for *Tortula Ammonsiana*. Dept. of Biological and Environmental Sciences, Morehead State University, Morehead, KY.
41. Stihler, C. 6 January 2000. Letter to Lynette Otto. WVNDR, Elkins, WV.
42. Stihler, C. 1999. Note to J. Wargo. WVDNR, Elkins, WV.

43. Hosinger, J.R., R.A. Baroody, and D.C. Culver. 1976. The Invertebrate Cave Fauna of West Virginia. Bulletin 7. WV Speleological Survey.
44. The Nature Conservancy. Element Stewardship Abstracts for: Shale Barren Rockcress, Hellbender, Indiana Bat, Greenbrier Valley Cave Isopod, Blind Cave Millipede, Organ Cave snail, Cheat Valley Cave Isopod, Dry Fork Valley Cave Beetle, Running Buffalo Clover, Darlington's Spurge, Rock Skullcap, Jacob's Ladder, Kate's Mountain Clover.
45. Stihler, C. WVDNR. Personal communications regarding Allegheny woodrat, Indiana and Virginia big-eared bats, Virginia northern flying squirrel.
46. McDonald, B. March 2000. Personal communication. Natural Heritage Program, WVDNR, Elkins, WV
47. Gleason, H.A. and Conquist A. 1991. The manual of Vascular Plants of Northeastern U.S. and Adjacent Canada. New York Botanical Garden.
48. The Smithsonian Book of North American Mammals. 1999. D.E. Wilson and S. Ruff ed.
49. Lee, D.S., C.R. Gilbert, C.H. Hocutt, R.E. Jenkins, D. E. McAllister and J.R. Stauffer, Jr. 1980. Atlas of North American Freshwater Fishes. North Carolina State museum of Natural History. Publication #1980-12 of the North Carolina Biological Survey.
50. Degraaf, R.M., and D.D. Rudis 1981. Forest habitat for Reptiles and Amphibians of the Northeast. Northeastern Forest Experiment Station. R9-35-9-15-RRWL.
51. NatureServe Explorer: An online encyclopedia of life [web application]. 2001. Version 1.6. Arlington, VA USA: NatureServe. Available: <http://www.natureserve.org/explorer>.
52. Sargent, B., WVDNR, Natural Heritage - Personal communication regarding Natural Heritage database for ETS occurrences in project areas.
53. Sharp, Penelope C., *Hasteola suaveolens* (L.) Pojark, Sweet Indian Plantain. Conservation and Research Plan, New England Wild Flower Society.
54. Personal communication with MNF Aquatic Ecologist, Mike Owen.

Chipps, S.R., Perry S.A., and W.B. Perry. 1993. Status of sensitive fish species in selected streams in the Monongahela National Forest. West Virginia University, Morgantown, WV.

Conant, R. 1975. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. Second Edition, Houghton, Mifflin Company, Boston.

Federal Register, Tuesday, November 15, 1994. Part IV, Department of the Interior, Fish and Wildlife. 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule.

Harmon. P.J. Final Report: Rare plant study of the Gauley Ranger District. WV Natural Heritage Program. Div. of Natural Resources, Elkins, WV.

Notes of meeting on sensitive fish species with Dan Cincotta, WVDNR, of 10-2-03.

USDA FS – R9 Regional Sensitive Species list. 2003 technical update with database.

USDI Fish and Wildlife Service. Recovery Plans for: Indiana Bat, Appalachian Northern Flying Squirrels, Cheat Mountain Salamander, Virginia Big-eared Bat, Peregrine Falcon, Eastern Cougar, Running Buffalo Clover, Small-Whorled Pogonia, Virginia Spirea, Shale Barren Rock Cress.

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