
APPENDIX D

TERRESTRIAL SPECIES VIABILITY

Table D-1. Terrestrial species of viability concern and the species groups to which they were linked.

Common Name	Scientific Name	Glade and Barrens	Cliff and Talus	Montane Oak Forest	Canebrake	Seep and Fen	Pond & E. Wetland	Caves, Mines, Karst	Woodland/Grassland	Pine-Bluestem	Open Oak Forest	Mature Forest	Mature Mesic Forest	Mesic Forest Gaps	Mesic Closed Forest	Mature Riparian	Understory Riparian	Forest Interior	Regenerating Forest	Mixed Succession	Den Trees	Snags	Human Disturbance
Cave salamander	<i>Eurycea lucifuga</i>							x															
Dark-sided Salamander	<i>Plethodon longicauda melanopleura</i>					x		x															
Four-toed Salamander	<i>Hemidactylium scutatum</i>																						
Graybelly Salamander	<i>Eurycea multiplicata griseogaster</i>					x		x															
Grotto Salamander	<i>Typhlotriton spelaeus</i>							x															
Many-ribbed Salamander	<i>Eurycea multiplicata multiplicata</i>					x		x															
Mole Salamander	<i>Ambystoma talpoideum</i>						x																
Northern Crawfish Frog	<i>Rana areolata circulosa</i>						x																
Oklahoma Salamander	<i>Eurycea tynnerensis</i>					x										x							
Ouachita Dusky Salamander	<i>Desmognathus brimeylorum</i>					x										x							
Ozark Zigzag Salamander	<i>Plethodon angusticlavius</i>	x				x						x											
Ringed Salamander	<i>Ambystoma annulatum</i>						x																
Southern Redback Salamander	<i>Plethodon serratus</i>										x												
Spotted Dusky Salamander	<i>Desmognathus fuscus conanti</i>					x										x							
Wood Frog	<i>Rana sylvatica</i>						x																

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Acadian Flycatcher	<i>Empidonax virescens</i>												x					x					
American Kestrel	<i>Falco sparverius</i>								x														
American Woodcock	<i>Scolopax minor</i>				x				x								x		x				
Bachman's Sparrow	<i>Aimophila aestivalis</i>									x													
Bald Eagle	<i>Haliaeetus leucocephalus</i>																						
Bewick's Wren	<i>Thryomanes bewickii</i>								x														
Blue-winged Warbler	<i>Vermivora pinus</i>								x										x				
Brown-headed Nuthatch	<i>Sitta pusilla</i>									x													
Cerulean Warbler	<i>Dendroica cerulea</i>													x				x					
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>																		x				
Chimney Swift	<i>Chaetura pelagica</i>																				x		
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>																			x			
Hooded Warbler	<i>Wilsonia citrina</i>													x			x	x					
Interior Least Tern	<i>Sterna antillarum athalassos</i>																						
Kentucky Warbler	<i>Oporornis formosus</i>													x				x					
Mississippi Kite	<i>Ictinia mississippiensis</i>															x							
Northern Bobwhite	<i>Colinus virginianus</i>								x										x				
Orchard Oriole	<i>Icterus spurius</i>								x														
Painted Bunting	<i>Passerina ciris</i>								x														

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Prairie Warbler	<i>Dendroica discolor</i>							x											x				
Prothonotary Warbler	<i>Protonotaria citrea</i>															x					x	x	
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>							x											x			x	
Ruffed Grouse	<i>Bonasa umbellus</i>													x					x				
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	x	x																				
Swainson's Warbler	<i>Limnothlypis swainsonii</i>				x												x		x				
Whip-poor-will	<i>Caprimulgus vociferus</i>																				x		
White-eyed Vireo	<i>Vireo griseus</i>													x			x		x				
Wood Thrush	<i>Hylocichla mustelina</i>													x				x					
Worm-eating Warbler	<i>Helmitheros vermivorus</i>										x			x				x					
Yellow-throated Vireo	<i>Vireo flavifrons</i>										x							x					
Ozark Cavefish	<i>Amblyopsis rosae</i>							x															
Southern Cavefish	<i>Typhlichthys subterraneus</i>							x															
American Burying Beetle	<i>Nicrophorus americanus</i>								x												x		
Diana Fritillary	<i>Speyeria diana</i>								x												x		

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Magazine Mtn. Mold Beetle	Arianops sandersoni												x										
Magazine Mtn. Shagreen	Inflectarius (Mesodon) magazinensis		x																				
Striate Supercoil	Paravitrea aulacogyra		x																				
A Crayfish	Cambarus causeyi					x																	
Neoarctic Paduneillan Caddisfly	Paduniella nearctica															x							
Cave Pseudoscorpion	Apochthonius titanicus							x															
Globular springtail	Arrhopalites clarus							x															
Stone Co. cave pseudoscorpion	Apochthonius typhlus							x															
Eastern Small-Footed Bat	Myotis leibii		x																	x			
Gray Myotis	Myotis grisescens							x									x						
Indiana Bat	Myotis sodalis							x												x			
Ozark Big-eared Bat	Corynorhinus townsendii ingens							x												x			
Plains Spotted Skunk	Spilogale putorius interrupta								x											x			
Rafinesque's Big-Eared Bat	Corynorhinus rafinesquii																				x	x	
Rocky Mountain Elk	Cervus elaphus nelsoni								x														x
Southeastern Myotis	Myotis austroriparius																				x	x	

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Alabama Snow Wreath	<i>Neviusia alabamensis</i>		x										x			x							
American Ginseng	<i>Panax quinquefolius</i>													x									x
Bush's Poppymallow	<i>Callirhoe bushii</i>	x							x														
Butternut	<i>Juglans cinerea</i>													x									
Climbing Magnolia	<i>Schisandra glabra</i>														x								
French's Shooting Star	<i>Dodecatheon frenchii</i>		x																				
Geocarpon	<i>Geocarpon minimum</i>																						
Maple-leaved Oak	<i>Quercus acerifolia</i>		x	x																			
Moore's Larkspur	<i>Delphinium newtonianum</i>														x								
Open-ground Whitlow-grass	<i>Draba aprica</i>	x																					
Ouachita Leadplant	<i>Amorpha ouachitensis</i>	x	x																				
Ovate-leaf Catchfly	<i>Silene ovata</i>		x																				
Ozark Chinquapin	<i>Castanea pumila</i> var <i>ozarkensis</i>																			x			
Ozark Corn-Salad	<i>Valerianella ozarkana</i>	x							x														
Ozark Least Trillium	<i>Trillium pusillum</i> var <i>ozarkanum</i>										x												
Ozark Spiderwort	<i>Tradescantia ozarkana</i>													x									
Royal Catchfly	<i>Silene regia</i>	x							x														

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Small-headed Pipewort	<i>Eriocaulon kornickianum</i>	x																					
Southern Lady's-Slipper	<i>Cypripedium kentuckiense</i>					x										x							x
Trelease's Larkspur	<i>Delphinium treleasei</i>	x	x																				
Wolf Spikerush	<i>Eleocharis wolfii</i>	x																					
American Alligator	<i>Alligator mississippiensis</i>						x																
Collared Lizard	<i>Crotaphytus collaris</i>	x	x																				x
Great Plains Skink	<i>Eumeces obsoletus</i>	x							x														
Queen Snake	<i>Regina septemvittata</i>															x							
Southern Prairie Skink	<i>Eumeces septentrionalis obtusirostris</i>	x	x						x														
Timber Rattlesnake	<i>Crotalus horridus</i>	x	x																	x			x
Western Diamondback Rattlesnake	<i>Crotalus atrox</i>	x	x						x														x
Number of Species		15	14	1	2	9	5	13	19	2	3	1	3	10	2	11	4	7	9	10	4	4	6

Table D-2 Viability rating and limiting factors.

Limiting Factors and Viability Risk for Species of Viability Concern

Ringed Salamander

Ambystoma annulatum

Local viability concern

Primary Limiting Factor: Accidental mortality
Secondary Limiting Factor: Non-native invasive species
Tertiary Limiting Factor: --

The amount of road density in the Forest provides obstacles and possible death of individuals during migration. The accidental introduction of fish into fishless ponds and wetlands on the Forest can provide viability problems for the species during mating season and during early development. The addition of a Riparian Corridor Management Area and designation of SMZ's should provide habitat protection for the Ringed Salamander. Standards provided to protect Riparian Areas and wetlands (rare community) would also help protect the Ring Salamander's habitat. The construction of fishless ponds for wildlife should provide new breeding opportunities for this species.

Viability Risk Rating: Moderate

Risk is driven by accidental mortality (roads) and the introduction of fish (non-native invasive species) within the Ringed Salamander's habitat. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.

Mole Salamander

Ambystoma talpoideum

Local viability concern

Primary Limiting Factor: Naturally limited populations
Secondary Limiting Factor: Forest management-general
Tertiary Limiting Factor: --

Species has only been found at 3 locations on the St. Francis NF but is suspected to be more numerous than has been documented with limited surveys. This species is also sensitive to timber management activities, but mostly clearcutting of large areas. The addition of a Riparian Corridor Management Area and designation of SMZ's should help provide habitat protection for the Mole Salamander. Standards provided to protect Riparian Areas and wetlands (rare community) would also help protect the Mole Salamander's habitat. Additional sampling is needed to better evaluate this species.

Viability Risk Rating: Moderate

Risk is driven by naturally limited populations of this species on the St. Francis National Forest and forest management activities. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for these habitats during project implementation.

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Ouachita Dusky Salamander</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: -- Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Low</p>	<p><u>Desmognathus brimeylorum</u></p> <p>Forest Service Sensitive</p> <p>This species is at the northern edge of its range on the Ozark National Forest; its distribution is apparently naturally limited to Magazine Mountain on the Forest. Populations and habitat are stable for the Ouachita Dusky Salamander. The addition of a Riparian Corridor Management Area and designation of SMZ's should provide habitat protection for the Ouachita Dusky Salamander. Standards provided to protect Riparian Areas would also help protect the Ouachita Dusky Salamander's habitat. The overall range of this species is very wide spread and the overall viability of the Ouachita Dusky Salamander will not be affected by the health of this population.</p> <p>Risk is driven solely by naturally limited distribution of this species on the Forest. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>
<p><u>Spotted Dusky Salamander</u></p> <p>Primary Limiting Factor: Land-use conversion & fragmentation Secondary Limiting Factor: Forest management--general Tertiary Limiting Factor: Hydrologic modification</p> <p>Viability Risk Rating: High</p>	<p><u>Desmognathus fuscus conanti</u></p> <p>Local viability concern</p> <p>This species was found strictly on the St. Francis portion of the Forests. It uses wet woodland areas under logs and leaf litter. This species is especially vulnerable to clearcutting and destruction of bottomland hardwoods. It can also be effected by activities that modify the hydrology of the system like road construction, fire line construction, and other soil compaction activities. The management prescriptions for Crowley's Ridge, Upland Hardwood and Bottomland Hardwood Management Areas will protect this species during forest management activities. A taxonomic question remains about whether the Spotted Dusky Salamander should be treated as a species or a subspecies of <i>Desmognathus fuscus</i>. <i>Desmognathus fuscus</i> is very widespread and stable and the overall viability of this species will not be affected by the health of this population.</p> <p>Risk for this species is driven by land-use conversion, forest management activities, and hydrologic modifications. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>

Table D-2 Viability rating and limiting factors (Continued).

<u>Dark-sided Salamander</u>	<u><i>Eurycea longicauda melanopleura</i></u>	<u>Local viability concern</u>
Primary Limiting Factor: Naturally limited habitat		<p>This species is found within the Ozark Highlands of northern and northwestern Arkansas from cave habitats. It can also be found in areas away from the cave in rocks and debris near springs, streams, or seeps. Cave, spring, and seep habitat are considered rare communities in the plan. Special management direction is given for these rare communities. This species are also protected by Forest plan standards and special regulations for SMZ's and KMZ's. Riparian Corridor Management Areas will also protect this species during management activities. This species is considered to be very common in appropriate habitats in northern Arkansas.</p>
Secondary Limiting Factor: --		
Tertiary Limiting Factor: --		
Viability Risk Rating: Low		
<u>Cave salamander</u>	<u><i>Eurycea lucifuga</i></u>	<u>Local viability concern</u>
Primary Limiting Factor: Naturally limited habitat		<p>This species is usually found in conjunction with caves or springs but can be found in nearby streams or in moist areas under logs. The species is found in limestone areas of Arkansas; north of the Arkansas River. It is naturally limited habitat since it prefers areas in or near limestone cave systems. It can also be affected by hydrologic modifications that can affect groundwater flow and by human disturbance of the cave salamander's habitat. Cave, spring, and seep habitat are considered rare communities in the plan. Special management direction is given for these rare communities. This species are also protected by Forest plan standards and special regulations for SMZ's and KMZ's. Riparian Corridor Management Areas will also protect this species during management activities.</p>
Secondary Limiting Factor: Human disturbance		
Tertiary Limiting Factor: Hydrologic modification		
Viability Risk Rating: Low		

Table D-2 Viability rating and limiting factors (Continued).

<u>Graybelly Salamander</u>	<u><i>Eurycea multiplicata griseogaster</i></u>	<u>Local viability concern</u>
Primary Limiting Factor: Naturally limited habitat		This species is found in aquatic habitats near caves and spring-fed streams. It is affected by naturally limited habitat because of its need for caves and springs. It can also be affected by hydrologic modifications that can affect groundwater flow and by human disturbance of the Graybelly salamander's habitat. Cave, spring, and seep habitat are considered rare communities in the plan. Special management direction is given for these rare communities. This species is also protected by Forest plan standards and special regulations for SMZ's and KMZ's. Riparian Corridor Management Areas will also protect this species during management activities.
Secondary Limiting Factor: Hydrologic modification		
Tertiary Limiting Factor: Human disturbance		
Viability Risk Rating: Low		Risk for this species is driven by naturally limited habitat, hydrologic modifications, and human disturbance. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation. This species for the most part lives in a fairly secure and protected environment.
<u>Many-ribbed Salamander</u>	<u><i>Eurycea multiplicata multiplicata</i></u>	<u>Local viability concern</u>
Primary Limiting Factor: Naturally limited populations		This species is at the northern edge of its range on the Ozark National Forest; its disturbance is apparently naturally limited to Magazine Mountain. There, it is limited to cave and spring habitats. The Forest Plan provides protection and optimal management of these habitats by recognizing them as rare communities.
Secondary Limiting Factor: Naturally limited habitat		
Tertiary Limiting Factor: --		
Viability Risk Rating: Moderate		Risk is driven solely by naturally limited distribution of the species and naturally limited available habitat on the forest. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.

Table D-2 Viability rating and limiting factors (Continued).

<u>Oklahoma Salamander</u>	<u><i>Eurycea tynerensis</i></u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor: Naturally limited populations		This species is found in aquatic habitats in small, cold, clear, cherty gravel bottomed streams and springs. This species is only found on the Wedington unit of the Forests. The species is affected by low population densities and naturally limited habitat because of its need for springs and streams associated with Ordovician-Silurian rock strata. It can also be affected by human disturbance from activities like gravel mining or others which increase sedimentation. Spring, and seep habitat are considered rare communities in the plan. Special management direction is given for these rare communities. This species are also protected by Forest plan standards and special regulations for SMZ's and KMZ's. Riparian Corridor Management Areas will also protect this species during management activities.
Secondary Limiting Factor: Naturally limited habitat		
Tertiary Limiting Factor: Human disturbance		
Viability Risk Rating: Moderate		Risk for this species is driven by naturally limited populations, naturally limited habitats, and human disturbance. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.
<u>Four-toed Salamander</u>	<u><i>Hemidactylum scutatum</i></u>	<u>Local viability concern</u>
Primary Limiting Factor: Unknown		No occurrences have been found on the Forest; most specimens in Arkansas have been found in Ouachita Mtns.
Secondary Limiting Factor: --		
Tertiary Limiting Factor: --		
Viability Risk Rating: NA		

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Ozark Zigzag Salamander</u></p> <p>Primary Limiting Factor: Forest management–general Secondary Limiting Factor: Land-use conversion & fragmentation Tertiary Limiting Factor: –</p> <p>Viability Risk Rating: Low</p>	<p><u>Plethodon angusticlavius</u></p>	<p><u>Local viability concern</u></p> <p>This species is known to exist from mesic woodland areas. It is usually associated with canyon, ravines, and escarpments in exposures of naked rock and springs and seepage areas. It has also been associated with caves in limestone-dominated geology. It is affected by forest management activities like clearcutting and conversion of forested land to agriculture and urban areas. The Forest Plan provides protection and optimal management of these habitats by recognizing them as rare communities. Populations in the Ozarks are quite common where mesic hardwood forests with rocky substrate predominate.</p> <p>Risk is driven solely by forest management activities. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>
<p><u>Southern Redback Salamander</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: – Tertiary Limiting Factor: –</p> <p>Viability Risk Rating: Low</p>	<p><u>Plethodon serratus</u></p>	<p><u>Local viability concern</u></p> <p>This species is at the western edge of its range in Arkansas. It is known only from Mt. Magazine on the Forest. It is affected most by its limited populations on OSFNF lands. This species may have individuals affected by forest management activities, but not the viability of the populations. It is also widespread throughout its range and is very abundant in the right habitat.</p> <p>The species is at the edge of what seems to be its northern range on Mtn. Magazine. Following BMPs and LRMP standards should protect this species. Forest management activities should do nothing to lower the viability of this species.</p>

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Northern Crawfish Frog</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: Naturally limited habitat Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Moderate</p>	<p><u><i>Rana areolata circulosa</i></u></p>	<p><u>Local viability concern</u></p> <p>This species lives in burrows (mainly crayfish burrows), pastures, prairie habitat, and grasslands as an adult. This species has been found at only one site on the Wedington unit. The potential for an accidental loss of this species at this site is possible, but this species is believed to be more abundant than what has been found. The fact that it lives in burrows for the majority of the year and that investigators have not been in breeding grounds at the correct time for this species could be the reason for the lack of observations. This species may have individuals affected by forest management activities, but not the viability of populations.</p> <p>Risk is driven by naturally limited populations and naturally limited habitat of this species on the forest. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. This species is highly mobile which should protect populations even though individuals may be lost during project implementation.</p>
<p><u>Wood Frog</u></p> <p>Primary Limiting Factor: Naturally limited habitat Secondary Limiting Factor: Interspecific factors Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Low</p>	<p><u><i>Rana sylvatica</i></u></p>	<p><u>Local viability concern</u></p> <p>This species lives in upland mesic forest as an adult. It breeds and lays its eggs in fishless ponds and ephemeral pools. This species has been found throughout the Forest and seems to have stable populations on the Forest. The continued construction of fishless wildlife ponds on the Forest should improve breeding habitat for this species. This species is also vulnerable to interspecific competition with the spotted salamander for ideal egg-laying sites. The Forest Plan provides protection and optimal management of these habitats by recognizing them in the Forest standards. It also provides SMZ's for pond habitat on the Forest.</p> <p>Risk is driven by naturally limited habitat and interspecific competition of the species on the forest. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. Breeding habitat could be increased through the construction of ponds during project implementation. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>

Table D-2 Viability rating and limiting factors (Continued).

<u>Grotto Salamander</u>	<u>Typhlotriton spelaeus</u>	<u>Local viability concern</u>
Primary Limiting Factor: Naturally limited habitat		This species is found in caves and springs that are associated with a cave (caves as an adult and springs outside the cave as young). It is affected by naturally limited habitat because of its need for living caves. It can also be affected by human disturbance of the cave or spring habitat or by over collection by humans. Cave and spring habitat are considered a rare communities in the plan. Special management direction is given for these rare communities. This species is also protected by Forest plan standards and special regulations for SMZ's and KMZ's. Riparian Corridor Management Areas will also protect this species during management activities.
Secondary Limiting Factor: Human disturbance		
Tertiary Limiting Factor: Over-harvest/collection/persecution		
 Viability Risk Rating: Low		Risk for this species is driven by naturally limited habitat, human disturbance, and over collection. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.
 <u>Bachman's Sparrow</u>	 <u>Aimophila aestivalis</u>	 <u>Forest Service Sensitive</u>
Primary Limiting Factor: Lack of disturbance, succession		Loss of pine and oak woodland habitats has reduced the amount of optimal habitat for this species. Early seral pine stands also provide some habitat for this species.
Secondary Limiting Factor: --		
Tertiary Limiting Factor: --		
Viability Risk Rating: Moderate		Risk is driven by low population levels and the amount of pine woodland habitat on the forest. Population levels are currently low on the Forest but the amount of Pine Woodland Restoration provided for in the plan should greatly improve conditions for this species.

Table D-2 Viability rating and limiting factors (Continued).

Rufous-crowned Sparrow ***Aimophila ruficeps***
Primary Limiting Factor: Naturally limited populations
Secondary Limiting Factor: Naturally limited habitat

Tertiary Limiting Factor: Lack of disturbance, succession
Viability Risk Rating: Very High

Local viability concern

This species is at the eastern edge of its range and probably a disjunct population. It is found on glades adjacent to a bluff line with a southern exposure on Mount Magazine. Forest management activities that maintain the open condition of the glade will benefit this species.

Risk is very high because of the species limited distribution. Events such an extremely cold winter could wipe out the local population. Genetic variation may also be very low in this population.

Ruffed Grouse ***Bonasa umbellus***
Primary Limiting Factor: Naturally limited populations
Secondary Limiting Factor: Lack of disturbance, succession

Tertiary Limiting Factor: --
Viability Risk Rating: Very High

Local viability concern

This species is at very low numbers and is at the edge of its range. Suitable habitat has not been produced at a constant rate to allow for population expansion.

Due to low numbers, edge of range problems and questions about future habitat conditions most experts think this species will become extirpated from the state over the next 50 years. Stocking efforts by the state have been discontinued.

Chuck-will's-widow ***Caprimulgus carolinensis***
Primary Limiting Factor: Lack of disturbance, succession
Secondary Limiting Factor: --
Tertiary Limiting Factor: --
Viability Risk Rating: Moderate

Conservation Concern

Needs openings in a forest environment or woodlands.

Risk is driven by lack of open areas to feed. Plan implementation should improve this situation by providing regeneration areas, woodland habitat and wildlife openings.

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Whip-poor-will</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: -- Tertiary Limiting Factor: -- Viability Risk Rating: Low</p>	<p><u>Caprimulgus vociferus</u></p> <p>Conservation Concern</p> <p>Lack of woodland habitat and openings is the main limiting factor for this species. Forest management activities that create open and early succession habitats will benefit this species.</p> <p>Risk is low because species is well represented across the unit and suitable habitat is likely to continue to be provided.</p>
<p><u>Chimney Swift</u></p> <p>Primary Limiting Factor: Lack of mature forest structure Secondary Limiting Factor: -- Tertiary Limiting Factor: -- Viability Risk Rating: Low</p>	<p><u>Chaetura pelagica</u></p> <p>Conservation Concern</p> <p>Lack of large diameter hollow trees.</p> <p>Risk is associated with the availability of large diameter hollow trees. Standards will protect large diameter hollow trees in treatment areas and natural succession of the forest is increasing hollow trees in untreated stands. Conditions for this species are improving. Increased use of fire could consume some potential nest trees.</p>
<p><u>Northern Bobwhite</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: -- Tertiary Limiting Factor: -- Viability Risk Rating: Low</p>	<p><u>Collinus virginianus</u></p> <p>Conservation Concern</p> <p>Loss of woodlands and small farms has hurt this species. Fire suppression has played a key role in loss of habitat.</p> <p>Populations are currently low on the forest but restoration of woodlands will significantly increase optimal habitat.</p>

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Cerulean Warbler</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: Lack of disturbance, succession</p> <p>Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Moderately High</p>	<p><u>Dendroica cerulea</u></p>	<p><u>Conservation Concern</u></p> <p>The Forest is on edge of range. Lack of mature forests with complex structures may be limiting; effects of oak mortality may be beneficial or detrimental depending on level of mortality. Effect of prescribed fire on occupied habitat is a concern.</p> <p>Risk is driven by the fact that the forest unit is on the edge of the range, forest habitat is changing in uncertain ways due to oak mortality, and other factors affecting shifts in rangewide populations and distribution. Effects of prescribed fire will be monitored.</p>
<p><u>Prairie Warbler</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: -- Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Low</p>	<p><u>Dendroica discolor</u></p>	<p><u>Conservation Concern</u></p> <p>The plan calls for adequate regeneration and woodlands to provide for this species.</p>
<p><u>Chestnut-sided Warbler</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: Lack of disturbance, succession</p> <p>Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Moderately High</p>	<p><u>Dendroica pensylvanica</u></p>	<p><u>Conservation Concern</u></p> <p>This species is at the edge of its range in the Ozarks, having only recently established a disjunct population. It prefers early-successional forest or open forest habitats, which are relatively uncommon on the forest.</p> <p>Risk is driven primarily by naturally limited distribution of the species on the forest, and the possibility that the range of the species will contract back to previous distribution for unknown causes. Forest Plan objectives call for higher levels of early-successional forests and open forests, which are expected to improve habitat conditions and reduce viability risk. Some nests may be directly impacted during management actions, but the species is mobile enough, source populations abundant enough, and area impacted in any one season small enough, that this impact is not expected to cause a trend toward loss of viability on the forest. Some regular disturbance of a small proportion of habitat (and nests) is necessary to maintain habitat conditions for long-term population persistence.</p>

Table D-2 Viability rating and limiting factors (Continued).

<u>American Kestrel</u>	<u>Falco sparverius</u>	<u>Conservation Concern</u>
Primary Limiting Factor:	Naturally limited populations	Management of Pine and Oak Woodlands, and native grasslands should provide suitable habitat for this species.
Secondary Limiting Factor:	Lack of disturbance, succession	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Moderate	The Forest is on the edge of this species breeding range. Habitat should be improving.
<u>Bald Eagle</u>	<u>Haliaeetus leucocephalus</u>	<u>Threatened or Endangered</u>
Primary Limiting Factor:	Naturally limited habitat	Suitable large bodies of water are limited on the unit.
Secondary Limiting Factor:	--	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Moderate	Risk is driven by low numbers and limited amount of suitable habitat for breeding; however general populations are increasing and habitat is expected to be filled.
<u>Worm-eating Warbler</u>	<u>Helminthos vermivorus</u>	<u>Conservation Concern</u>
Primary Limiting Factor:	Lack of mature forest structure	Mature forest with complex structure will increase naturally on many acres on the unit. Some silvicultural treatments such as thinning, group selection, single tree selection will enhance complexity in mature forests, but frequent prescribed burning is likely to be detrimental if it reduces the understory. Cowbird parasitism may be a limiting factor on the St. Francis NF due to surrounding agricultural use.
Secondary Limiting Factor:	Interspecific factors	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Low	Risk is low because species is well represented across the unit and suitable habitat is likely to continue to be provided.

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Wood Thrush</u></p> <p>Primary Limiting Factor: Lack of mature forest structure Secondary Limiting Factor: Interspecific factors Tertiary Limiting Factor: -- Viability Risk Rating: Low</p>	<p><u><i>Hylocichla mustellina</i></u></p>	<p><u>Conservation Concern</u></p> <p>Mature forest with complex structure will increase naturally on many acres on the unit. Some silvicultural treatments such as thinning, group selection, single tree selection will enhance complexity in mature forests, but frequent prescribed burning is likely to be detrimental if it reduces the understory. Cowbird parasitism may be a limiting factor on the St. Francis NF due to the surrounding agricultural use.</p> <p>Risk is driven by availability of habitat with dense hardwood understory. Risk is low because species is well represented across the unit and suitable habitat is likely to continue to be provided. Silvicultural treatments and natural succession should provide gaps that provide usable habitat. This bird prefers moist woods that are less likely to burn hot during prescribed burns.</p>
<p><u>Orchard Oriole</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: Naturally limited populations Tertiary Limiting Factor: -- Viability Risk Rating: High</p>	<p><u><i>Icterus spurius</i></u></p>	<p><u>Conservation Concern</u></p> <p>Lack of sparse riparian and bottomland habitat is the main condition needed on the forest for this species. Perceptions that that providing this type habitat in riparian zones is not acceptable riparian management will likely prevail in the near future. Naturally low breeding densities occur on Ozark and St. Francis forests.</p> <p>Risk is driven by availability of open woodland riparian habitat. Lack of sparse riparian and bottomland habitat is the main condition needed on the forest for this species. Perceptions that providing this type habitat in riparian zones is not acceptable riparian management will likely prevail in the near future.</p> <p>Woodland management may provide usable habitat for this species.</p>
<p><u>Mississippi Kite</u></p> <p>Primary Limiting Factor: Naturally limited habitat Secondary Limiting Factor: Naturally limited populations Tertiary Limiting Factor: -- Viability Risk Rating: Moderately High</p>	<p><u><i>Ictinia mississippiensis</i></u></p>	<p><u>Conservation Concern</u></p> <p>Species is found only on the St. Francis NF and is limited by the small size of the unit relative to the home range size for the species.</p> <p>Opportunities to manage this species on the forest are limited. Viability depends on population inputs from outside the national forest. Risk is driven by small size of the national forest unit and uncertainties relative to habitat conditions on surrounding private lands.</p>

Table D-2 Viability rating and limiting factors (Continued).

<u>Swainson's Warbler</u>	<u><i>Limnothlypis swainsonii</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor: Lack of disturbance, succession		This species uses cane and high site early successional habitat.
Secondary Limiting Factor: --		Nest parasitism is of concern on the St. Francis NF.
Tertiary Limiting Factor: --		
Viability Risk Rating: Moderate		Regeneration on high productivity sites and cane restoration on the St. Francis District should provide improved habitat for this species. Some specific regeneration areas should be targeted for this species.
<u>Red-headed Woodpecker</u>	<u><i>Melanerpes erythrocephalus</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor: Lack of disturbance, succession		Currently, snag habitat is probably not a limiting factor to the species on the forest due to oak mortality, but this spike in habitat is temporary.
Secondary Limiting Factor: --		Forest management activities that create and maintain woodlands or open canopy forest provides a stable habitat for this species. Treatments such as but not limited to prescribed fire, thinning, modified shelterwoods and seedtrees will benefit this species.
Tertiary Limiting Factor: --		
seedtrees		
Viability Risk Rating: Moderate		Risk is moderate due to low population levels on the forest but suitable habitat will be provided by management of pine and oak woodlands. Beaver activities provide habitat on the St Francis NF.
<u>Kentucky Warbler</u>	<u><i>Oporornis formosus</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor: Lack of mature forest structure		Mature forest with complex structure will increase naturally on many acres on the unit. Some silvicultural treatments such as thinning, group selection and single tree selection will enhance complexity in mature forests, but frequent prescribed burning is likely to be detrimental if it reduces the understory. Cowbird parasitism may be a limiting factor on the St. Francis NF due to the surrounding agricultural use.
Secondary Limiting Factor: Interspecific factors		
Tertiary Limiting Factor: --		
Viability Risk Rating: Low		Risk is driven by availability of brushy understory. Risk is low because species is well represented across the unit and suitable habitat is likely to continue to be provided.

Table D-2 Viability rating and limiting factors (Continued).

<u>Painted Bunting</u>	<u><i>Passerina ciris</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor:	Lack of disturbance, succession	Lack of woodland habitat is currently limiting populations on the forest.
Secondary Limiting Factor:	--	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Moderate	Occurrences on the forest are currently low. Woodland restoration should benefit this species.
<u>American Woodcock</u>	<u><i>Scolopax minor</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor:	Lack of disturbance, succession	Lack of Woodland and early seral habitat are limiting populations.
Secondary Limiting Factor:	--	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Moderate	Amounts of early seral habitat and Woodland habitat provided for in the plan should improve conditions for this species.
<u>Brown-headed Nuthatch</u>	<u><i>Sitta pusilla</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor:	Lack of disturbance, succession	The lack of pine woodland habitat on the is limiting populations on the Forest.
Secondary Limiting Factor:	--	Management of pine woodlands under the new plan should dramatically improve habitat and populations on the forest.
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Low	Risk is driven by availability of Pine woodland habitat. Risks low if pine woodlands are created and maintained.
<u>Interior Least Tern</u>	<u><i>Sterna antillarum athalassos</i></u>	<u>Threatened or Endangered</u>
Primary Limiting Factor:	Naturally limited habitat	
Secondary Limiting Factor:	Hydrologic modification	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	NA	Forest Service mgt. does not affect their habitat (sand bars).

Table D-2 Viability rating and limiting factors (Continued).

<u>White-eyed Vireo</u>	<u><i>Vireo griseus</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor:	Lack of disturbance, succession	Lack of management on high productivity sites could limit this species.
Secondary Limiting Factor:	Interspecific factors	However old growth conditions often provide dense understories when gaps are created.
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Moderate	Risk is driven by the availability of brushy understory. High site regeneration areas provide ideal habitat. Risk is low because species is well represented across the unit and suitable habitat is likely to continue to be provided.
<u>Hooded Warbler</u>	<u><i>Wilsonia citrina</i></u>	<u>Conservation Concern</u>
Primary Limiting Factor:	Lack of mature forest structure	Mature forest with complex structure will increase naturally on many acres on the unit. Some silvicultural treatments such as thinning, group selection, single tree selection will enhance complexity in mature forests, but frequent prescribed burning is likely to be detrimental if it reduces the understory.
Secondary Limiting Factor:	Interspecific factors	Cowbird parasitism may be a limiting factor on the St. Francis NF due to the surrounding agricultural use.
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Low	Risk is driven by availability of brushy understory. Risk is low because species is well represented across the unit and suitable habitat is likely to continue to be provided.
<u>Ozark Cavefish</u>	<u><i>Amblyopsis rosae</i></u>	<u>Threatened or Endangered</u>
Primary Limiting Factor:	Naturally limited populations	Not known on the Forest unit; recharge area for occupied habitat is also not on unit
Secondary Limiting Factor:	Hydrologic modification	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	NA	

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Magazine Mtn. Mold Beetle</u></p> <p>Primary Limiting Factor: Unknown Secondary Limiting Factor: None Tertiary Limiting Factor: -- Viability Risk Rating: High</p>	<p><u>Arlanops sandersoni</u></p>	<p><u>Forest Service Sensitive</u></p> <p>Risk is result of only one known location subject to stochastic events and lack of ongoing monitoring for this species; however habitat conditions at the known location are expected to remain relatively stable.</p>
<p><u>Globular springtail</u></p> <p>Primary Limiting Factor: Unknown Secondary Limiting Factor: None Tertiary Limiting Factor: -- Viability Risk Rating: Moderately High</p>	<p><u>Arrhopalites clarus</u></p>	<p><u>Local viability concern</u></p> <p>Known from two caves on Sylamore RD; cave protection measures will maintain habitat.</p> <p>Risk is driven by significant unknowns regarding status and habitat relations; however cave habitats are stable and well provided for under the Plan.</p>
<p><u>A Crayfish</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: Naturally limited habitat Tertiary Limiting Factor: Hydrologic modification Viability Risk Rating: Low</p>	<p><u>Cambarus causeyi</u></p>	<p><u>Local viability concern</u></p> <p>This species is found in aquatic habitats near seeps and springs. It is affected by naturally limited populations being endemic to the Ozark highlands. It is also affected by naturally limited habitat since it found in the spring and seep habitat. It can also be affected by hydrologic modifications caused from activities like road construction which could effect ground water levels. Spring and seep habitat are considered rare communities in the plan. Special management direction is given for these rare communities. This species is also protected by Forest plan standards and special regulations for SMZ's and KMZ's. Riparian Corridor Management Areas will also protect this species during management activities.</p> <p>Risk for this species is driven by naturally limited populations, naturally limited habitats, and hydrologic modifications. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Magazine Mtn. Shagreen</u></p> <p>Primary Limiting Factor: Naturally limited populations</p> <p>Secondary Limiting Factor: --</p> <p>Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Moderately High</p>	<p><u>Inflectarius (Mesodon)</u></p>	<p><u>Threatened or Endangered</u></p> <p>Risk is a result of only one known populations vulnerable to stochastic events beyond our control such as catastrophic wildfire.</p>
<p><u>American Burying Beetle</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession</p> <p>Secondary Limiting Factor: --</p> <p>Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Moderate</p>	<p><u>Nicrophorus americanus</u></p>	<p><u>Threatened or Endangered</u></p> <p>Threatened by naturally limited soil conditions needed for reproduction, and lack of quality early successional grassland and woodland habitats that provide small animal carrion.</p> <p>Restoration of grassland and woodland habitats on the Magazine and Boston Mountain districts under the proposed plan is expected to greatly increase distribution and abundance of potentially suitable habitat on the national forest. Risk of impacts to individuals is managed through bait-away and trap-and-relocate strategies.</p>
<p><u>Neoartic Padunellian Caddisfly</u></p> <p>Primary Limiting Factor: Naturally limited populations</p> <p>Secondary Limiting Factor: --</p> <p>Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Low</p>	<p><u>Paduniella nearctica</u></p>	<p><u>Forest Service Sensitive</u></p> <p>This species is found along the margin headwater streams on the surface of large boulders. It endemic to the Interior Highlands. The species has been found on the Forest at: Lee Creek at Natural Dam; North Sylamore Creek at Blanchard Springs Recreation Area; and North Sylamore Creek at Barkshed Recreation Area. This species is protected by Forest plan standards and special regulations for SMZ's. Riparian Corridor Management Areas will also protect this species during management activities. Further work needs to be done on the distribution of this species. This species is probably more widespread than is currently known.</p> <p>Risk is driven solely by naturally limited distribution of the species on the Forest. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Striate Supercoll</u></p> <p>Primary Limiting Factor: Unknown Secondary Limiting Factor: -- Tertiary Limiting Factor: -- Viability Risk Rating: NA</p>	<p><u>Paravitrea aulacogyra</u></p>	<p><u>Forest Service Sensitive</u></p> <p>It is not know if this species exists. One specimen was found in 1903 and has never been found again. Rare community provisions in the Revised Forest Plan will provide protection for individuals if found to be present.</p>
<p><u>Diana Fritillary</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: Non-native invasive species Tertiary Limiting Factor: -- Viability Risk Rating: Low</p>	<p><u>Speyeria diana</u></p>	<p><u>Forest Service Sensitive</u></p> <p>Restoration of woodlands and other fire maintained communities will improve habitat; reduction or control of non-native invasive will also improve habitat especially along woodland edges where such species as sericea lespedeza, Japanese honeysuckle, multiflora rose among others are competing with native food plants. Risks are low because habitat is expected to become abundant through woodland restoration and other fire maintained habitats; no other major threats are known.</p>
<p><u>Rocky Mountain Elk</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: -- Tertiary Limiting Factor: -- Viability Risk Rating: Low</p>	<p><u>Cervus elaphus nelsoni</u></p>	<p><u>Local viability concern</u></p> <p>Lack of open habitats is currently limiting expansion of the current population from expanding onto the forest. The High Quality Wildlife Management Rx Area should provide for a sustained herd expansion.</p>
<p><u>Rafinesque's Big-Eared Bat</u></p> <p>Primary Limiting Factor: Naturally limited habitat Secondary Limiting Factor: Lack of mature forest structure Tertiary Limiting Factor: -- Viability Risk Rating: Moderately High</p>	<p><u>Corynorhinus rafinesquii</u></p>	<p><u>Local viability concern</u></p> <p>Plan provisions for bottomland hardwood forest on the St. Francis NF provide for abundant mature forest and snag and den tree retention. Riparian prescriptions and SMZ's in the Plan will also provide added protection for this species. Viability risk is the result of the St. Francis NF being on the edge of its range with range wide occurrence of this species being uncommon and possibly declining.</p>

Table D-2 Viability rating and limiting factors (Continued).

<u>Ozark Big-eared Bat</u>		<u><i>Corynorhinus townsendii ingens</i></u>	<u>Threatened or Endangered</u>
Primary Limiting Factor:	Human disturbance		Cave and cliff protection provisions in the revised plan are designed to address human disturbance factors affecting roosting habitat. Foraging habitat is not believed to be limiting, but may be improved by woodland restoration. Risk is driven by current low numbers, lack of genetic diversity, and high uncertainty regarding limiting factors. Forest Service management is directed at minimizing risk of factors under agency control, and maintaining diverse foraging habitat within the species range.
Secondary Limiting Factor:	Naturally limited populations		
Tertiary Limiting Factor:	Unknown		
Viability Risk Rating:	High		
<u>Southeastern Myotis</u>		<u><i>Myotis austroriparius</i></u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Lack of mature forest structure		Plan provisions for bottomland hardwood forest on the St. Francis NF provide for abundant mature forest and snag and den tree retention. Riparian prescriptions and SMZ's in the Plan will also provide added protection for this species. Not known to occur on the forest.
Secondary Limiting Factor:	--		
Tertiary Limiting Factor:	--		
Viability Risk Rating:	NA		
<u>Gray Myotis</u>		<u><i>Myotis grisescens</i></u>	<u>Threatened or Endangered</u>
Primary Limiting Factor:	Human disturbance		Cave protection provisions in the revised plan are designed to address human disturbance factors affecting roosting habitat. Foraging habitat is forested riparian and lakeshores which may have benefited from reservoir creation. Riparian prescription provisions will maintain a predominance of mature forest in riparian zones and lakeshores. Risk is driven by current concentration of known individuals in relatively few caves. Forest Service management is directed at protecting these caves.
Secondary Limiting Factor:	--		
Tertiary Limiting Factor:	--		
Viability Risk Rating:	Moderate		
<u>Eastern Small-Footed Bat</u>		<u><i>Myotis leibii</i></u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Human disturbance		Cave and cliff protection provisions in the revised plan are designed to address human disturbance factors affecting roosting habitat. Foraging habitat is not believed to be limiting, but may be improved by woodland restoration. Species is relatively common in the center of its range, but is relatively uncommon on the Forest as it is on the edge of its range.
Secondary Limiting Factor:	--		
Tertiary Limiting Factor:	--		
Viability Risk Rating:	Moderate		

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Indiana Bat</u></p> <p>Primary Limiting Factor: Human disturbance Secondary Limiting Factor: Lack of disturbance, succession</p> <p>Tertiary Limiting Factor: Naturally limited populations</p> <p>Viability Risk Rating: High</p>	<p><u>Myotis sodalis</u></p> <p>Threatened or Endangered</p> <p>Cave protection provisions in the revised plan are designed to address human disturbance factors affecting roosting habitat. Foraging habitat may be improved by woodland restoration, thinning, shelterwood, seedtree, pond construction, small openings, etc. The forest unit is on the south/west edge of the species range.</p> <p>Risk is driven by current low numbers, lack of genetic diversity, declining populations range-wide and high uncertainty regarding limiting factors. Forest Service management is directed at minimizing risk of factors under agency control, and maintaining diverse foraging habitat within the species range.</p>
<p><u>Plains Spotted Skunk</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: Naturally limited populations Tertiary Limiting Factor: -- Viability Risk Rating: Moderate</p>	<p><u>Spilogale putorius interrupta</u></p> <p>Local viability concern</p> <p>Woodland restoration objectives are expected to improve habitat.</p> <p>Risk results from low populations on edge of range and unknowns due to current status.</p>
<p><u>Ouachita Leadplant</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: Unknown</p> <p>Tertiary Limiting Factor: -- Viability Risk Rating: Moderate</p>	<p><u>Amorpha ouachitensis</u></p> <p>Forest Service Sensitive</p> <p>Species needs open conditions; it withstands repeated mowing, but may not be favored by repeated burning. It is not clear what limits this species on the National Forest.</p> <p>Low number of known sites and unknown limiting factors are primary drivers of risk.</p>
<p><u>Bush's Poppymallow</u></p> <p>Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: -- Tertiary Limiting Factor: -- Viability Risk Rating: Moderately High</p>	<p><u>Callirhoe bushii</u></p> <p>Forest Service Sensitive</p> <p>Lack of fire in the woodlands it occurs in, is its biggest threat.</p> <p>Low if specific populations are targeted for fire.</p>

Table D-2 Viability rating and limiting factors (Continued).

<u>Ozark Chinquapin</u>	<u><i>Castenea pumila var ozarkensis</i></u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Disease or pests	
Secondary Limiting Factor:	Lack of disturbance, succession	
Tertiary Limiting Factor:	Unknown	
Viability Risk Rating:	Moderate	Species is a viability risk because of disease. Disturbance from limited timber management and prescribed burning would seem to improve the growth of young clones.
<u>Southern Lady's-Slipper</u>	<u><i>Cypripedium kentuckiense</i></u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Over-harvest/collection/persecution	
Secondary Limiting Factor:	Forest management–general	
Tertiary Limiting Factor:	Unknown	
Viability Risk Rating:	Low	Habitats for this species are stable.
<u>Moore's Larkspur</u>	<u><i>Delphinium newtonianum</i></u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Naturally limited populations	
Secondary Limiting Factor:	--	Species is generally associated with mesophytic habitat and a variety of structural conditions. Habitat is expected to be provided without specific management direction.
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Low	Risk is moderate due to limited distribution appears to be stable and resilient to management effects and occupies a variety of habitats.
<u>Trelease's Larkspur</u>	<u><i>Delphinium treleasei</i></u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Naturally limited habitat	
Secondary Limiting Factor:	Lack of disturbance, succession	
Tertiary Limiting Factor:	Unknown	
Viability Risk Rating:	Low	Glade restoration will benefit this species.

Table D-2 Viability rating and limiting factors (Continued).

<p><u>French's Shooting Star</u></p> <p>Primary Limiting Factor: Naturally limited populations</p> <p>Secondary Limiting Factor: Hydrologic modification</p> <p>Tertiary Limiting Factor: Human disturbance</p> <p>Viability Risk Rating: Moderate</p>	<p><u>Dodecatheon frenchii</u></p>	<p><u>Forest Service Sensitive</u></p> <p>Species is found in a currently stable environment but its rarity and dependence on hydrology (wet bluff lines) makes it vulnerable to climatic or physical environment changes.</p>
<p><u>Open-ground Whitlow-grass</u></p> <p>Primary Limiting Factor: Naturally limited habitat</p> <p>Secondary Limiting Factor: Naturally limited populations</p> <p>Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Moderate</p>	<p><u>Draba aprica</u></p>	<p><u>Forest Service Sensitive</u></p> <p>Forest has two occurrence records. Increased use of fire and restoration of Glades and Woodlands should improve habitat for this species.</p>
<p><u>Wolf Spikerush</u></p> <p>Primary Limiting Factor: Naturally limited habitat</p> <p>Secondary Limiting Factor: Lack of disturbance, succession</p> <p>Tertiary Limiting Factor: Unknown</p> <p>Viability Risk Rating: Moderately High</p>	<p><u>Eleocharis wolfii</u></p>	<p><u>Local viability concern</u></p> <p>There are just two occurrence records for this species but it is easily overlooked. Glade restoration should benefit this species.</p>
<p><u>Small-headed Pipewort</u></p> <p>Primary Limiting Factor: Naturally limited habitat</p> <p>Secondary Limiting Factor: Lack of disturbance, succession</p> <p>Tertiary Limiting Factor: Unknown</p> <p>Viability Risk Rating: Moderate</p>	<p><u>Eriocaulon kornickianum</u></p>	<p><u>Forest Service Sensitive</u></p> <p>Restoration of glades should benefit this species.</p>

Table D-2 Viability rating and limiting factors (Continued).

Butternut

Juglans cinerea

Primary Limiting Factor: Naturally limited populations
Secondary Limiting Factor: Disease or pests
Tertiary Limiting Factor: Lack of disturbance, succession
Viability Risk Rating: High

Forest Service Sensitive

This species grows in moist environments but is shade intolerant. Major disturbance is required to provide sunlight for regeneration.

Risk is due to naturally low populations, disease and regeneration concerns.

Alabama Snow Wreath

Neviusia alabamensis

Primary Limiting Factor: Naturally limited populations
Secondary Limiting Factor: Human disturbance
Tertiary Limiting Factor: --
Viability Risk Rating: Moderate

Forest Service Sensitive

Distribution is poor but likelihood of extirpation from forest is low to moderate due to stability of the habitats it is found.

American Ginseng

Panax quinquefolius

Primary Limiting Factor: Over-harvest/collection/persecution
Secondary Limiting Factor: Unknown
Tertiary Limiting Factor: --
Viability Risk Rating: Moderate

Local viability concern

Over collection continues to be the leading threat to this species. The forest has had a moratorium on allowing collection for the past 5 years.

Maple-leaved Oak

Quercus acerifolia

Primary Limiting Factor: Naturally limited populations
Secondary Limiting Factor: Lack of disturbance, succession
Tertiary Limiting Factor: Disease or pests
Viability Risk Rating: Moderately High

Forest Service Sensitive

This species is in a protected area of the Mt. Magazine State park. Provisions for regeneration should be made. Since it is a red oak it may be vulnerable to the rash of insects and diseases currently affecting northern red oak.

There is a high occurrence of Oak diseases that could affect this species and provisions for regenerating the species on the forest have not been made. However nursery stock is being grown to provide for sustaining the species.

Table D-2 Viability rating and limiting factors (Continued).

<u>Climbing Magnolia</u>	<u>Schisandra glabra</u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Non-native invasive species	
Secondary Limiting Factor:	--	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Low	Relatively common on the St. Francis District and resilient to management practices.
<u>Ovate-leaf Catchfly</u>	<u>Silene ovata</u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Naturally limited habitat	Species is dependent on talus slopes.
Secondary Limiting Factor:	Unknown	
Tertiary Limiting Factor:	--	
Viability Risk Rating:	Low	Species occurs on areas of the forest which are protected.
<u>Royal Catchfly</u>	<u>Silene regia</u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Lack of disturbance, succession	This plant occurs along roadsides and is susceptible to mowing, hardwood and vine competition and herbicide applications.
Secondary Limiting Factor:	Naturally limited habitat	
Tertiary Limiting Factor:	Human disturbance	
Viability Risk Rating:	Moderately High	Low populations are driving risk. Management for glades and woodlands should benefit the species.
<u>Ozark Spiderwort</u>	<u>Tradescantia ozarkana</u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	None	
Secondary Limiting Factor:	None	
Tertiary Limiting Factor:	None	
Viability Risk Rating:	Low	Fairly wide spread with wide range of habitat occurrences.
<u>Ozark Least Trillium</u>	<u>Trillium pusillum var ozarkanum</u>	<u>Forest Service Sensitive</u>
Primary Limiting Factor:	Lack of disturbance, succession	
Secondary Limiting Factor:	Unknown	
Tertiary Limiting Factor:	Unknown	
Viability Risk Rating:	Moderately High	Only known from one site on the forest and it is protected.

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Ozark Corn-Salad</u> Primary Limiting Factor: Lack of disturbance, succession Secondary Limiting Factor: Unknown Tertiary Limiting Factor: -- Viability Risk Rating: Moderate</p>	<p><u>Valerianella ozarkana</u></p>	<p><u>Forest Service Sensitive</u></p>
<p style="text-align: center;">Increase in fire and restoration of glades and woodlands should help this species.</p>		
<p><u>American Alligator</u> Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: Naturally limited habitat Tertiary Limiting Factor: Human disturbance Viability Risk Rating: Moderate</p>	<p><u>Alligator mississippiensis</u></p>	<p><u>Threatened or Endangered</u></p>
<p>The American Alligator lives in swampland lakes, sloughs, and sluggish streams. It has only been found at two sites on the St. Francis National Forest. The species are also effected by human disturbances like boating activity and other recreational users. The habitat is protected from other forest management activities based on Riparian Corridor Management Areas, Crowley's Ridge Management Area, and Bottomland Hardwood Management Areas. It is also protected by SMZ's and other Forest standards. The Forest will help to improve human disturbance through education of the public about this species.</p> <p>Risk is driven by naturally limited populations, naturally limited habitat, and human disturbance from recreational use. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>		

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Western Diamondback</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: Naturally limited habitat Tertiary Limiting Factor: Over-harvest/collection/persecution</p> <p>Viability Risk Rating: Low</p>	<p><u>Crotalus atrox</u></p>	<p style="text-align: center;"><u>Local viability concern</u></p> <p>This species inhabits dry, rocky areas in Arkansas. It especially likes rocky outcroppings, rocky glades, and talus slopes. It is at the eastern extent of its range in Arkansas. It has been found on the Forest on the Magazine and Boston Mountain Ranger Districts. The viability of this species on the Forest is most affected by naturally limited populations. It is also affected by over-harvest, collection, and persecution by the public. Lastly it is limited by the lack of available habitat of rocky/talus areas. The habitat for this species is protected by special provisions for talus areas under rare communities in the Forest plan. Further surveys of the distribution of this species on the Forest could reveal new populations of this species on the Forest.</p> <p>Risk is driven solely by naturally limited distribution of the species on the forest. Habitats where the species occurs are expected to remain stable if not improve due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>
<p><u>Timber Rattlesnake</u></p> <p>Primary Limiting Factor: Over-harvest/collection/persecution Secondary Limiting Factor: Accidental mortality Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Low</p>	<p><u>Crotalus horridus</u></p>	<p style="text-align: center;"><u>Local viability concern</u></p> <p>This species can be found in variety of habitats. This species is most affected by over-harvest and collection by individuals. The viability of this species is also affected by accidental mortality of this species by vehicles on roads. Education of the public should help to improve the over-collection/persecution of this species. Road density reductions stipulated in the Forest plan should lower accidental mortality of this species. Further surveys of the distribution of this species on the Forest could reveal new populations of this species on the Forest.</p> <p>Risk is driven by over-harvest and accidental mortality of the species on the Forest. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>

Table D-2 Viability rating and limiting factors (Continued).

<u>Collared Lizard</u>	<u><i>Crotaphytus collaris</i></u>
Primary Limiting Factor:	Naturally limited habitat
Secondary Limiting Factor:	Lack of disturbance, succession
Tertiary Limiting Factor:	Over-harvest/collection/persecution
Viability Risk Rating:	Moderate

Local viability concern

This species is an obligate to glade habitats which are limited on the Forest. This habitat is limiting on the Forest and existing glades are threatened by encroachment by oak-hickory forest. This is largely due to the lack of fire in these ecosystems. Maintenance of woodland habitat as connecting corridors is also very important for this species. This is addressed in the Forest plan through woodland restoration. Lastly, over collection of this species is also a key threat to the viability of this species. Education of the public about this species should improve public awareness.

Risk is driven by naturally limited habitat, lack of disturbance/succession and over collection of the species on the Forest. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.

<u>Great Plains Skink</u>	<u><i>Eumeces obsoletus</i></u>
Primary Limiting Factor:	Naturally limited populations
Secondary Limiting Factor:	Lack of disturbance, succession
Tertiary Limiting Factor:	--
Viability Risk Rating:	Low

Local viability concern

This species is at the eastern extent of its range. It has been found at one location on the Forest. The major limiting factor is naturally limited populations. This is probably due to the fact that it is at the edge of its range. Habitat for this species is probably lacking due to a lack of disturbance and succession on the Forest. The amount of this habitat should improve across the Forest with the increase of woodland restoration and the increase in prescribed burning proposed in the plan.

Risk is driven by naturally limited population and a lack of disturbance/succession. Habitats where the species occurs are expected to remain stable, if not improve, due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.

Table D-2 Viability rating and limiting factors (Continued).

<p><u>Southern Prairie Skink</u></p> <p>Primary Limiting Factor: Naturally limited populations Secondary Limiting Factor: Lack of disturbance, succession Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Low</p>	<p><u>Eumeces septentrionalis</u></p>	<p><u>Local viability concern</u></p> <p>This species is at the eastern extent of its range. It has been found at one location on the Forest. The major limiting factor is naturally limited populations. This probably due to the fact that it is at the edge of its range. Habitat for this species is probably lacking due to a lack of disturbance and succession on the Forest. The amount of this habitat should improve across the Forest with the increase of woodland restoration and the increase in prescribed burning proposed in the plan.</p> <p>Risk is driven by naturally limited population and a lack of disturbance/succession. Habitats where the species occurs are expected to remain stable, if not improve, due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>
<p><u>Queen Snake</u></p> <p>Primary Limiting Factor: Human disturbance Secondary Limiting Factor: --</p> <p>Tertiary Limiting Factor: --</p> <p>Viability Risk Rating: Low</p>	<p><u>Regina septemvittata</u></p>	<p><u>Local viability concern</u></p> <p>This species is found in rivers and streams that flow southward out of the Ozark Mountains. This species is mostly affected on the forest by human disturbance from human recreational activities on the streams and rivers. The habitat is protected from other forest management activities based on Riparian Corridor Management Areas and Scenic River Management Areas. It is also protected by SMZ's and other Forest standards. The Forest will help to improve human disturbance through education of the public about this species.</p> <p>Risk is driven solely by human disturbance from recreational use. Habitats where the species occurs are expected to remain stable due to Forest Plan provisions. These provisions also are expected to provide protection for individuals in these habitats during project implementation.</p>