

## Small Projects Aquatic and Terrestrial Effects/Impacts Analysis and

### Biological Evaluation

**Project Title:** Ozark Road Improvement Project

**National Forest:** Shawnee NF **Ranger District:** Hidden Springs

**County:** Pope **Range/Township/Section:** T11S, R5E, Sections 15, 16 and 21

**USGS Quad Map(s) Involved:** Stonefort Quadrangle Illinois

**Proposed Action:** This project proposes to conduct improvements to a 1.7 miles section of Forest Service Road 402 (Ozark Road). The purpose of the proposed project is to execute a maintenance agreement with Pope County in order to allow the County Road Construction Number 2 to maintain and improve a section of Ozark Road. The improvement would accommodate the public traffic and to reduce future maintenance costs. The Ozark Road is one of the most highly used roads on the Forest. Paving this road would stabilize the road and lessen the sediment delivery to the adjacent stream systems. Forest Plan direction states that "Forest roads and highways must be constructed to at least a minimum standard appropriate for their intended uses, considering safety, cost of transportation and effects on land and resources. Under this agreement, the Forest would allow Pope County to maintain and improve the Ozark Road from the intersection of the Delwood Road and Bell Smith Springs to the intersection of Appel Road in McCormick, about 1.7 linear miles. The work would include replacement of eight culverts, clearing, brushing and adding gravel. The road would be upgraded to an oil and chip surface. Removal of brush and trees up to 3 " dbh (diameter at breast height) would occur during routine maintenance.

**Description of Proposed Project Area:** The section of FSR 402 proposed for road improvements extends through a mix of upland habitat types, including mature upland hardwood forest, open agricultural pastureland, private residences, and mature yellow pine forest. An open non-forested road corridor is present along the southeastern side of FSR 402, extending as far as 10 feet in width. This open linear strip is generally composed of a mix of native and non-native herbaceous plants which receives annual mowing. A liner corridor consisting of grasses and herbaceous vegetation is present along the northwestern border of FSR 402 which averages six (6) to eight (8) feet in width. Standing dead hardwood and conifer trees are abundance along both sides of the road, consisting of both small (<6" dbh) and large diameter (>9" dbh) snags. Three road culverts have already been replaced, with an additional six (6) culverts remaining to be replaced. These six (6) culverts are fairly open on each end of the culverts, reducing the likelihood of having to clear and remove standing live or dead trees. The road currently has a gravel surface and receives considerably high motor vehicle use. The proposed section of FSR 402 does not cross any streams or other water bodies. No other water bodies are present. Water run-off handled by road culverts is being dumped out onto the surface of adjacent forestland where sediments are being allowed to settle out onto the forest floor. For several culverts, gullyng is starting to take place but the likelihood of sediment from road run-off reaching downslope streams being highly unlikely. Rip-rap is needed to be placed at the downstream terminus of each existing culvert, and for any culverts replaced, so as to reduce the likelihood of further gullyng and soil erosion taking place. No karst (caves, cliffs, rock outcrops, etc.) occurs within close proximity to the section of FSR 402. However, an abundance of karst is present a one mile radius of the proposed project area.

**Are Federal TEPC Species Known or Likely to Occur in Project Area?:** Yes  No  If Yes, which species?

Indiana bat (*Myotis sodalis*): The entire Shawnee National Forest is considered to be potentially occupied by Indiana bats during summer months, utilizing standing dead and live trees for summer roost sites, and for foraging.

The proximity of the proposed project to Bay Creek and Hunting Branch increases the likelihood that Indiana bats may be present on or adjacent to the project. An abundance of suitable summer roost trees located adjacent to the section of FSR 402 proposed for improvements elevates the likelihood of Indiana bats being present along FSR 402. However, no trees (dead or live) greater than 3" dbh will need to be cut/removed from April 1-September 30 as part of the proposed project. Forest Service roads are likely to be used at both travel corridors and for foraging. No Indiana bat summer roost records exist within the proposed project area at this time.

Gray bat (*Myotis grisescens*): For the most part, gray bats confine summer foraging activities within close proximity to rivers and creeks, with minimal use of upland mature hardwood forest. It is highly unlikely that gray bats would be present using the section of FSR 402 proposed for road improvements.

**Are RFS Species Known or Likely to Occur in Project Area? Yes  No  If Yes, which species?**

Timber rattlesnake (*Crotalus horridus*): Timber rattlesnake records exist within a five mile radius of the proposed road improvement project, so it is likely that timber rattlesnakes occur in the vicinity of the road being proposed for improvement.

Little brown myotis (*Myotis lucifugus*): It is likely that little brown myotis utilize the surrounding mature forest during the summer for roosting and foraging. It is likely that the road corridor itself may be used by little brown myotis as a travel corridor as well as for foraging during summer months.

Northern long-eared myotis (*Myotis septentrionalis*): It is likely that northern long-eared myotis are present on or adjacent to the project area, utilizing the open road corridor as a travel corridor and for foraging during the summer months. It is also likely that northern long-eared myotis are present using mature dead and live trees for summer roosting sites.

Tri-colored bat (*Perimyotis subflavus*): It is highly likely that tri-colored bats utilize mature woodlands adjacent to FSR 402 for summer roosting, as well as utilize the open road corridor for foraging and travel corridors during the summer months.

Eastern small-footed bat (*Myotis leibii*): The eastern small-footed bat is known to be present using open sandstone glade habitats to the west and southwest of the proposed project. It is likely that eastern small-footed bats may use FSR 402 as a travel corridor and for foraging during the summer months. It is also likely that eastern small-footed bats also utilize standing dead trees present within mature woodlands adjacent to FSR 402 for summer roosting sites.

**Are ISL Known or Likely to Occur in Project Area? Yes  No, If yes, which species?**

Eastern timber rattlesnake, Indiana bat, and gray bat (all included in either TEPC or RFS species). It is feasible that Bewick's wren (*Thryomanes bewickii*) and golden mice (*Ochrotomys nuttalli*) may be present in adjacent woodlands, even though no records of occurrence exist along this section of FSR 402. Early seral shrub/scrub habitat is present along various portions of FSR 402 around private residences. However, the proposed road improvement activities should not involve or impact any suitable habitat. It is feasible that golden mice may be present in this early seral habitats, as well as in Japanese honeysuckle patches located in yellow pine stands. Since no aquatic habitat is present adjacent to FSR 402, and the likelihood of aquatic habitats being impacted is low, no aquatic ISL species are likely to be present, or adversely affected by the proposed project.

**Will TEPC Species Be Affected by the Proposed Action? Yes No X. If yes, how?**

Indiana bat: No standing live or dead trees greater than 3" dbh will be cut or removed from April 1-September 15 to implement road improvement activities, so the likelihood of direct adverse effects taking place is virtually non-existent. Disturbance levels are believed to remain at or near current levels following implementation of road improvement activities, since the section of road in question receives annual road maintenance (including motor grading and mowing using mechanical heavy equipment) and use by the general public by a diversity of motorized vehicles. It is believed that any additional noise disturbances created as a result of chip-sealing will fall within existing noise disturbance levels. Use of the road after improvement activities have been completed should also remain close to pre-implementation of improvement activities.

Gray bat: Since it is highly unlikely that gray bats would be foraging within/along the proposed section of FSR 402 during summer months, it is highly unlikely that implementation of the proposed project would have any effects on gray bat populations or habitats in southern Illinois.

**Will RFS Species Be Impacted by the Proposed Action? Yes No X. If yes, how?**

Little brown myotis, northern long-eared myotis and tri-colored bat: There should be no direct, indirect, or cumulative adverse impacts to little brown myotis, northern long-eared myotis, or tri-colored bat from the implementation of road improvement activities, as proposed. No standing dead or live trees greater than 3" dbh will be cut or removed on Forest Service lands from April 1-September 30. FSR 402 is currently one of the heaviest used Forest Service roads, and improving the surface to FSR 402 should not result in any substantive increase in motor vehicle use rates. Any impacts that may adversely impact little brown myotis, northern long-eared myotis or tri-colored bats from existing uses of this section of FSR 402 are already taking place, and implementation of proposed road improvements should not result in any substantive changes in existing motor vehicle use rates.

Timber rattlesnake: There should be no direct, indirect, or cumulative adverse impacts to eastern timber rattlesnakes. FSR 402 is currently one of the heaviest used Forest Service roads, and improving the surface to FSR 402 should not result in any substantive increase in motor vehicle use rates. Any impacts that may adversely impact timber rattlesnakes is already taking place, and implementation of proposed road improvements should not result in any substantive changes in existing motor vehicle use rates or impacts to timber rattlesnake populations in southern Illinois.

**Will ISL Species Be Impacted by the Proposed Action? Yes No X. If yes, how?**

Since no suitable habitat for Bewick's wren or golden mouse will be impacted by implementation of proposed road improvement activities, as proposed, implementation of proposed road improvements should have no direct, indirect or cumulative adverse impacts to populations or habitat of Bewick's wren or golden mouse.

**Other Potential Resource Issues:**

Soil erosion and gullyng from water flowing from existing and new road culverts: An inspection of existing road culverts indicates no serious problem at the present time. However, water exiting from road culverts is beginning to cause minor soil erosion and gullyng below culverts at the point where water empties out onto the soil surface. At the present time, sediment coming from these road culverts is dumping out on the forest floor surface and has not reached stream channels. However, if left uncorrected, it is highly likely that soil erosion and sediment movement will continue, eventually resulting in severe gullyng and sediment reaching stream channels located downslope, which would affect aquatic resources in the area, which could eventually have adverse downstream impacts to Hunting Branch and Bay Creek.

Introduction of NNIS Plants and Impacts to Terrestrial Animal Habitats: The establishment of NNIS plants has been shown to have the possibility of causing adverse impacts to terrestrial animals, especially to invertebrates. The transportation of heavy grading and dozing equipment could serve as a source for the introduction of NNIS plants, which in turn could have adverse impacts to wildlife habitats. Washing of motorized equipment to be used to implement road improvements could help to reduce the likelihood of introducing NNIS plants.

**Recommended/Required Mitigation:**

Required Mitigation Measures: This BE was prepared based on information provided by Pope County that no trees over 3”dbh would need to be cut during the summer bat maternity period to implement needed road improvements. If this information changes, a revised BE will have to be prepared and informal consultation will have to be conducted with the Marion, Illinois Sub-Office of the US Fish and Wildlife Service to address potential direct effects to Indiana bats.

The following Design Criteria should be included as part of the “Proposed Action”.

<b>Table 1. This table summarizes the Design Criteria to be used for the Ozark Road Improvement Project.</b>		
<b>Resource Area</b>	<b>Design Criteria</b>	<b>Rationale / Effectiveness</b>
<b>Terrestrial Animal Resources</b>	No trees (any size) containing bird nests will be cut from April 15-July 15.	To avoid the likelihood of directly impacting nesting avian species.
	No cutting of any live or dead trees >3”dbh from 4/1 – 09/30 unless evaluated by a Forest Service wildlife biologist to determine suitability as an Indiana bat summer roost tree.	To minimize the potential for causing direct mortality or adverse disturbance to summer roosting Indiana bats.
<b>Terrestrial Animal Species</b>	All vegetative and organic debris will be washed/removed from any motorized equipment used to implement road improvement activities prior to being brought onto Forest Service lands.	To avoid the introduction and spread of NNIS plants that could adversely impact terrestrial wildlife habitats.
<b>Aquatic Animal Resources</b>	At the terminus outlet of all road culverts, armor the soil surface where water run-off dumps onto soil surface with RR1 (3” bedding stone) to dissipate water energy, retard soil erosion and gullyng	To reduce the development of gullyng, soil erosion and prevent sediment from reaching downslope streams and adversely impacting aquatic resources.

**Effects Determination of Proposed Action on TEPC Species:**

Indiana bat: There should be “no direct, indirect or cumulative effects” to Indiana bats from the implementation of proposed road improvement activities to a 1.7 mile stretch of FSR 402 (Ozark Road).

Gray bat: There should be “no direct, indirect or cumulative effects” to gray bats from the implementation of proposed road improvement activities to a 1.7 mile stretch of FSR 402 (Ozark Road).

There should be no direct, indirect, or cumulative adverse effects to any other TEPC species, since none are expected to be present on or near Forest Service lands where the activity is proposed to take place.

**Effects (Impacts) Determination of Proposed Action on RFS Species:**

Little brown myotis, northern long-eared myotis, tri-colored bat and eastern timber rattlesnake:

Implementation of proposed road improvement activities, as outlined, is not expected to have any direct, indirect, or cumulative adverse impacts to these three bat species.

Implementation of proposed road improvement activities to a section of FSR 402 (Ozark Road) is not expected to have any direct, indirect or cumulative adverse impacts to any other RFS animal species.

**Effects Determination of Proposed Action on ISL Species:**

The implementation of proposed road improvement activities to a section of FSR 402 (Ozark Road) is not expected to have any direct, indirect or cumulative adverse impacts to any ISL species.

**Forest Service Wildlife/Fisheries Biologist:** Rod D. McClanahan, Forest Wildlife Biologist

**Wildlife Biologist Signature:** /s/ Rod D. McClanahan

**Date:**      May 15, 2012                     

**USFWS Concurrence Signature (if required):**

Formal USFWS concurrence signature is not required due to a “no effects” determination for Indiana bat and gray bat.

\_\_\_\_\_

**Date:** \_\_\_\_\_

AMENDED

APPENDIX A

Documentation of Regional Forester's Sensitive (S) Aquatic and Terrestrial Animal Species Occurrences  
For  
Ozark Road Improvement Project  
National Forest Lands in Alexander (A), Pulaski (Pu), Jackson (Ja), Union (U), Hardin (H), Gallatin (G), Pope (P), Massac (M), Johnson (J), Williamson (W), and Saline (S) Counties, Illinois  
Coding for Occurrence Analysis Results (OAR)  
February 2012

(This version reflects edits/updates/changes to the Region Nine Regional Forester's Sensitive Species List of December 2011)

OAR	Species Name	Common Name	Range on or near Shawnee NF	Habitat-Detail	Federal T&E, and Region Nine Sensitive	G Rank	Illinois State Rank	County	Threats/Misc. Comments
2	<i>Hyla avivoca</i>	Bird-voiced Treefrog	Grantsburg Swamp, Cache River, Cypress Pond SNA, Little Black Slough, Bay Creek	Forested and swampy floodplains of large rivers and smaller streams that support cypress and tupelo trees.	S	G5	S3	A, Ja, M, Pu, P,J, U	Habitat fragmentation, loss of cypress-tupelo gum swamp
1	<i>Gastrophryne carolinensis</i>	Eastern narrow-mouth toad	Only occurs on national forest lands in IL.	Open moist areas with ground cover, ponds, lakes, swamp edges, marshy fields, sandy loam soils	S	G5/N5	S2	U,P, Ja,H	
1	<i>Pseudacris streckeri illinoensis</i>	Illinois chorus frog		Sand prairies, open sandy areas of river lowlands	S	G5T5	S2	A	Draining-clearing of bottomlands, habitat conversion, pesticides, highway construction, water contamination
1	<i>Nerodia cyclopion</i>	Mississippi green watersnake	Known only from Pine Hills RNA	Bald cypress-water tupelo backwater areas.	S	G5N5	S1	U-Big Muddy Watershed	Draining of bottomland sloughs and swamps

O A R	Species Name	Common Name	Range on or near Shawnee NF	Habitat-Detail	Federal T&E, and Region Nine Sensitive	G Rank	Illinois State Rank	County	Threats/Misc. Comments
1	<i>Tantilla gracilis</i>	Flat-headed snake	Known only from the Pine Hills RNA	Rocky wooded hillsides, forest edges, pine-oak uplands, pine woods.	S	G5N5	S2	U-Big Muddy Watershed	
2	<i>Nerodia erythrogaster neglecta</i>	Northern Copperbelly Watersnake	Grantsburg Swamp, Massac SP, N. Fork of Saline River, Dixon Springs Agr. Exp. Sta., Smith Mines	Backwater sloughs, swamps, lowland lakes and ponds	S	G5T3	S2	P,J,G,M,S	
6	<i>Crotalus horridus</i>	Timber Rattlesnake		Heavy forest along rocky outcrops and bluffs	S	G4	S3	A, G,P,S,H,J,Ja,U,W	Habitat fragmentation
1	<i>Macrochelys temminckii</i>	Alligator Snapping Turtle	Mississippi River and tributaries	Backwater sloughs and swamps, deep water rivers, oxbow lakes, slow moving rivers.	S	G3G4	S1	U	Habitat alteration, commercial and overharvesting, water pollution, habitat fragmentation
2	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Lake of Egypt, along Ohio River, Grande Pierre Creek	Undisturbed areas along rivers/lakes, Nesting in large old trees	S	G5	S2B,S3N	G,H,P,S,M,J,Ja,A, Pu,U,W	No longer federally-listed by the USFWS
2	<i>Ammodramus henslowii</i>	Henslow's Sparrow	Turpen , Pennant Bar, Wilson, Ashby Tracts	Grasslands-Prairie, abandoned fields and hayfields, tall-dense cover	S	G4	S2	P,S,J	Loss of open grass fields, clump grasses

O A R	Species Name	Common Name	Range on or near Shawnee NF	Habitat-Detail	Federal T&E, and Region Nine Sensitive	G Rank	Illinois State Rank	County	Threats/Misc. Comments
2	<i>Lanius ludovicianus migrans</i>	Migrant Loggerhead Shrike	Pennant Bar Tract	Open agricultural areas, grasslands, woody thick hedgerows	S	G4T3Q	S?	A, Ja,J,M,Pu,U,P,S	Loss of larger blocks of early successional habitat dominated by shrubs, saplings-thickets
2	<i>Dendroica cerulea</i>	Cerulean Warbler	Cache River	Mature bottomland forest, mature upland forest	S	G4	S3	U	Loss of mature bottomland hardwood forest
2	<i>Limnothlypis swainsonii</i>	Swainson's Warbler	Herron Pond NP, Reevesville, Fort Massac SP	Dense canopied forest with giant cane	S	G4	S1	A,Ja,Pu,J	Loss of dense saplings, river cane in bottomland hardwood forest
2	<i>Myotis austroriparius</i>	Southeastern Myotis	Martin-Marietta Stone Quarry, Cave Spring Cave	Caves, mines, and mature forested wetlands	S	G3G4	S1	A,Pu,M,U, H,P,S	Loss of mature wetland hardwood forest; disturbance to hibernacula, WNS
6	<i>Myotis leibii</i>	Eastern small-footed bat	Fink Sandstone Barrens Ecological Area	Caves, mines, rock shelters, boulder fields, bridges	S	G3	S1	J	One male and one female found Nov. 4, 2005-first Il. State record
2	<i>Corynorhinus rafinesquii</i>	Rafinesque's big-eared bat		Abandoned buildings, rock shelters, caves, mines, large hollow trees	S	GSG4	S1	A,Ja,J,P,Pu	Vandalism to caves and mines; destruction of abandoned buildings, loss of mature bottomland swamp forest

O A R	Species Name	Common Name	Range on or near Shawnee NF	Habitat-Detail	Federal T&E, and Region Nine Sensitive	G Rank	Illinois State Rank	County	Threats/Misc. Comments
6	<i>Myotis lucifugus</i>	Little brown bat	Distributed throughout southern Illinois where suitable habitat is present	<u>Hibernacula:</u> caves and mines <u>Maternity Roosts:</u> dead trees with sloughing bark, man-made structures, abandoned buildings	S	G5	S5	A,G,H, Ja, J, M, Po, P, S, U, W	Susceptible to effects from expose to WNS; loss of summer maternity roosts, disturbance to hibernacula
6	<i>Myotis septentrionalis</i>	Northern long-eared myotis	Distributed throughout southern Illinois where suitable habitat is present	<u>Hibernacula:</u> caves and mines <u>Maternity Roosts:</u> dead trees with sloughing bark, man-made structures, requires larger tracts of mature forest	S	G4	S4	A,G,H, Ja, J, M, Po, P, S, U, W	Susceptible to effects from expose to WNS; loss of summer maternity roosts, disturbance to hibernacula
6	<i>Perimyotis subflavus</i>	Tri-colored bat	Distributed throughout southern Illinois where suitable habitat is present	<u>Hibernacula:</u> caves and mines <u>Maternity Roosts:</u> green foliage within tree canopy	S	G5	S5	A,G,H, Ja, J, M, Po, P, S, U, W	Susceptible to effects from expose to WNS; loss of summer maternity roosts, disturbance to hibernacula
1	<i>Neotoma floridana</i>	Eastern Wood Rat		Rocky outcrops, rock ledges, cave-like depressions, rocky crevices, and old buildings in association with late successional hardwood forest.	S	G5	S1	Ja, U, S,G	Experimental populations reintroduced into Garden of the Gods and Pounds Hollow/Rim Rock areas in 2004; long-term status still unknown.

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1	<i>Ligumia recta</i>	Black sandshell		Ohio and Mississippi Rivers and tributaries	S	G5N5	S2	A, Pu, M	Sedimentation, chemical and organic pollution, channel alteration, mine run-off
1	<i>Toxoplasma lividum</i>	Purple liliput	Big Grand Pierre Creek	Tributary of Ohio River	S	G3N3	S1	P	Chemical and organize pollution, siltation, channel alteration, coal mine run-off, access to streams by livestock
1	<i>Lepomis miniatus</i>	Redspotted sunfish	Pine Hills Swamp, Wolf Lake area, Clear Creek	Swamps, backwater sloughs, bottomland lakes, pools of creeks, and small to medium rivers	S	G5N5	S2	M,G,Pu,H,U	Habitat alteration, ditching and draining of forested wetlands, habitat fragmentation
1	<i>Lepomis symmetricus</i>	Bantam sunfish		Lowland sloughs, oxbow lakes, ponds, swamps with mud bottoms with logs and heavy vegetation	S	G5N5	S1	A,Pu,U	Habitat alteration, ditching and draining of forested wetlands, habitat fragmentation
1	<i>Sinella cavernarum</i>	Cavernicolous springtail	Equality Cave, Brown's Hole Cave	Caves	S	G5N5	SNR	S,H	Susceptible to subterranean and surface water contamination
1	<i>Bachtrurus brachycaudus</i>	Short-tailed bactroid		Subterranean and spring seeps	S	G4N4	SNR	Ja, U	Susceptible to subterranean and surface water contamination

O A R	Species Name	Common Name	Range on or near Shawnee NF	Habitat-Detail	Federal T&E, and Region Nine Sensitive	G Rank	Illinois State Rank	County	Threats/Misc. Comments
1	<i>Caecidotea bicrenata whitei</i>	A cave obligate isopod	Only three records in IL, two of which are in Union County, IL	Subterranean and surface springs	S	G3G4T3T4	SNR	U	Susceptible to subterranean and surface water contamination
2	<i>Caecidotea beattyi</i>	A cave obligate isopod	Dixon Springs	Subterranean and surface springs	S	G3G3 N3N4	SNR	P,M	Susceptible to subterranean and surface water contamination
1	<i>Caecidotea stygia</i>	A cave isopod		Subterranean and surface springs	S	G5N5	SNR	J,H	Susceptible to subterranean and surface water contamination
2	<i>Crangonyx anomalus</i>	Anomalous spring amphipod	Found only in the Lusk Creek drainage	Subterranean and surface springs	S	G4G5N4N5	SU	P	Susceptible to subterranean and surface water contamination
2	<i>Crangonyx packardi</i>	Packard cave amphipod		Subterranean and surface springs	S	G4N4	S1	H,J,P,U	Susceptible to subterranean and surface water contamination
1	<i>Pseudosinella argentea</i>	A springtail	Brown's Hole Cave	Subterranean and surface springs	S	GNR/NNR	SNR	H	Susceptible to subterranean and surface water contamination
1	<i>Ergodesmus remingtoni</i>	A millipede		Cave-subterranean habitats	S	G1G2 N1N2	SNR	H	Susceptible to subterranean and surface water contamination
1	<i>Gammarus bousfieldi</i>	Bousfield's amphipod		Subterranean and surface springs	S	G1 NNR	SNR	H,M,Pu	Susceptible to subterranean and surface water contamination

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2	<i>Orconectes indianensis</i>	Indiana crayfish		Rocky riffles and pools of small-medium sized streams	S	G3/N3	S2	G,H,J,P,W,S	Habitat alteration, impoundment of streams, introduction of non-native species
1	<i>Orconectes kentuckiensis</i>	Kentucky crayfish	Known only from Big Creek, Hosick Creek, and Peters Creek-tributaries of the Ohio River	Small to large streams with bottom substrates of cobble or large gravel	S	G4/N4	S2	H	Habitat alteration, impoundment of streams, introduction of non-native species
2	<i>Orconectes placidus</i>	Bigclaw crayfish	Known only from the Big Creek drainage-tributary of the Ohio River	Rocky riffles and pools with scattered cobble or fractured bedrock, small to large-sized streams and rivers	S	G2/N2	S2	H,,P,	Habitat alteration, impoundment of streams, introduction of non-native species
1	<i>Sphalloplana hubrichti</i>	A cave obligate planarium			S	G2G4/N2N4	SNR	Ja	
1	<i>Stygobromus subtilis</i>	Subtle stygobromid	Restricted to Giant City State Park area	Groundwater seeps and drip pools	S	G2N2	S2	Ja,U	Groundwater contaminants, sewage contaminants, cattle feedlots, pesticides, road salting, fertilizer, stream impoundments, quarry mining-blasting
1	<i>Stenotrema hubrichti</i>	Carinate Pillsnail	LaRue-Pine Hills/Otter Pond RNA	Sandstone bluffs	S	G1	S1S3	U	Isolated populations and no dispersal between populations

O A R	Species Name	Common Name	Range on or near Shawnee NF	Habitat-Detail	Federal T&E, and Region Nine Sensitive	G Rank	Illinois State Rank	County	Threats/Misc. Comments
1	<i>Pseudanophthalmus illinoisensis</i>	Illinois Cave Beetle	Cave Springs Cave	Inhabits caves in moist soils, often near streams or drip zones	S	G1	SNR	H	

**LEGEND FOR TES SPECIES IN OCCURRENCE ANALYSIS RESULTS (OAR):**

**OAR Codes:**

1=Project located out of species known range.

2=Lack of suitable habitat for species in project area.

3=Suitable habitat present, species was searched for during field surveys, but not found.

4=Species occurs in project area, but outside of activity area.

5=Field surveys located species in proposed activity area.

6=Species not seen/found during field survey, but could possibly occur in activity area based on habitat observed; or, field survey not conducted when species is recognizable (time of year or time of day). Therefore, assume presence and no additional surveys are needed.

7=Aquatic species or habitat known or suspected downstream of project activity area, but outside of projected water cumulative effects analysis area (defined as point below which sediment amounts are immeasurable and insignificant).

8=Aquatic species or habitat known or suspected downstream of project activity area, but inside projected water cumulative effects analysis area.

**Definition of Terms:**

**Species**=The term “species” includes any subspecies of fish or wildlife, and any distinct population segment of any species of vertebrate, invertebrate, or mussel, which interbreeds when mature. (Endangered Species Act of 1973, as amended through the 100<sup>th</sup> Congress).

**Range**=The geographical distribution of a species. For use here “range” is expressed as where a species is known or expected to occur on or near the Shawnee National Forest in terms of landform (feature name, physiographic province), political boundary (county name), or watershed (river, or stream name).

**Habitat**=A place where the physical and biological elements of ecosystems provide a suitable environment and the food, cover, and space resources needed for plant and animal livelihood (FSM 2605-91-8, pg. 10 of 13). **Global Rank**=Global ranks are assigned by a consensus of the network of natural heritage programs, scientific experts, and the Nature Conservancy to designate a rarity based on the range-wide status of a species or variety. This system was developed by the Nature Conservancy and is widely used by other agencies and organizations as the best available scientific and objective assessment of taxon rarity and level of threat to its existence. The ranks are assigned after considering a suite of factors including number of occurrences, numbers of individuals, and severity of threats.

**G1**=Extremely rare and critically imperiled with 5 or fewer occurrences or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.

**G2**=Very rare and imperiled with 6 to 20 occurrences or few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.

**G3**=Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range; or vulnerable to extinction because of other factors. Usually fewer than 100 occurrences are documented.

**G4**=Common and apparently secure globally, though it may be rare in parts of its range, especially at the periphery.

**G5**=Very common and demonstrably secure globally, though it may be rare in parts of its range, especially at the periphery.

**GH**=Formally part of the world’s biota with the exception that it may be rediscovered.

**GX**=Believed extinct throughout its range with virtually no likelihood of rediscovery.

**GU**=Possibly rare, but status uncertain and more data needed.

**G?**=Unranked, or, if following a ranking, ranking uncertain (ex. G3?).

**G\_Q**=The taxon has a questionable taxonomic assignment, such as G3Q.

**G\_T**=Signifies the rank of a subspecies or variety. For example, G5T1 would apply to a subspecies of a species that is demonstrably secure globally (G5) but the subspecies warrants a rank of T1, critically imperiled.

**State Rank:** The following ranks are used by the Illinois Department of Conservation to set protection priorities for natural heritage resources. Natural Heritage Resources (NHR’s) are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The criterion for ranking NHR’s is the number of populations or occurrences, i.e. the number of known distinct localities; the number of individuals in existence at each locality or, of a highly mobile organism (e.g. sea turtles, many birds, and butterflies), the total number of individuals; the quality of the occurrences, the number of protected occurrences; and threat.

- **S1** – Extremely rare; usually 5 or fewer populations or occurrences in the state; or may be a few remaining individuals; often especially vulnerable to extirpation.
- **S2** – Very rare; usually between 5 and 20 populations or occurrences; or with many individuals in fewer occurrences; often susceptible to becoming extirpated.

- **S3** – Rare to uncommon; usually 20 and 100 populations or occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
- **S4** – Common; usually >100 populations or occurrences, but may be fewer with many large populations; may be restricted to only a portion of the state; usually not susceptible to immediate threats.
- **S5** – Very common; demonstrably secure under present conditions.
- **SA** – Accidental in the state.
- **S#B** – Breeding status of an organism within the state.
- **SH** – Historically known from the state, but not verified for an extended period, usually >15 years; this rank is used primarily when inventory has been attempted recently.
- **S#N** – Non-breeding status within the state. Usually applied to winter resident species.
- **SR** – Reported for Illinois, but without persuasive documentation that would provide a basis for either accepting or rejecting the report.
- **SU** – Status uncertain, often because of low search effort or cryptic nature of the element.
- **SX** – Apparently extirpated from the state.
- **SZ** – Long distant migrant, whose occurrences during migration are too irregular, transitory and/or dispersed to be reliably identified, mapped and protected.
- **SN** – Not ranked, under review

These ranks should not be interpreted as legal descriptions.

**County:**

**P**=Pope; **S**=Saline; **H**=Hardin; **G**=Gallatin; **J**=Johnson; **M**=Massac; **W**=Williamson.

**T**-Listed as Federally threatened by the US Fish and Wildlife Service.

**E**-Listed as Federally endangered by the US Fish and Wildlife Service.

**S**-Region Nine-Regional Forester's Sensitive Species list. The specific species included in the Regional Forester's Sensitive species list may periodically change as additional status reviews are completed by the Shawnee NF and the regional office.

\* Species has been de-listed by the U.S. Fish and Wildlife Service.