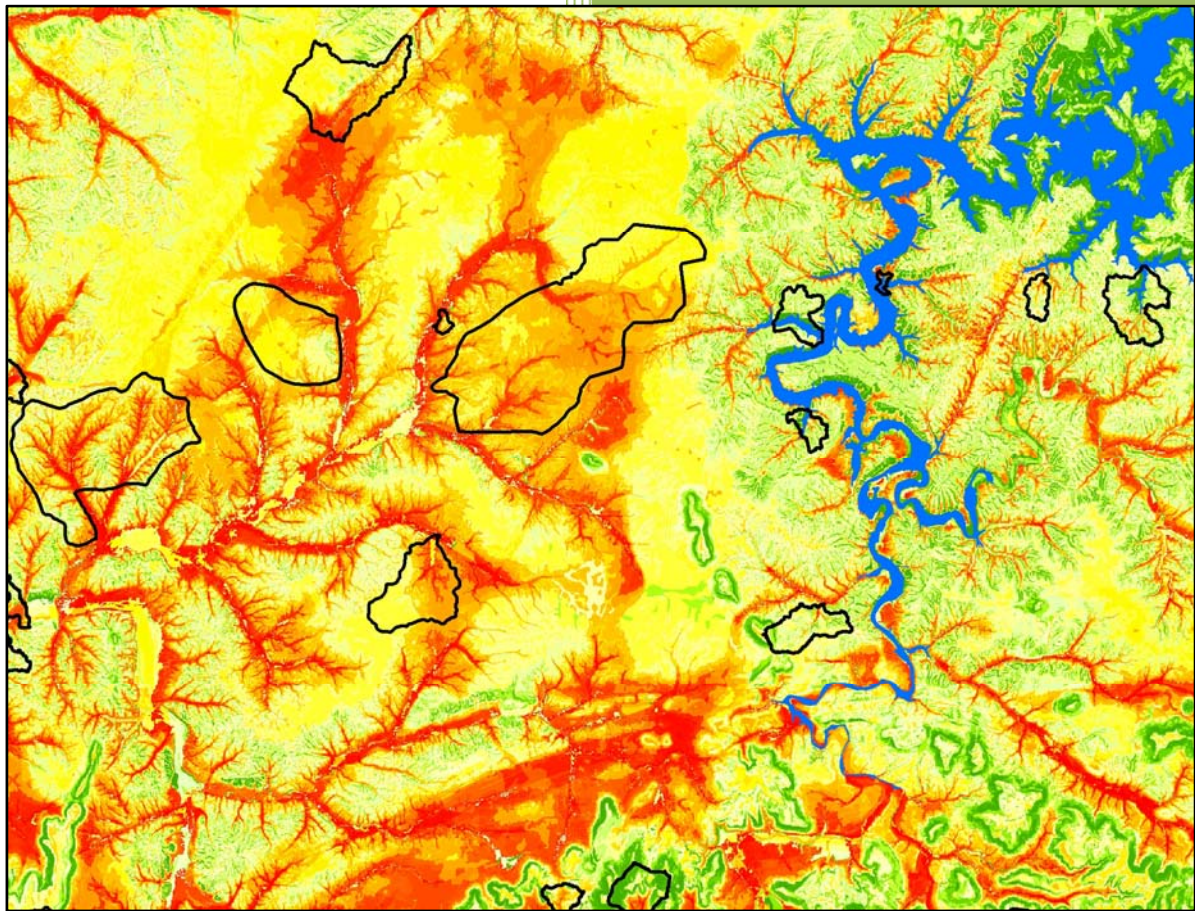


# Mapping the Distribution, Habitat, and Threats for Arkansas' Species of Greatest Conservation Need



Final report for  
Arkansas State Wildlife Grant  
Agreement Number T20-9

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# **MAPPING THE DISTRIBUTION, HABITAT, AND THREATS FOR ARKANSAS' SPECIES OF GREATEST CONSERVATION CONCERN**

Final Report, submitted by

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March 31, 2001

## **INTRODUCTION**

Karst species are important components of species conservation planning efforts in the Arkansas State Wildlife Action Plan (AWAP). Karst is a terrain, generally underlain by limestone or dolomite, in which the topography is chiefly formed by the dissolving of rock, and which may be characterized by sinkholes, losing streams, closed depressions, subterranean drainage, and caves (USEPA 1999). Often, species living in karst habitats are uniquely adapted to rigorous environmental conditions that occur there. Because light is absent and food is limited, many species exhibit morphological, physiological, and behavioral characteristics that make them well suited for existence in subterranean habitats. These organisms are often among the rarest and most unique species inhabiting karst regions.

To effectively protect karst species and the groundwater resources they use, accurate maps of species locations and threats are needed. Species inventories are sparse and are often held in disparate databases and collections. Existing range maps yield vast gaps in expected distributions. Exhaustive inventory projects of the 3000 caves in Arkansas would be costly and time consuming. A predictive approach for mapping karst species may provide a more cost-effective way to plan for their conservation in the future.

The species-habitat affinity (or wildlife habitat relationship) approach for predicting species distributions is a widely accepted tool for terrestrial and aquatic species conservation planning. This approach relies on accurate habitat maps and species occurrence maps. Habitat affinities for each species of concern are identified through literature review and expert knowledge, as well as map analyses comparing habitat types to species occurrences. With species-habitat affinities identified, predicted species distribution maps can be generated. These maps are critical to conservation planning efforts, and they are used in programs such as GAP and CWCS.

Very little research has been developed to predict the distribution of karst species. Such an approach could yield great advances in our understanding of karst species and our abilities to conserve them over time. The purpose of this project was to generate the base-level maps, species biological data, and associate threats needed for a future attempt at predicting distributions for karst species in Arkansas.

## Objectives

- To generate updated species range maps for each of the 36 Arkansas SGCN karst species occurring in the Ozark and Boston Mountains Ecoregions. These species maps will be derived from TNC's karst database, which integrates a variety of data sources beyond those of the Arkansas Natural Heritage database.
- To assess the current status of threats to each of these 36 species.
- To produce a conservation implementation priorities list based on the species distribution maps and threats.
- To create the first Ozark Karst Habitat Map, a critical step toward future predictive mapping efforts for karst species.
- To Identify species-habitat affinities by comparing the species ranges to the karst habitat map.

## METHODS

### Study Area

The study area for this project was limited to the portion of the state considered part of the Ozarks Ecoregion (Figure 1). This portion included sections of the Boston Mountains and the Ozark Plateau as designated by EPA Level 3 ecoregional mapping effort.

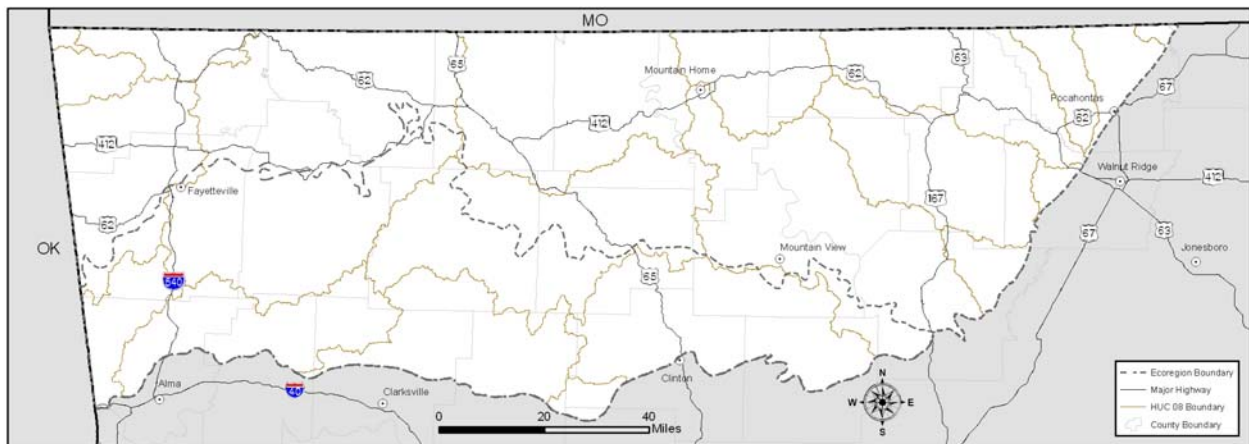


Figure 1. The study area for this project included all Arkansas lands within the Ozarks Ecoregion boundary and includes the Boston Mountains and the Ozarks Plateau.

### Biological Information

#### Database Structure and Updates

TNC uses Microsoft Access database structure to characterize descriptions and locations of karst species. The TNC karst database includes occurrence information for 36 AWAP karst species (**Error! Reference source not found.**), as well as many other groundwater and karst-dependent species occurring throughout Arkansas and the entire Ozarks ecoregion. Species information is continually updated with the latest species and location information collected through inventory efforts by TNC and its partners.

Table 1. Karst species included in the Arkansas Wildlife Action Plan. Priority score is the priority ranking score assigned to each species during the formulation of the AWAP. Methodology for assigning priority scores can be found the AWAP.

Community Group	Class	Common Name	Scientific Name	Priority Score
Terrestrial	Invertebrate-Other	cave obligate pseudoscorpion	Apochthonius diabolus	65
	Invertebrate-Other	cave obligate pseudoscorpion	Apochthonius titanicus	65
	Invertebrate-Other	cave obligate harvestman	Crosbyella distincta	65
	Invertebrate-Other	cave obligate harvestman	Crosbyella roeweri	65
	Invertebrate-Other	pseudoscorpion	Hesperoernes occidentalis	23
	Invertebrate-Other	springtail	Pseudosinella dubia	50
	Invertebrate-Other	Shelled Cave Springtail	Pseudosinella testa	42
	Invertebrate-Other	springtail	Pygmarrhopalites clarus	25
	Insect	ground beetle	Rhadine ozarkensis	80
	Invertebrate-Other	cave obligate millipede	Trigenotyia parca	65
	Invertebrate-Other	cave obligate springtail	Typhlogastrura fousheensis	65
Bat	Mammal	Ozark Big-eared Bat	Corynorhinus townsendii ingens	80
	Mammal	Gray Bat	Myotis grisescens	23
	Mammal	Eastern Small-Footed Bat	Myotis leibii	34
	Mammal	Indiana Bat	Myotis sodalis	46
Aquatic	Invertebrate-Other	Hubricht's Long-tailed Amphipod	Allocrangonyx hubrichti	42
	Fish	Ozark Cavefish	Amblyopsis rosae	34
	Invertebrate-Other	Foushee Cavesnail	Amnicola cora	65
	Invertebrate-Other	amphipod	Bactrurus pseudomucronatus	42
	Invertebrate-Other	isopod	Caecidotea ancyla	30
	Invertebrate-Other	isopod	Caecidotea dimorpha	42
	Invertebrate-Other	bat cave isopod	Caecidotea macropropoda	57
	Invertebrate-Other	isopod	Caecidotea oculata	42
	Invertebrate-Other	isopod	Caecidotea salemensis	8
	Invertebrate-Other	cave obligate isopod	Caecidotea simulator	42
	Invertebrate-Other	isopod	Caecidotea steevesi	30
	Invertebrate-Other	isopod	Caecidotea stiladactyla	30
	Crayfish	crayfish	Cambarus aculabrum	80
	Crayfish	Bristly Cave Crayfish	Cambarus setosus	27
	Crayfish	Hell Creek Crayfish	Cambarus zophonastes	80
	Invertebrate-Other	cave obligate planarian	Dendrocoelopsis americana	42
	Amphibian	Grotto Salamander	Eurycea spelaea	19
	Invertebrate-Other	isopod	Lirceus bicuspidatus	27
	Invertebrate-Other	isopod	Lirceus bidentatus	80
	Invertebrate-Other	Ozark Cave Amphipod	Stygobromus ozarkensis	27
Fish	Southern Cavefish	Typhlichthys subterraneus	27	

For the purposes of this project, the 36 AWAP karst species were split into three biological community groups (**Error! Reference source not found.**). Those groups included the terrestrial, bat, and aquatic communities. Terrestrial species use in-cave terrestrial habitats. Bat species use caves and crevices for hibernation, raising their young and other life functions. Bats also forage beyond these karst features. Aquatic species primarily or solely use the aquatic habitats of caves, springs, and seeps. The grotto salamander (*Eurycea spelaea*) was placed in the aquatic community group though it uses both terrestrial and aquatic karst habitats

A master GIS layer was developed that represented all sites where the 36 AWAP karst species are known to occur based on the above database information. ESRI ArcGIS 9.3.1 software was used to create, update, and maintain the layer. The occurrence sites in this layer included cave entrances, springs, seeps, crevices, sinkholes etc. Sites were represented as points in the GIS, and the layer had a total of 297 sites. Most sites had a precise known location, which was represented at a Universal Transverse Mercator (UTM) easting (X-coordinate) and northing (Y-coordinate) in the North American Datum of 1983 (NAD1983). These coordinates were generally determined using GPS, or comparison to other known features in the GIS, such as streams, roads, or topographic features. Some sites in the database, especially historic references, were only described as occurring within a PLSS section (about 1 square mile). In those cases, the point representing the site was digitized at the centroid (geometric center) of the section. Thirty of the 297 sites were represented based on a section centroid, and three were based on a county centroid.

## Species Range Maps

### Individual Species

To provide updated information to the AWAP document, TNC produced species range maps for 33 of the 36 AWAP karst species. The range maps reflect the species range within Arkansas, but does not reflect the entire range of that species if it also occurs outside of Arkansas. Most species range maps were produced in late 2008, and reflect database information at that time.

For each terrestrial and aquatic species, occurrence sites were assigned to the 12-digit HUC sub-watersheds (HUC-12) that they occur within. For these species, the range map is a cartographic representation of the HUC-12. Two aquatic species, *Caecadotea salemensis* and *Lirceus bicuspidatus*, had no occurrence information in the database, so HUC-12 based range maps were not produced for these species. However, point-based maps are included for these two species, and these maps are based on point estimates derived from site descriptions available from the relevant literature. Although these maps are included to assist with visually interpreting the possible species ranges, information on these two species was not included in the resulting threat analyses.

For the AWAP bat species, specific site locations were buffered in the GIS with a five mile radius to generalize the species locations for the range maps. This yielded circular assessment areas to symbolize bat locations. *Myotis leibii* had no occurrence information in the

database, so no range map was produced for this species. Additional maps were produced to show the total number of bat species in each five-mile area and the total bat AWAP priority score for these areas.

### Summary Maps

Additional maps were produced to show the total number of terrestrial, aquatic and combined species in each HUC-12. Maps were also produced to show the total AWAP priority score for these community groups per HUC-12. Similar maps were produced for bats also.

### Threat Assessment

GIS-based threat models were designed and implemented for each of the three biological community groups. These models were developed to assess and compare the relative level of threat from human land uses and activities at each species occurrence site, and also to determine the relative threat to each species across its range in Arkansas.

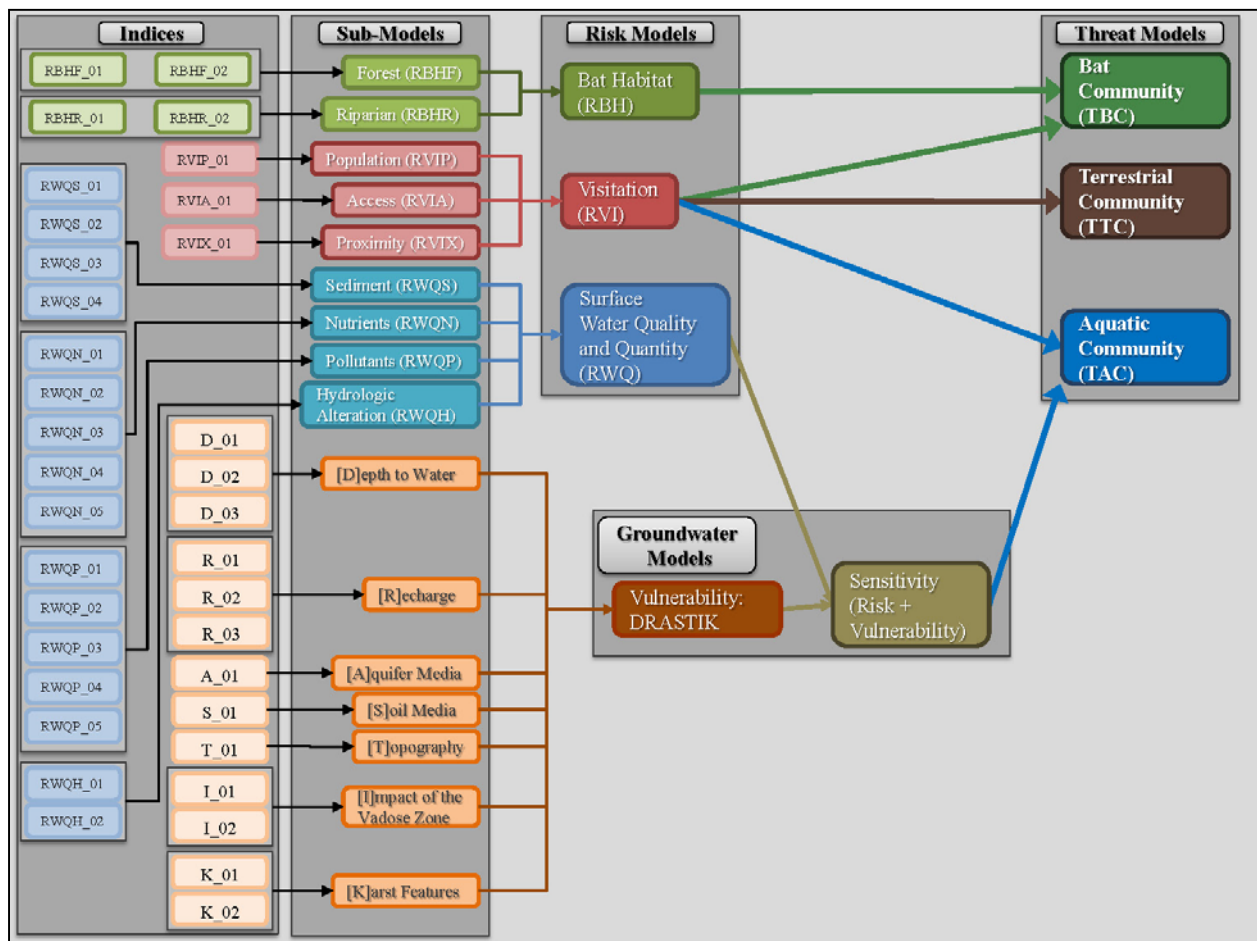


Figure 2. Generalized schematic of three community threat models.

The threat models varied in content and complexity with each biological community group. The threat model for the terrestrial group was the simplest of all the community threat models, only accounting for the risk of disturbance at the site by human visitation (Risk:

Visitation, or RVI). The threat model for the bat community accounted for the risk of visitation (RVI), as well as the riparian and upland forest habitat characteristics near the site (Risk: Bat Habitat, or RBH). The threat model for the aquatic community was the most complex of the threat models. It accounted for site visitation (RVI), but also accounted for groundwater sensitivity. Groundwater sensitivity had two sub-models: The risk to water quality and quantity (RWQ), and the groundwater vulnerability, which describes the ability of the landscape and subsurface to filter and attenuate the factors assessed in RWQ. Figure 2 is a generalized schematic of the criteria for each threat model.

### Terrestrial Community Group

The threat model for the terrestrial community group assumed that the primary threat to terrestrial karst species is from human visitation to the sites where the species occurs. Impacts from human visitation can include trampling, collection of animals, disturbance, destruction of habitat, vandalism, introduction of pollutants, and others. A GIS model was developed using available GIS data to measure the relative risk of visitation (RVI) across sites.

### Sites and Assessment Areas

All site points with known occurrences of terrestrial species were selected as a subset from the master occurrences GIS layer and were designated as the terrestrial site layer. A total of 22 sites were included for this analysis. Of these sites, 8 points were generated based on PLSS centroids. For each site point, a GIS assessment area (AA) for calculating RVI indices was defined as a circular area with a 10-mile radius from the site. This visitation assessment area (VAA) was intended to describe the human activities and likelihood of visitation in proximity to the site.

### Risk Model: Visitation (RVI)

As described earlier and shown in Figure 2, the terrestrial community threat model was based solely on the visitation risk model (RVI). The RVI model was developed with the assumption that the likelihood that a particular site will be visited is dependent on the proximate human population, the available access to the site, and the proximity of the site to a road. Therefore, RVI was comprised of three sub-models: population (RVIP), access (RVIA), and proximity (RVIX), as shown in Figure 3 below. Figure 3 also shows the indices that comprise each of these sub-models.

### Visitation Sub-Model: Population (RVIP)

An index is the result of a specific GIS analysis. For example, the visitation sub-model for population (RVIP) is comprised of a single index called RVIP\_01. RVIP\_01 is based on a count of the total human population in the VAA for each site.

Data from the 2000 US Census were used to calculate RVIP\_01. A "raw" index value was first calculated for each site which represented the human population count of the census blocks that occurred within the VAA. The raw values ranged from 585 people for a cave in rural Pope County to 135,654 people for a cave in urban Washington County that included the entire

cities of Fayetteville and Springdale within the VAA. Raw index values are referred to in GIS layers and tables accompanying this document with a "\_R" as a suffix. The raw index in this example is RVIP\_01\_R.

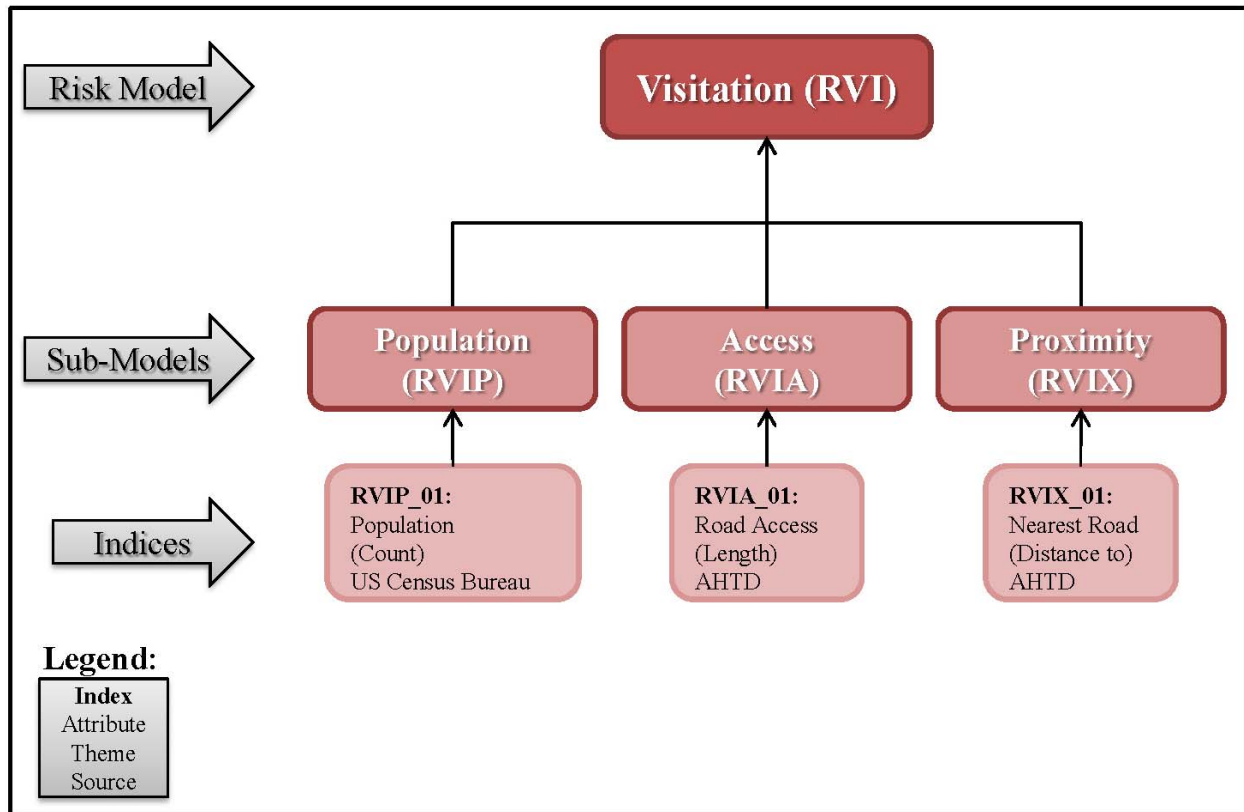


Figure 3. Visitation risk model schematic.

In the above example, and for all threat models, raw index values were re-scaled and normalized to have a maximum value of 1.0 and a minimum possible value of 0. Regardless of what attribute the index was measuring, the site with a final rescaled value of 1.0 indicated the best ecological condition for that index.

The process for rescaling an index included dividing the raw index value at each site by the highest raw value at any site. In the example above the result of this first rescaling calculation would give the Washington county site a 1.0 since it was the site with the highest raw value. The values for this index were inverted so the site with the lowest human population within the VAA would be assigned a 1.0. Final scaled index values are referred to in GIS layers and tables accompanying this document with a "\_S" as a suffix. The scaled index in this example is RVIP\_01\_S. For more specific information about the modeling process and data sources for this and all other indices, see Appendix A.

#### Visitation Sub-Model: Access (RVIA)

The second sub-model comprising the Visitation risk model was developed to assess the likelihood of visitation based on the access (RVIA) that the proximate road network provides.

RVIA was comprised of a single index, RVIA\_01, which summarized the amount of roads within the VAA. See Appendix A for more information about this index.

#### Visitation Sub-Model: Proximity (RVIX)

The third sub-model comprising the visitation risk model was developed to assess the likelihood of visitation based on the proximity (RVIX) of the site to a road. The logic of the index is that the closer a site is to a road, the more likely it would be disturbed. RVIX was comprised of a single index, RVIX\_01, which indicated the distance of the site to the nearest road. The assessment area was the site itself. This index was not calculated for sites that were located based on centroids. See Appendix A for more information about this index.

#### Calculation of the Visitation Risk Model

Because the sub-models for the RVI risk model were each only comprised of a single index, the sub-model scores were the same as the index that they included. The raw RVI score was simply the summation of the RVIP, RVIA, and RVIX sub-models. The raw sum RVI\_R was then rescaled from 0 to 1 to determine the final RVI\_S score.

#### Calculation of the Terrestrial Community Threat Model

Because it is comprised solely of the RVI risk model, the terrestrial community threat model scores were calculated directly from the RVI\_S score.

#### Bat Community Group

Bats use caves, crevices, and other karst sites as habitat. Visitation and disturbance by humans to these sites is a primary threat to multiple bat species. Bats also use forest and riparian lands near these sites to forage for food. As shown in Figure 2, the bat community threat model is based on both the visitation risk model (RVI) described above as well as the bat habitat risk model (RBH), which characterizes the condition of these foraging habitats.

#### Sites and Assessment Areas

All site points with known occurrences of bat species were selected as a subset from the master occurrences GIS layer and were saved separately as the bat site layer. A total of 152 sites were included for this analysis. For each site point, a GIS assessment area for calculating RVI indices was defined as a circular area with a 10-mile radius from the site (VAA), as described above for terrestrial sites. A bat foraging habitat assessment area (BAA) was also generated for assessing the indices of the RBH model. The BAA was defined as an area within a 5-mile radius to each point in the bat site layer.

#### Risk Model: Visitation (RVI)

The visitation risk model for bats was calculated using the same methodology as was used for terrestrial sites, described above. It was applied to the bat site layer.



### Risk Model: Bat Habitat (RBH)

The bat habitat risk model (RBH) is shown in Figure 4. It was comprised of two sub-models: Forest (RBHF) and Riparian (RBHR).

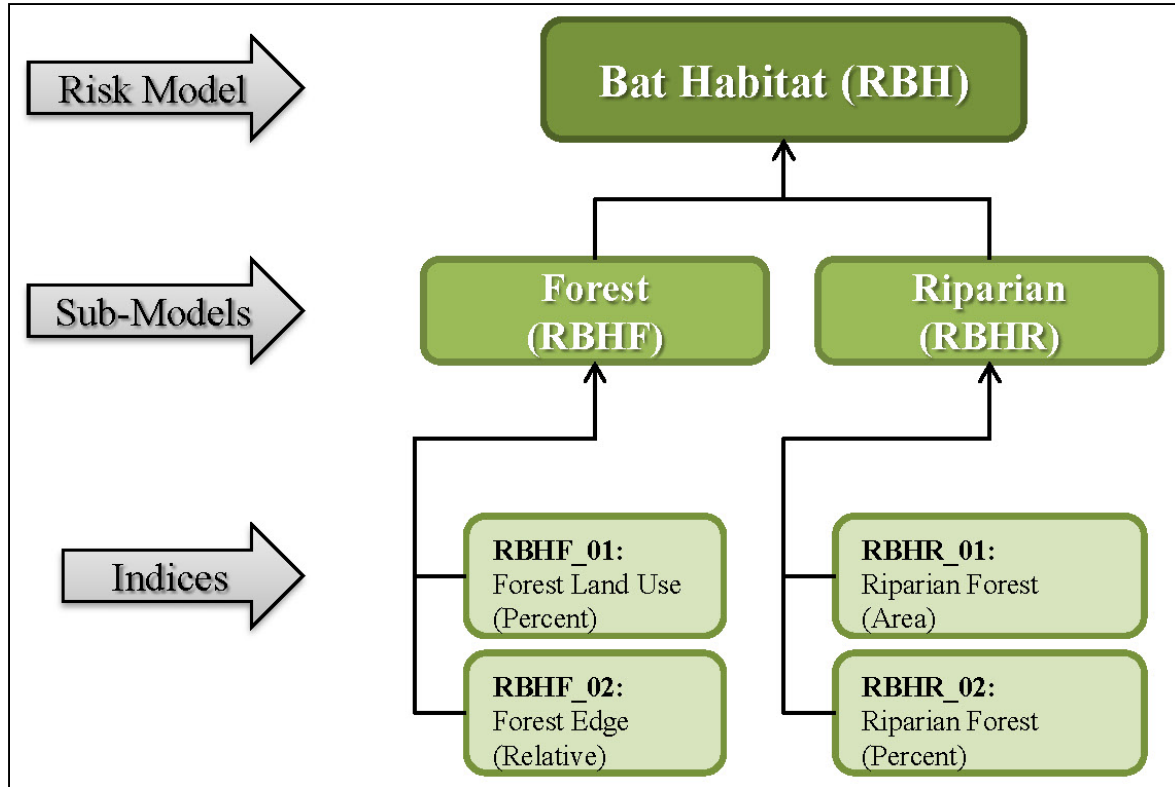


Figure 4. Bat habitat risk model schematic.

### Bat Habitat Sub-Model: Forest (RBHF)

RBHF consisted of two indices. RBHF\_01 described the percent of the BAA that was in forested land use. In the model, it is assumed that a greater amount of forest is preferable for bats. RBHF\_02 described the relative amount of forest edge in the BAA. In the model, it is assumed that a greater amount of forest edge is preferable for bats. See Appendix A for more information about these indices.

After RBHF\_01 and RBHF\_02 were initially calculated, their raw scores were scaled from a value of 0 to 1. These two scaled indices were summed to generate the raw RBHF score (RBHF\_R), which was then also rescaled from 0 to 1 in the sub-model score RBHF\_S.

### Bat Habitat Sub-Model: Riparian (RBHR)

Riparian forest is an important habitat for some bat species. RBHR accounted for the amount and condition of the riparian area within the BAA. The riparian area was defined as areas adjacent to water bodies, and was mapped in a raster GIS environment. Cells mapped as water in the CAST summer 2006 land use / land cover layer were first selected. This captured

water features including lakes, ponds, and larger streams and rivers. Streams mapped in the USGS high resolution National Hydrologic Dataset (NHD) were also rasterized. All analysis was run with a 30m raster cell size. The water cells from the LULC and NHD datasets were then buffered by an additional 30m cell. The results of this analysis yielded the riparian area for this project. The stream riparian area was as wide as three 30m cells because the stream was represented with one cell, and had another cell on each side. Lake and pond shorelines were once cell.

The indices for RBHR were calculated solely based on data falling within the riparian area described above. RBHR\_01 described the total area of forested land use within the riparian area. RBHR\_02 described the percent of the riparian area that was forested as opposed to other land use classes. See Appendix A for more information about these indices.

After RBHR\_01 and RBHR\_02 were initially calculated, their raw scores were scaled from a value of 0 to 1. These two scaled indices were summed to generate the raw RBHR score (RBHR\_R), which was then also rescaled from 0 to 1 in the sub-model score RBHR\_S.

#### Calculation of the Bat Habitat Risk Model

The raw RHB score was simply the summation of the scaled RBHF and RBHR sub-model scores. The raw sum RBH\_R was then rescaled from 0 to 1 to determine the final RBH\_S score.

#### Calculation of the Bat Community Threat Model

The bat community threat model score was a summation of the RBH risk model and the RVI risk model, as shown in Figure 2. Again, the two scaled values for RHB and RVI were summed, then rescaled from 0 to 1 to form the bat community threat model.

#### Aquatic Community Group

The threat assessment for the aquatic community group was the most complex of all three taxa groups. Similar to terrestrial and bat species, visitation to aquatic sites by humans was assumed to be a significant risk component of threat to aquatic species. However, because aquatic species are immersed in aquatic habitats for a portion or all of their life cycle, the water quality and quantity in these habitats is also a significant risk component. A water quality and quantity risk model (RWQ) was developed to characterize potential impacts from sediment, nutrients, pollutants, and hydrologic alteration, each of which was described with separate sub-models. Each of the sub-models was comprised of a variety of unique indices (Figure 5), which address different measures of risk.

Risks to water quality and quantity are generated at the surface, but karst aquatic species primarily occur in subsurface habitats or spring runs that emerge from subsurface aquifers. Pollutants that enter surface waters are not delivered to subsurface aquifers uniformly.

Groundwater *vulnerability* describes the relative attenuation capacity of geologic materials between the land surface and saturated zone. Groundwater vulnerability mapping can

be used as a guide in assessing which areas are more susceptible to groundwater contamination within a broader mapped area. Groundwater vulnerability mapping involves the simplification of complex geologic and hydrogeologic situations. For this effort, a groundwater vulnerability model was developed to characterize the attenuation of risks.

Groundwater *sensitivity* combines both the relative risk from surface human impact characteristics and the vulnerability that can attenuate the movement of risk factors through the subsurface to groundwater and subsurface habitats. For this effort, a groundwater sensitivity model was developed to determine how the risks are offset or augmented by vulnerability to ultimately impact the karst aquatic community.

Figure 2 shows all factors used to model threats to aquatic sites, including risk of visitation, risk to surface water quality and quantity, groundwater vulnerability, and groundwater sensitivity.

### Sites and Assessment Areas

All site points with known occurrences of aquatic species were selected as a subset from the master occurrences GIS layer and were saved separately as the aquatic site layer. A total of 171 sites were included for this analysis. Twenty-one of the 171 sites were represented based on a section centroid, and three were based on a county centroid. Analysis was not completed for centroid based sites. For each site point, a GIS assessment area for calculating RVI indices was defined as a circular area with a 10-mile radius from the site (VAA), as described above for terrestrial sites.

For each site point, a recharge assessment area (RAA) had to be delineated that estimated groundwater recharge for calculating risk, vulnerability, and sensitivity measures. For some sites, especially those harboring federal threatened or endangered species, dye traced recharge areas had already been determined through previous studies. A dye traced recharge area can be thought of as a watershed of a cave or an underground watershed. A dye traced recharge area is the best information that exists to delineate a subsurface drainage area and involves field work performing dye injection tests into sinking streams and identifying where the dye outflow exists from surrounding caves and springs. A total of 10 sites had dye traced recharge areas delineated previously, which were used as RAAs.

For sites without dye traced recharge areas, a topographic estimate of recharge area (TERA) was determined by selecting one or multiple contiguous USGS NHD Plus catchments that were likely to capture surface flow upstream of the site. This was determined by TNC karst and GIS staff. While it is acknowledged that using surface watersheds (NHD Plus catchments) wasn't entirely reflective of the underground hydrological regime, it was determined to be the best available data to define RAAs for non-dye traced sites with aquatic species for this project.

### Risk Model: Visitation

The visitation risk model for the aquatic community group was calculated using the same methodology as was used for terrestrial sites, described above. It was applied to the aquatic site layer.

Risk Model: Surface Water Quality and Quantity (RWQ)

The surface water quality and quantity risk model (RWQ) is shown in Figure 5, below. It was comprised of four sub-models: Sediment (RWQS), Nutrients (RWQN), Pollutants (RWQP) and Hydrologic Alteration (RWQH). Readily available GIS layers were queried to estimate risks within each RAA. Figure 5 also shows the indices that comprise the RWQ sub-models.

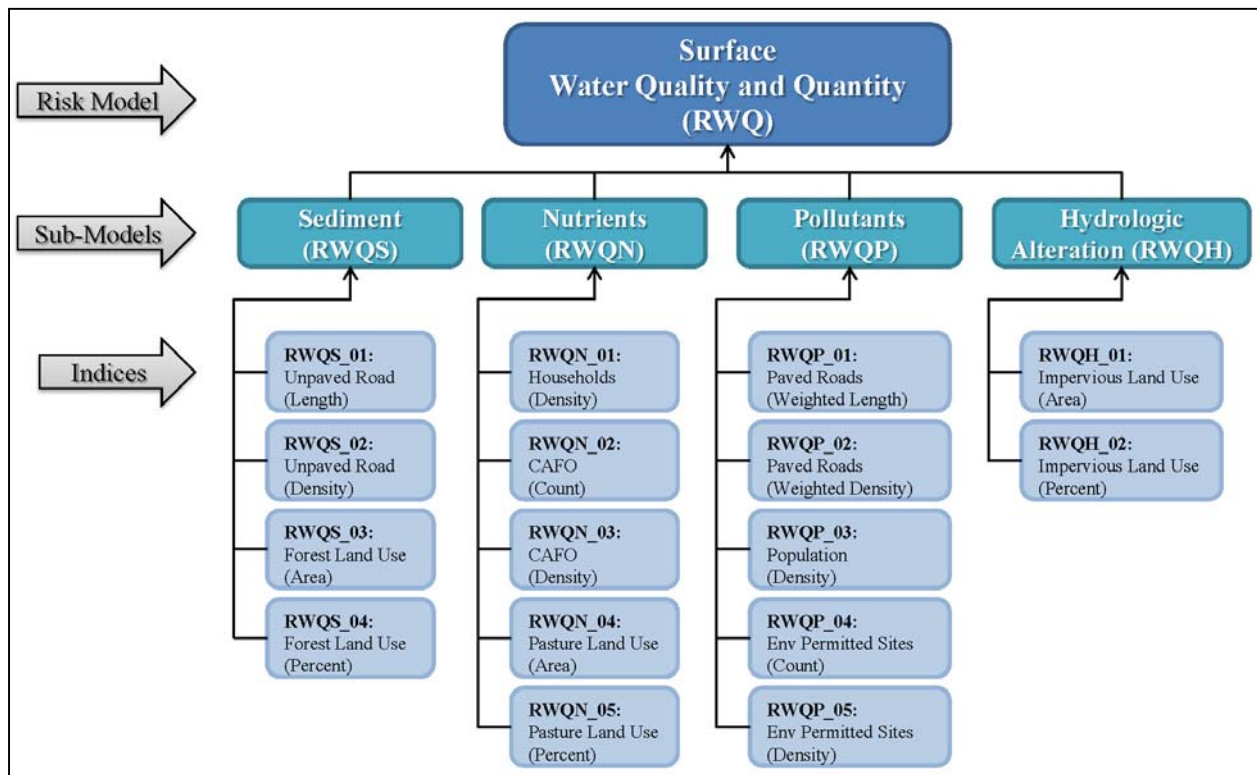


Figure 5. Surface water quality and quantity risk model schematic.

Surface Water Sub-Model: Sediment (RWQS)

Sediment is a primary impairment in Ozark streams. Unpaved roads and non-forest land uses are common sources of sediment. The sediment sub-model accounts for sediment sources from unpaved roads and non-forested land-use types. RWQS\_01 accounts for the total length of unpaved roads within the RAA. RWQS\_02 accounts for the density of roads within the RAA. With the variation in the size of RAAs, it was important to account for both the total length of roads, and road density. RWQS\_03 accounts for the total area of forested land-use (and therefore non-forested land use). See Appendix A for more information about these indices.

After all RWQS indices were initially calculated, their raw scores were scaled from a value of 0 to 1. These scaled indices were summed to generate the raw RWQS score (RWQS\_R), which was then also rescaled from 0 to 1 in the sub-model score RWQS\_S.

#### Surface Water Sub-Model: Nutrients (RWQN)

The Nutrients sub-model accounts for nutrient sources from rural septic systems, confined animal feed operations, and pasture land use. RWQN\_01 counts the density of rural households in the RAA based on US Census data. The index assumes that a household outside of city limits will use a decentralized septic system. RWQN\_02 and RWQN\_03 characterize the count and density of CAFOs in the RAA. Though much nutrient material that is produced at CAFOs is transported and spread elsewhere, the index assumes that some nutrients produced at CAFOs will get into groundwater. RWQN\_04 and RWQN\_05 quantify the total area and percent of the RAA in pasture land use. It is assumed that some pastures will have cattle present, which will be a source of nutrients. It is also assumed that pastures that do not have cattle are likely to be fertilized for grass production, also a nutrient source. See Appendix A for more information about these indices.

After all RWQN indices were initially calculated, their raw scores were scaled from a value of 0 to 1. These scaled indices were summed to generate the raw RWQN score (RWQN\_R), which was then also rescaled from 0 to 1 in the sub-model score RWQN\_S.

#### Surface Water Sub-Model: Pollutants (RWQP)

The Pollutants sub-model accounts for additional pollutant sources associated with paved roads and highways, residential density, and facilities that have permitted discharges. RWQP\_01 and RWQP\_02 measure total paved road length and density, respectively. Paved roads, including highways, are a potential source for pollution for a few reasons. First, the risk of a chemical or fuel tanker spill is higher on these transportation corridors. Second, regular discharge and leaking of fuel and oil from vehicles is expected to be greater on paved roads. Roads and highways were weighted to account for greater surface area and traffic volume on highways. The weighting scheme is shown in Appendix A. RWQP\_03 measures human population density, which is expected to account for some non-point pollution sources. RWQP\_04 and RWQP\_05 count the number and density of pollution point sources permitted by ADEQ. See Appendix A for more information about these indices.

After all RWQP indices were initially calculated, their raw scores were scaled from a value of 0 to 1. These scaled indices were summed to generate the raw RWQP score (RWQP\_R), which was then also rescaled from 0 to 1 in the sub-model score RWQP\_S.

#### Surface Water Sub-Model: Hydrologic Alteration (RWQH)

The Hydrologic Alteration sub-model was intended to account for the impact of impervious surfaces on water quality, groundwater infiltration, and altered storm hydrograph. RWQH\_01 and RWQH\_02 account for total area and percent of the RAA with impervious

surfaces. Impervious surfaces were mapped using urban and bare land uses, and paved roads. See Appendix A for more information about these indices.

After all RWQH indices were initially calculated, their raw scores were scaled from a value of 0 to 1. These scaled indices were summed to generate the raw RWQH score (RWQH\_R), which was then also rescaled from 0 to 1 in the sub-model score RWQH\_S.

#### Calculation of the Water Quality and Quantity (RWQ)

The raw RWQ score was simply the summation of the scaled RWQS, RWQN, RWQP and RWQH sub-model scores. The raw sum RWQ\_R was then rescaled from 0 to 1 to determine the final RWQ\_S score.

#### Groundwater Vulnerability Model: DRASTIK

##### Groundwater Vulnerability Model Selection

Groundwater vulnerability mapping can be used as a guide in assessing which areas are more susceptible to groundwater contamination within a broader mapped area. Groundwater vulnerability mapping involves the simplification of complex geologic and hydrogeologic situations and the attenuation capacity of the geologic materials between the land surface and saturated zone. Vulnerability maps are designed only as a guide and for relative comparisons and are not intended to replace specific site evaluations.

Several models exist for evaluating the vulnerability of groundwater, the models fall into one of two categories, “any aquifer” or “karst specific” models. The “any aquifer” models include DRASTIC, GOD, AVI, and SINTACS and have been mainly applied in porous aquifers. The “karst specific” models include EPIK, PI, and COP and were developed for the assessment of vulnerability in karst areas. Deciding which model to use depends on factors such as the type of aquifer, data availability, cost, and time. While EPIK, PI, and COP will all do a better job at mapping karst aquifers, the data needed to run these models includes spatial data on sinkholes, sinking streams, and other karst features.

In areas with low data availability, the DRASTIC method is a suitable model and methodology according to Foster and Hirata (1988). This method is relatively inexpensive and straightforward which makes it a popular approach in groundwater vulnerability mapping. According to Margane (2003), the model uses data that are commonly available or can be estimated to produce vulnerability maps that can be easily interpreted. A USGS publication also concurs by stating that “the index method is a popular approach to ground-water vulnerability assessments because it is relatively inexpensive, straightforward, and uses data that are commonly available or estimated, and produces an end product that is easily interpreted and incorporated into the decision-making process” (USGS 2002).

For this project, most karst spatial data were unavailable and prevented the utilization of one of these karst specific models. Therefore, DRASTIC was selected to assess groundwater

vulnerability in the Ozarks in Arkansas with slight modifications from its original design to better represent the landscape setting.

### DRASTIC Model Background

The DRASTIC model was developed by the U.S. Environmental Protection Agency (US EPA) and is the most widely used index-based method for mapping groundwater vulnerability in porous aquifers. DRASTIC is a composite mapping technique designed to produce scores for different geographic locations and is an acronym for the seven hydrogeological factors considered in the method:

- D Depth to Water Table
- R (Net) Recharge
- A Aquifer Media
- S Soil Media
- T Topography (Slope)
- I Impact of Vadose Zone Media
- C Conductivity (Hydraulic) of Aquifer

Within each parameter, a rating is given between 1 and 10, with 10 being the highest degree of pollution vulnerability and 1 being the lowest degree of pollution vulnerability. The USGS states “the point rating system for DRASTIC was determined by the best professional judgment of the original method developers.” (USGS 2002)

A weight is also given to each rating relative to each other in order of importance from 1 through 5, the most significant factors have weights of 5; the least significant a weight of 1. These weights are allocated based on a parameter’s contribution to the overall susceptibility of an area. Ratings for individual parameters were proposed in the DRASTIC EPA manual (Aller et al. 1987).

The DRASTIC Index (groundwater vulnerability) at any one location on the map is determined by the equation:

$$\text{Vulnerability} = DrDw + RrRw + ArAw + SrSw + TrTw + IrIw + CrCw$$

where r = rating and w = weight

In order to properly represent and overlay the multiple parameters within the DRASTIC methodology from a spatial context, a Geographic Information System (GIS) is generally used. The computed DRASTIC index identifies areas which are likely to be susceptible to groundwater contamination relative to one another. Similar hydrogeologic parameters produce similar vulnerability indices. The higher the DRASTIC index the greater the vulnerability to groundwater pollution. It must be remembered that the DRASTIC technique provides a relative evaluation tool and is not designed to provide absolute answers.

### DRASTIC Model Modifications

Many modifications of the original DRASTIC model have been proposed by numerous authors in various locales throughout the world according to localized characteristics and data availability. Some of these modifications include adjusting the individual weights to emphasize or de-emphasize certain parameters, adding or removing parameters, or some combination of these procedures.

Piscopo (2001) used DRASTIC and GIS to produce a groundwater vulnerability map for the Castlereagh Catchment in Australia. In this research, the author excluded hydraulic conductivity (C) from the final DRASTIC calculation due to the lack of spatial data. Furthermore, the way the Recharge parameter (R) and Impact of vadose zone media (I) parameters were calculated was modified from how they were calculated by the US EPA. The author determined the recharge (R) parameter was more than simply a measure of rainfall; and additional environmental variables were summed together. The following equation was used to generate (R) taking into account three components:

$$\text{Recharge value} = \text{Slope \%} + \text{Rainfall} + \text{Soil permeability}$$

The Impact on the vadose zone media (I) parameter was also determined by Piscopo (2001) to be more than only the geologic characteristics and was defined by the equation:

$$\text{Impact of the Vadose Zone} = \text{Soil Permeability} + \text{Depth to Water Table}$$

Lee (1996) modified DRASTIC in research in Korea because most of the aquifers there are developed in fractured rock causing groundwater to mainly move through the fault and fracture areas. Higher lineament density values may represent more potential to groundwater contamination. Therefore, by applying analysis of lineament density to the DRASTIC system, groundwater pollution susceptibility was assessed more accurately. Due to the importance of lineament density in this system, lineament density was assigned a weight of 5, the greatest value of DRASTIC system weights. The modified DRASTIC system index was calculated using the equation:

$$\text{Modified DRASTIC index} = \text{DRASTIC index} + (\text{Lineament density rating} \times \text{weight} = 5)$$

Davis et al (2001) proposed the KARSTIC method in research conducted in South Dakota, USA. This was a modification of the DRASTIC method that was designed specifically to apply to hydrogeologic properties in karst landscapes. The KARSTIC method uses nine parameters (summed into seven terms) including information on karst features such as sinkholes with surface recharge. To calculate the (K) parameter in this model, karst surface features were multiplied by fractures and other geologic structure because a greater degree of vulnerability can result from using a product.

### Project Methodology

The DRASTIC model for this project was developed in a raster GIS environment in ArcGIS. The following modifications specific to the original DRASTIC model. Calculations of



the (R) and (I) parameters were based on the methods and techniques described by Piscopo (2001). The Hydraulic Conductivity (C) parameter was excluded from the development of the DRASTIC index because detailed data were not available. A new parameter (K) was added to represent lineaments in the study area. We termed our model *DRASTIK* to keep the model identity similar to the traditional model while also incorporating lineaments and the important role they play with groundwater a karst landscape.

Parameter ranges were based on a combination of sources including Hallman (1997), Klug (2009), Aller et al (1987), as well as by the Jenks classification method in ArcGIS using 10 classes. See Appendix B for specific parameter ranges.

A comprehensive collection of key datasets was compiled including SSURGO soils, USGS bedrock geology, a USGS water well database, Oregon State PRISM average rainfall data, University of Arkansas AWRC Lineaments, and a USGS DEM. To bring consistency to the varying scales of the input datasets, a constant scale was determined by the DEM (30 meters) and each of the layers were converted to raster datasets in ArcGIS 9.3.

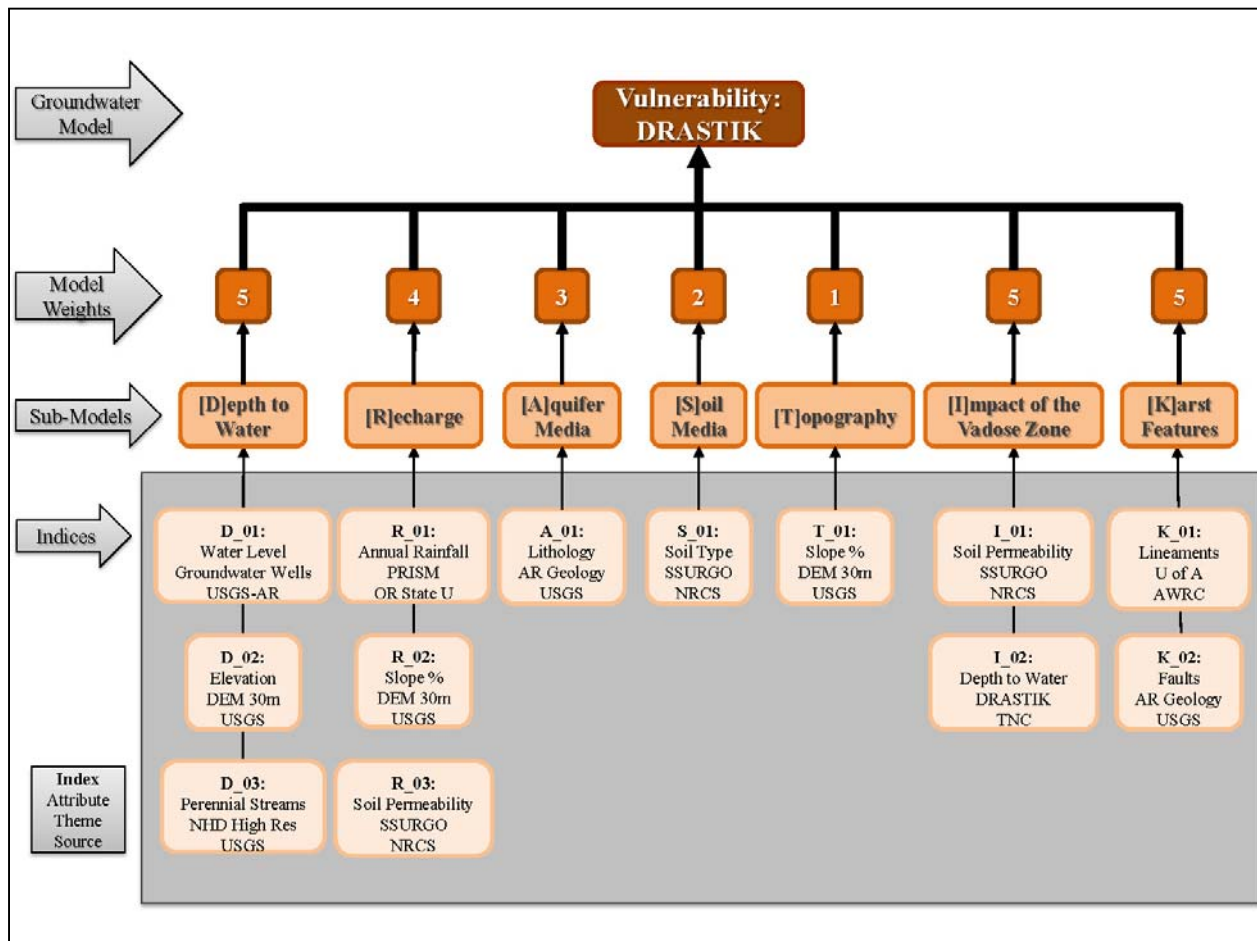


Figure 6. Schematic of DRASTIK groundwater vulnerability model.

Each cell in the model output dataset is represented by a vulnerability value, which corresponds to the cumulative rating of all input parameters and weights. Model outputs were

then classed based on their levels of vulnerability. Below is a description of each model parameter and the applied weights that were used. Figure 6 below shows the indices, data sources, and weights of the DRASTIK model.

#### DRASTIK Sub-Model: Depth to Water (D)

Represents the depth from the ground surface to the water table, deeper water table levels imply lesser chance for contamination to occur. This is an important feature because it determines the depth of material through which a contaminant must travel before reaching the water table. In general, attenuation capacity increases as the depth to water increases. This is because deeper water levels result in a longer travel time of a contaminant. 5

#### DRASTIK Sub-Model: Recharge (R)

Represents the amount of water which penetrates the ground surface and reaches the water table, recharge water represents the vehicle for transporting pollutants. In general, the greater the recharge, the greater the potential for groundwater pollution. The components incorporated in the recharge feature for the Ozarks of Arkansas were slope, rainfall, and soil permeability. 4

#### DRASTIK Sub-Model: Aquifer Media (A)

Refers to the saturated zone material properties, which controls the pollutant attenuation processes. Aquifer medium governs the route and path length within the aquifer. The route which a contaminant will take can be strongly influenced by fracturing, porosity, or by an interconnected series of openings which may provide preferential pathways for groundwater flow. For the Ozarks of Arkansas, the aquifer media was defined by its geology type. 4

#### DRASTIK Sub-Model: Soil Media (S)

Represents the uppermost weathered portion of the unsaturated zone and controls the amount of recharge that can infiltrate downward into the water table. Soil media can be described in terms of its textural classification and ranked in order of pollution potential. For the Ozarks of Arkansas, a soil permeability class “ksat\_r” was used from the SSURGO dataset. This map was suitable to be used for the soil media vulnerability feature map, as well as a component map for the development of the impact of Vadose Zone media map. 2

#### DRASTIK Sub-Model: Topography (T)

Refers to the slope of the land surface, it dictates whether the runoff will remain on the surface to allow contaminant percolation to the saturated zone. Slopes that provide a greater opportunity for contaminants to infiltrate will be associated with higher groundwater pollution potential. Topography influences soil development and therefore has an effect on contaminant attenuation. Slope in percentage was calculated using Digital Elevation Model (DEM) data for the Ozarks of Arkansas. Slope was then classified and ranked for use in the topography component map. 1

### DRASTIK Sub-Model: Impact of the Vedose Zone (I)

Represents the unsaturated zone material above the water table. It controls the passage and attenuation of the contaminant to the saturated zone. The type of Vadose Zone media determines the attenuation characteristics of the material including the typical soil horizon and rock above the water table. The factors considered important in defining the impact of Vadose Zone in the Ozarks of Arkansas include soil permeability, and depth to water table. 5

### DRASTIK Sub-Model: Karst Features (K)

Lineaments are geological structures such as fractures and joints. The lineament is closely related to groundwater flow and contaminants migration. Higher lineament density values may represent more potential to groundwater contamination. (REPLACED “C” PARAMETER)

### Calculation of the Groundwater Vulnerability Model: DRASTIK

The weightings used for parameters (D) (R) (A) (S) (T) and (I) was based on those in the original DRASTIC weighting method proposed by Aller et al (1987). The weighting for the (K) parameter was based on published literature from Mendoza (2006), Lee (1996), and Davis (2001).

The raw DRASTIK scores at each aquatic site was rescaled from 0 to 1 to determine the scaled DRASTIK score for further analysis of threat.

### Calculation of the Groundwater Sensitivity Model: RWQ + DRASTIK

Groundwater sensitivity is a function of both the surface risk factors, and the vulnerability, which characterizes the degree to which a system is susceptible to, or unable to cope with adverse risks. Assessment of groundwater vulnerability led to the creation of the DRASTIK layer. This layer is dependent on the physical hydrogeologic conditions found in a specific environment and is essentially independent of the land use. This data can be used by itself to help identify the potential areas in the Ozarks in Arkansas where groundwater is highly vulnerable to contamination and areas that are susceptible to degradation and need further site specific investigation.

For the purpose of determining groundwater sensitivity at aquatic sites, the scaled score RWQ\_S and the scaled DRASTIK scores were summed. The raw sum for groundwater sensitivity was then rescaled from 0 to 1.

### Calculation of the Aquatic Community Threat Model

The raw aquatic community threat score was simply the summation of the RVI and groundwater sensitivity. The raw sum of these two scores was then rescaled from 0 to 1 to determine the final aquatic community threat score.

## RESULTS

### Biological Information

#### Individual Species

Phylum Platyhelminthes  
Order Tricladida  
Family Dendrocoelidae

*Dendrocoelopsis americana*  
(Hyman 1939) (Figure 7)

Locality information: Logan County (Kenk 1973), Newton County (this study), Polk County (Darlington and Chandler 1979), Washington County (Hyman 1939, Mohr 1950, Dearolf 1953, Kenk 1973, Darlington and Chandler 1979, this study).

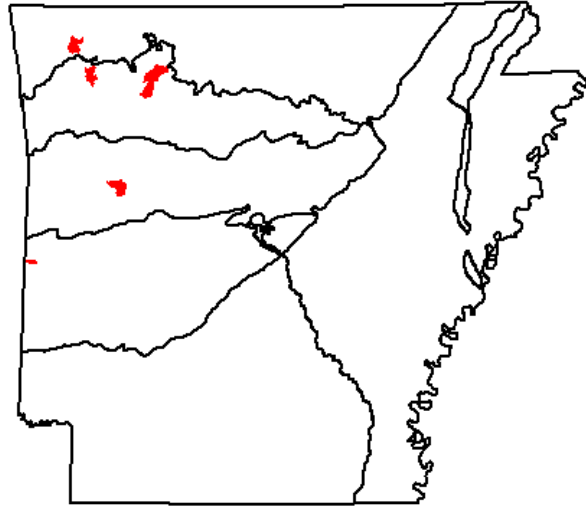


Figure 7. Distribution of *D. americana* in Arkansas. The red polygons are 12 HUCs that contain caves and/or springs where this species was documented.

Phylum Mollusca  
Order Neotaenioglossa  
Family Hydrobiidae

*Amnicola cora*  
Hubricht 1979 (Figure 8)

Locality information: Independence County (Hubricht 1979, Graening 2003).

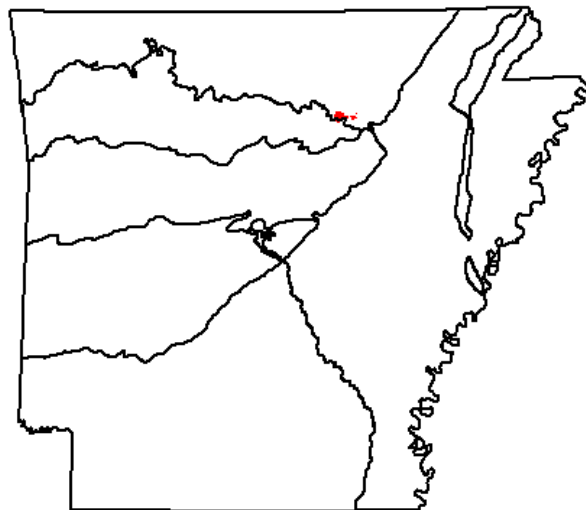


Figure 8. Distribution of *A. cora* in Arkansas. The red polygon is the 12 HUC that contains the cave where this species was documented.

Phylum Arthropoda  
Class Malacostraca  
Order Amphipoda  
Family Allocrangonyctidae

*Allocrangonyx hubrichti*  
Holsinger 1971 (Figure 9)

Locality information: White  
County (Robison and Holsinger 2000).

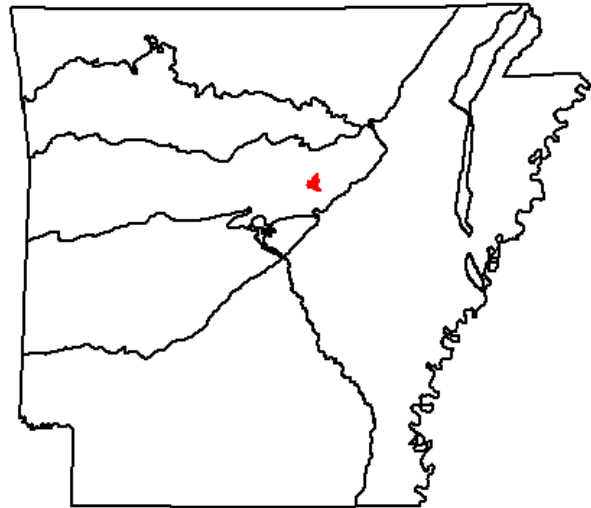


Figure 9. Distribution of *A. hubrichti* in Arkansas. The red polygon is the 12 HUC that contains the well where this species was documented.

Family Crangonyctidae

*Bactrurus pseudomucronatus*  
Koenemann and Holsinger 2001 (Figure 10)

Locality information: Lawrence County  
(Konemann and Holsinger 2001), Randolph  
County (Konemann and Holsinger 2001).

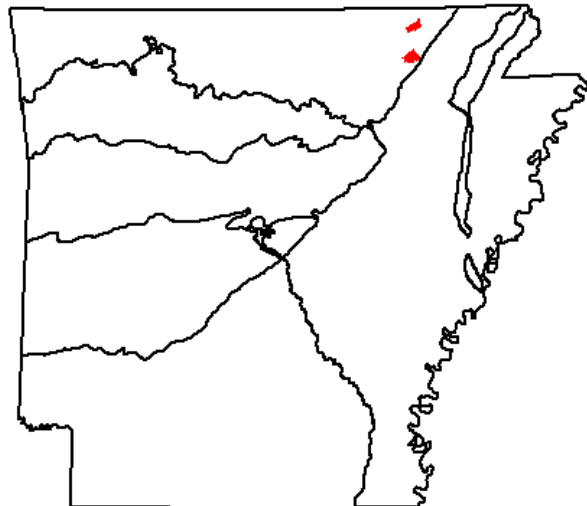


Figure 10. Distribution of *B. pseudomucronatus* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Stygobromus ozarkensis*  
(Holsinger 1967) (Figure 11)

Locality information: Benton County (Holsinger 1967, Holsinger 1972, Brown and Schram 1982, Graening et al. 2005), Carroll County (Schram 1982, Graening et al. 2005), Izard County (McDaniel et al. 1979, Graening et al. 2005), Madison County (Schram 1982, Schram 1983, Graening et al. 2005), Marion County (Graening et al. 2005), Newton County (Graening et al. 2005), Stone County (Graening et al. 2005), Washington County (Graening et al. 2005).

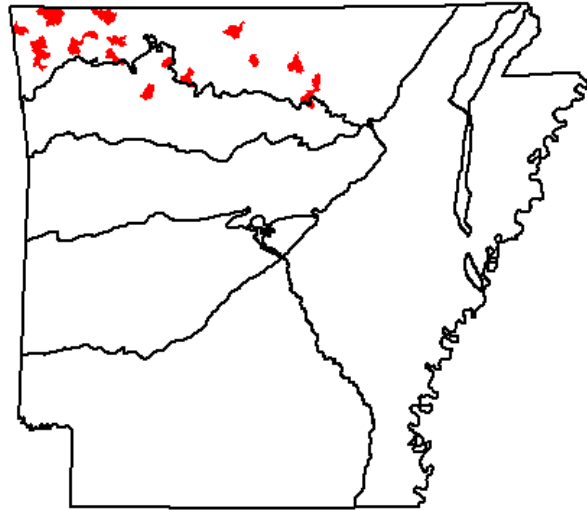


Figure 11. Distribution of *S. ozarkensis* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

Order Isopoda  
Family Asellidae

*Caecidotea ancyla*  
(Fleming 1972b) (Figure 12)

Locality information: Benton County (Graening et al. 2007), Boone County (Fleming 1972b, Lewis et al. 2006), Independence County (Graening et al. 2007), Madison County (Schram 1982, Lewis et al. 2006, Graening et al. 2007), Newton County (Graening et al. 2007), Stone County (Graening et al. 2007), Washington County (Schram 1982).

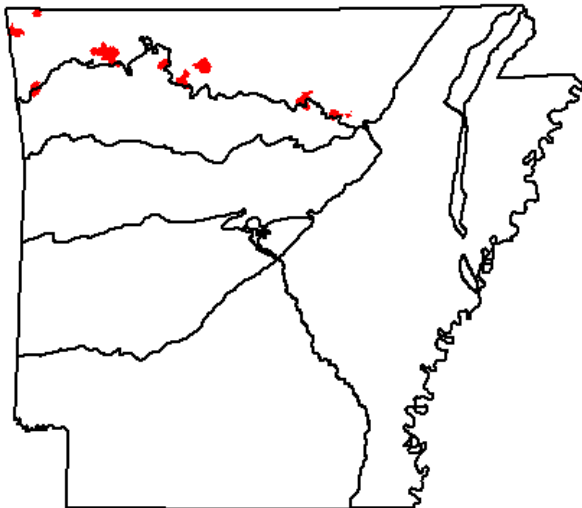


Figure 12. Distribution of *C. ancyla* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Caecidotea dimorpha*

Mackin and Hubricht 1940 (Figure 13)

Locality information: Baxter County (Graening et al. 2007), Jackson County (Mackin and Hubricht 1940), Marion County (Graening et al. 2007), Searcy County (Fleming 1972a, Graening et al. 2007), Stone County (Graening et al. 2007).

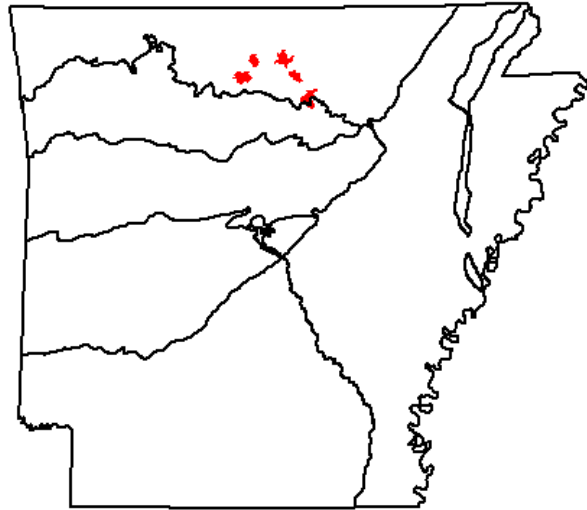


Figure 13. Distribution of *S. ozarkensis* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Caecidotea macropropoda*

Chase and Blair 1937 (Figure 14)

Locality information: Carroll County (Lewis 1999), Crawford County (Graening et al. 2007), Washington County (Dearolf 1953, Lewis 1999, Lewis et al. 2006, Graening et al. 2007).

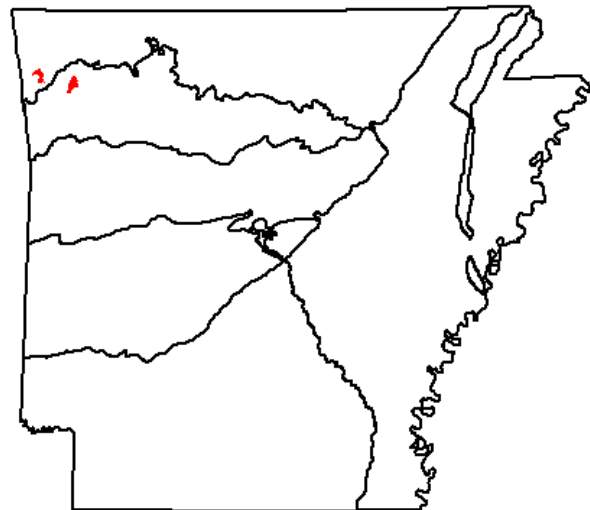


Figure 14. Distribution of *C. macropropoda* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Caecidotea salemensis*  
Lewis 1981 (Figure 15)

Locality information: Lawrence  
County (Lewis 1981).

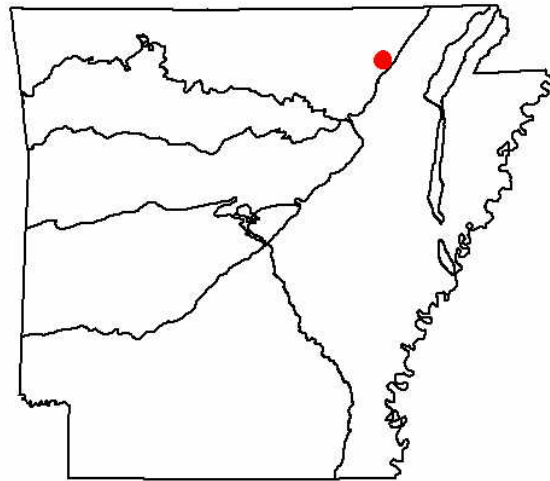


Figure 15. Distribution of *C. salemensis* in Arkansas. The red circle is a geographic estimate of the literature based record where this species was documented.

*Caecidotea simulator*  
Lewis 1999 (Figure 16)

Locality information: Washington  
County (Lewis 1999).

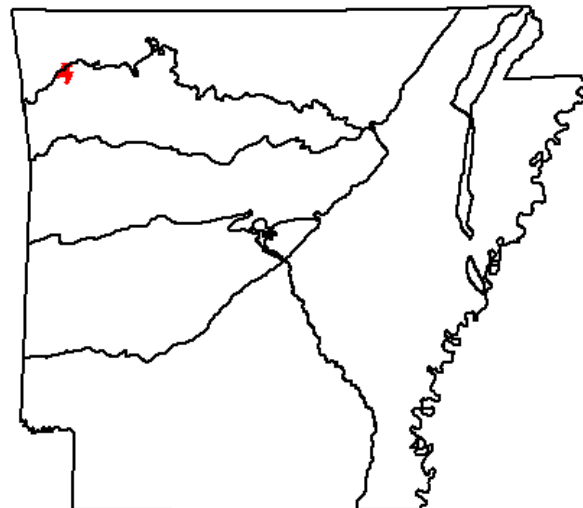


Figure 16. Distribution of *C. simulator* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.



*Caecidotea steevesi*  
(Fleming 1972b) (Figure 17)

Locality information: Benton County (Graening et al. 2007), Carroll County (Graening et al. 2007), Madison County (Schram 1982, Schram 1983, Lewis et al. 2006).

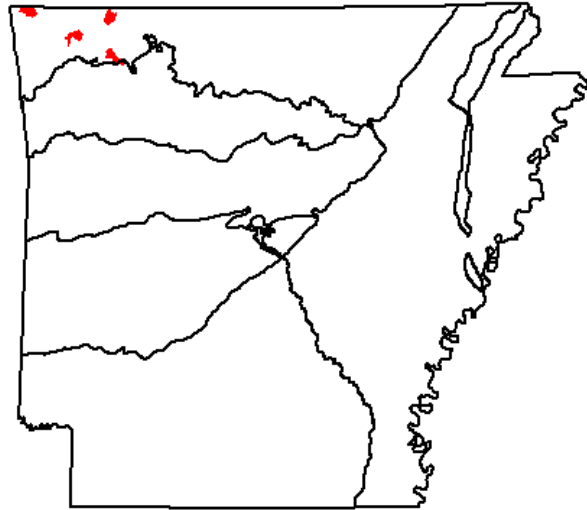


Figure 17. Distribution of *C. steevesi* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Caecidotea stiladactyla*  
Mackin and Hubricht 1940 (Figure 18)

Locality information: Baxter County (Graening et al. 2007), Benton County (Fleming 1972a, Schram 1982, Graening et al. 2007), Boone County (Mackin and Hubricht 1940), Carroll County (Schram 1982, Graening et al. 2007), Madison County (Schram 1982, Graening et al. 2007), Marion County (Graening et al. 2007), Newton County (Mackin and Hubricht 1940, Graening et al. 2007), Washington County (Graening et al. 2007).

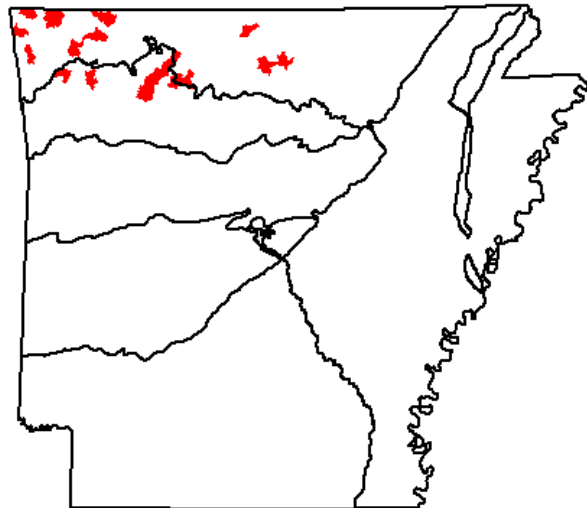


Figure 18. Distribution of *C. stiladactyla* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Lirceus bicuspidatus*

Hubricht and Mackin 1949 (Figure 19)

Locality information: Conway County (Hubricht and Mackin 1949), Independence County (Graening et al. 2007), Jackson County (Hubricht and Mackin 1949), Johnson County (Hubricht and Mackin 1949), Logan County (Hubricht and Mackin 1949), Newton County (Hubricht and Mackin 1949), Pulaski County (Hubricht and Mackin 1949), Saline County (Hubricht and Mackin 1949), Searcy County (Hubricht and Mackin 1949), Yell County (Hubricht and Mackin 1949).

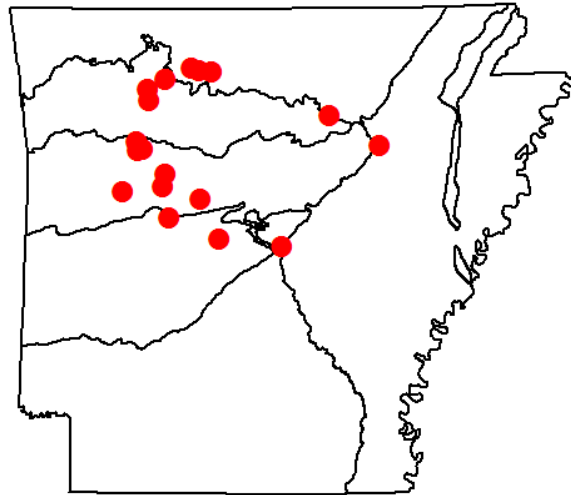


Figure 19. Distribution of *L. bicuspidatus* in Arkansas. The red circles are geographic estimates of literature based records where this species was documented.

*Lirceus bidentatus*

Hubricht and Mackin 1949 (Figure 20)

Locality information: Boone County (Hubricht and Mackin 1949).

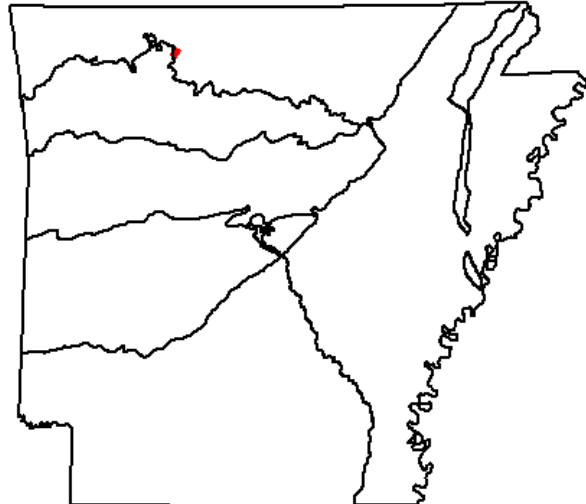


Figure 20. Distribution of *L. bidentatus* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.

Order Decapoda  
Family Cambaridae

*Cambarus aculabrum*

Hobbs Jr and Brown 1987 (Figure 21)

Locality information: Benton County (Hobbs Jr and Brown 1987, Graening et al. 2006d), Washington County (Graening et al. 2006d).

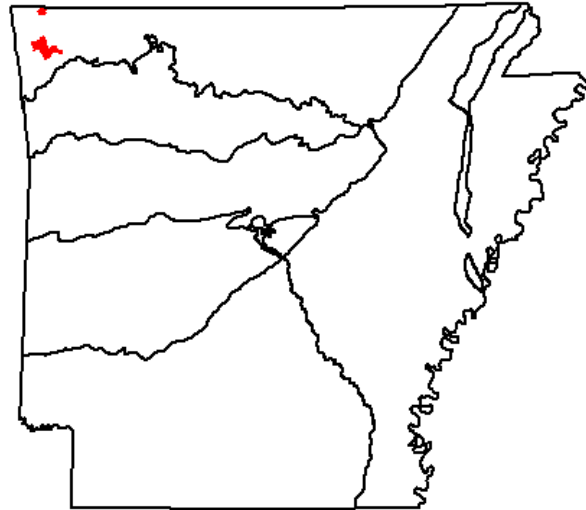


Figure 21. Distribution of *C. aculabrum* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Cambarus setosus*

Faxon 1889 (Figure 22)

Locality information: Benton County (Graening et al. 2006a), Independence County (Graening et al. 2006a).

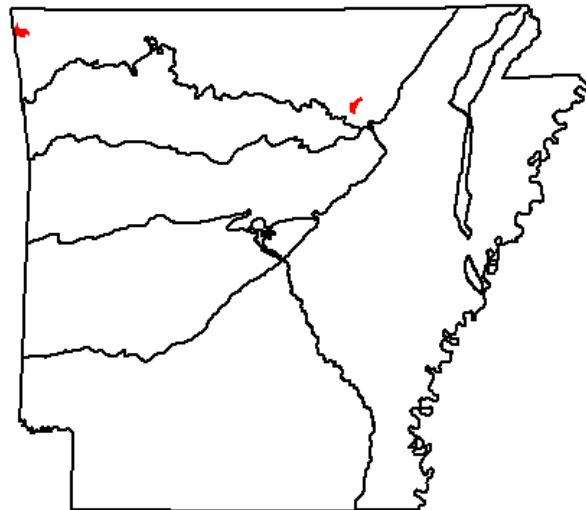


Figure 22. Distribution of *C. setosus* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Cambarus zophonastes*  
Hobbs Jr and Bedinger 1964 (Figure 23)

Locality information: Stone County  
(Hobbs Jr and Bedinger 1964, Graening et al. 2006b).

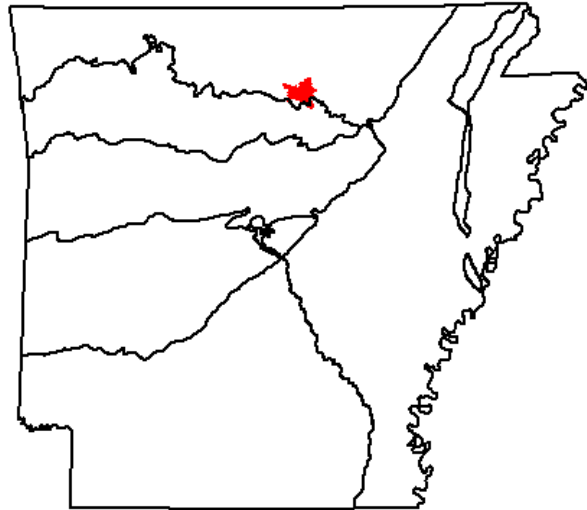


Figure 23. Distribution of *C. zophonastes* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

Class Arachnida  
Order Pseudoscorpionida  
Family Chthoniidae

*Apochthonius diabolus*  
Muchmore 1967 (Figure 24)

Locality information: Washington  
County (Muchmore 1967).

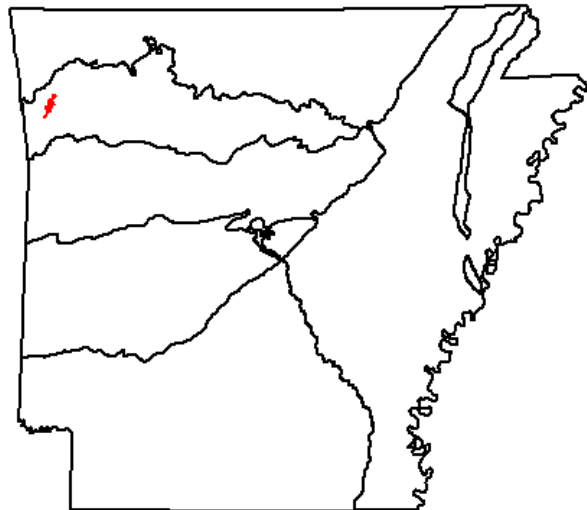


Figure 24. Distribution of *A. diabolus* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.

*Apochthonius titanicus*  
Muchmore 1976 (Figure 25)

Locality information: Stone County  
(Muchmore 1976).

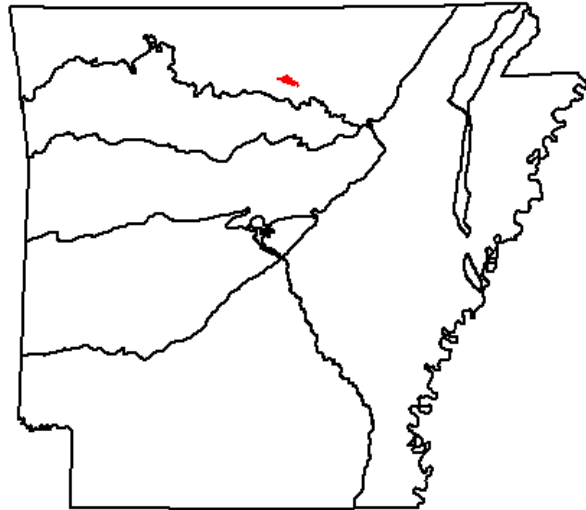


Figure 25. Distribution of *A. titanicus* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.

#### Family Chernitidae

*Hesperochnes occidentalis*  
(Hoff and Bolsterli 1956) (Figure 26)

Locality information: Baxter County (Graening et al. unpublished), Benton County (Graening et al. unpublished), Boone County (Muchmore, pers. comm.), Independence County (Graening et al. unpublished), Lawrence County (Muchmore, pers. comm.), Marion County (Graening et al. 2006c, Muchmore, pers. comm.), Newton County (Graening et al. 2006c, Muchmore, pers. comm.), Randolph County (Muchmore, pers. comm.), Searcy County (Graening et al. 2006c, Muchmore, pers. comm.), and Washington County (Hoff and Bolsterli 1956, Muchmore, pers. comm.).

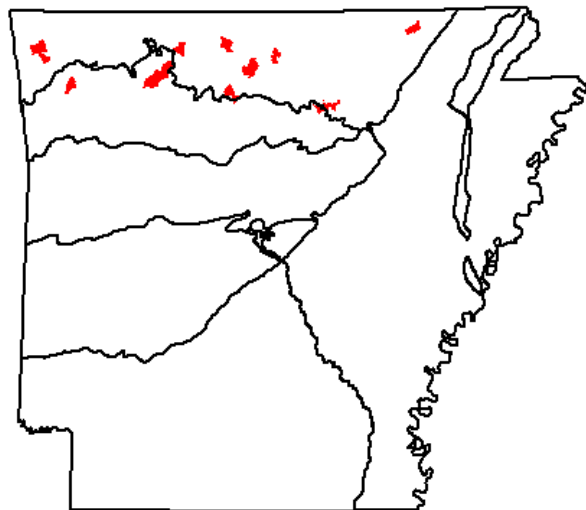


Figure 26. Distribution of *H. occidentalis* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

Order Opiliones  
Family Phalangodidae

*Crosbyella distincta*

Goodnight and Goodnight 1942 (Figure 27)

Locality information: Boone  
County (Goodnight and Goodnight 1942).

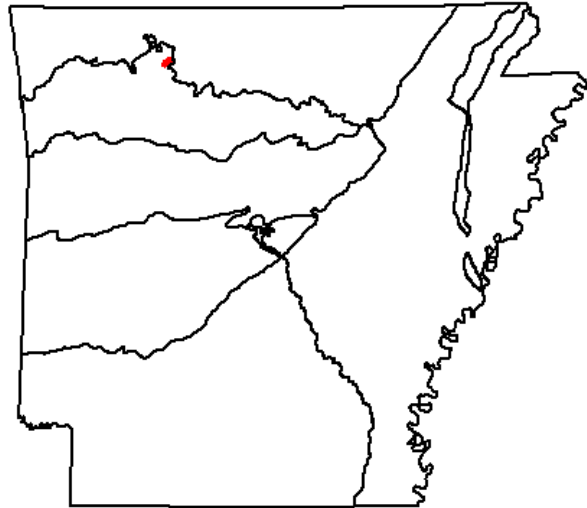


Figure 27. Distribution of *C. distincta* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.

*Crosbyella roeweri*

Goodnight and Goodnight 1942 (Figure 28)

Locality information: Benton  
County (Goodnight and Goodnight 1942).

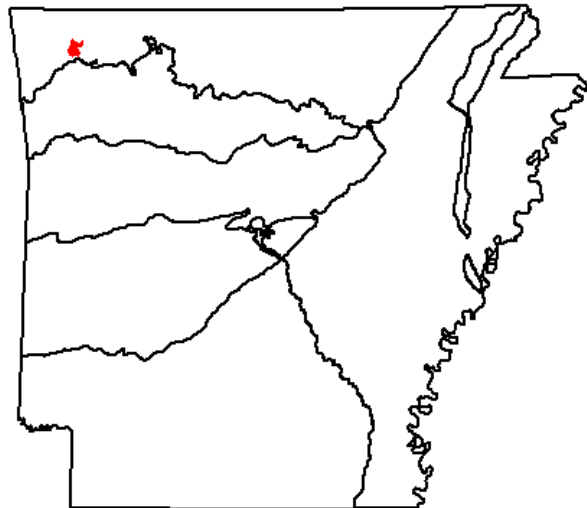


Figure 28. Distribution of *C. roeweri* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.

Class Diplopoda  
Family Trichopetalidae

*Trigenotyla parca*  
Causey 1951 (Figure 29)

Locality information: Benton County (Graening et al. unpublished), Newton County (Shear 2003, Graening et al. 2006c), Washington County (Shear 1972, Peck and Peck 1982, Shear 2003).

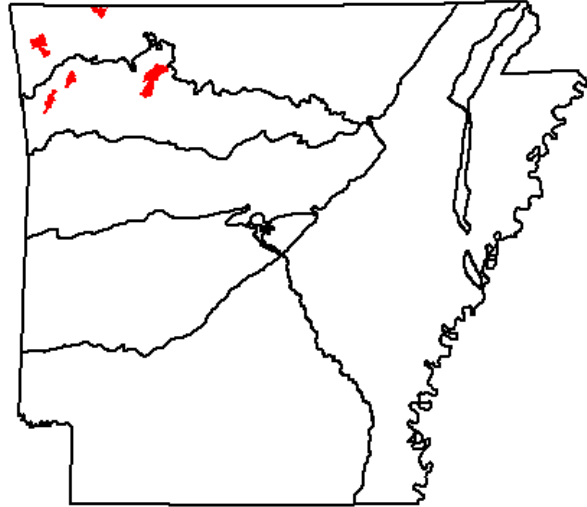


Figure 29. Distribution of *T. parca* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

Class Hexapoda  
Order Collembola  
Family Arrhopalitidae

*Pygmarrhopalites clarus*  
(Christiansen 1966) (Figure 30)

Locality information: Baxter County (Slay and Graening 2009), Benton County (Slay and Graening 2009), Carroll County (Slay and Graening 2009), Independence County (Slay and Graening 2009), Madison County (Slay and Graening 2009), Marion County (Slay and Graening 2009), Newton County (McDaniel and Smith 1976, Graening et al. 2006c), Pope County (Slay and Graening 2009), Searcy County (Slay and Graening 2009), Sharp County (Slay and Graening 2009), Stone County (Slay and Graening 2009), Washington County (Christiansen 1966, Slay and Graening 2009).

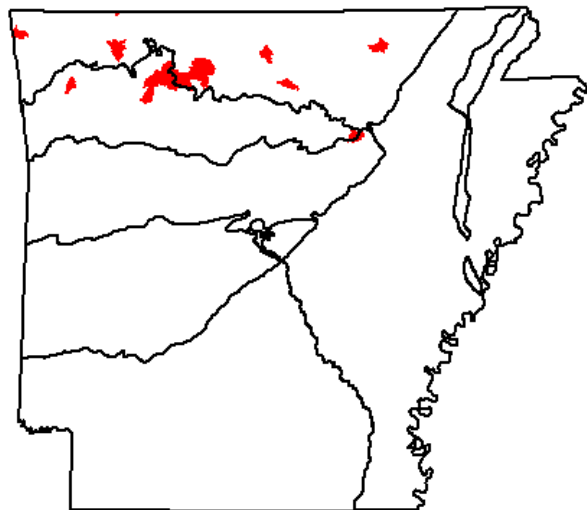


Figure 30. Distribution of *P. clarus* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

Family Entomobryiidae

*Pseudosinella dubia*

Christiansen 1960 (Figure 31)

Locality information: Washington  
County (Christiansen 1960).

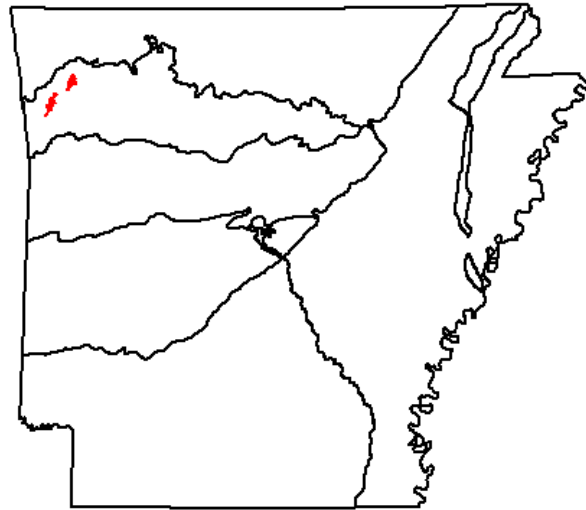


Figure 31. Distribution of *P. dubia* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Pseudosinella testa*

Christiansen and Bellinger 1980 (Figure 32)

Locality information: Washington  
County (Slay and Graening 2009).

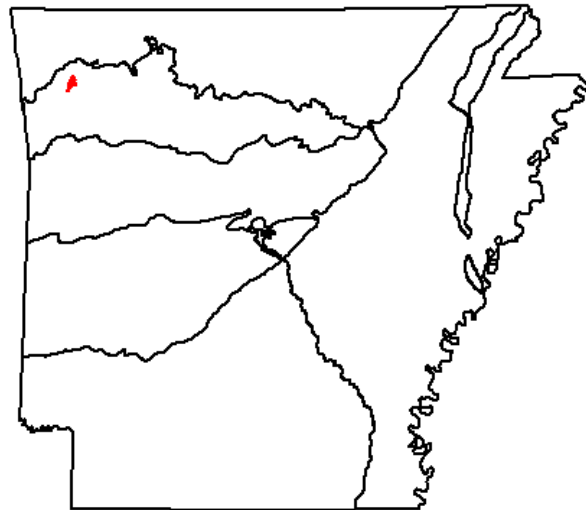


Figure 32. Distribution of *P. testa* in Arkansas. The red polygon is the 12 HUC that contains the sites where this species was documented.



Family Hypogastruridae

*Typhlogastrura fousheensis*  
Christiansen and Wang 2006 (Figure 33)

Locality information: Independence  
County (Christiansen and Wang 2006).

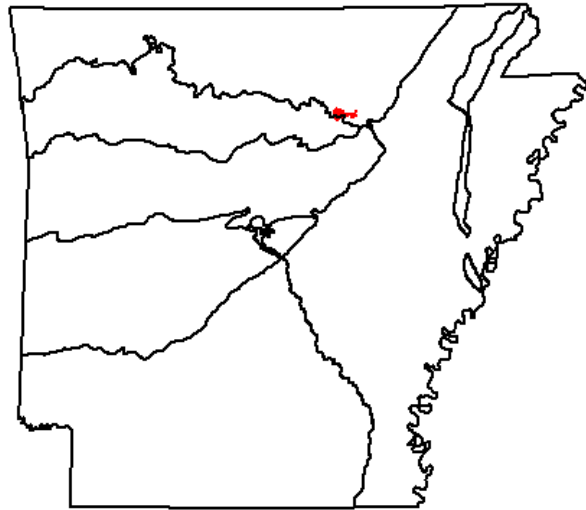


Figure 33. Distribution of *T. fousheensis* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.

Class Insecta  
Order Coleoptera  
Family Carabidae

*Rhadine ozarkensis*  
Sanderson and Miller 1941 (Figure 34)

Locality information: Washington  
County (Sanderson and Miller 1941).

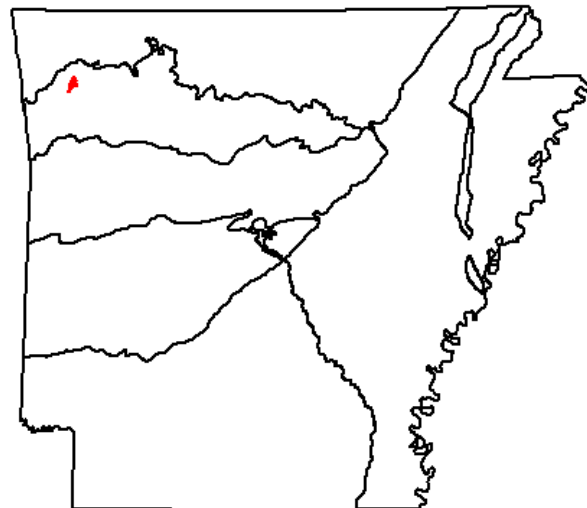


Figure 34. Distribution of *R. ozarkensis* in Arkansas. The red polygon is the 12 HUC that contain the site where this species was documented.

Phylum Chordata  
Class Actinopterygii  
Order Perciformes  
Family Amblyopsidae

*Amblyopsis rosae*  
(Eigenmann 1898) (Figure 35)

Locality information: Benton  
County (Poulson 1963, Willis and Brown  
1985, Brown and Todd 1987, Graening et  
al. 2010).

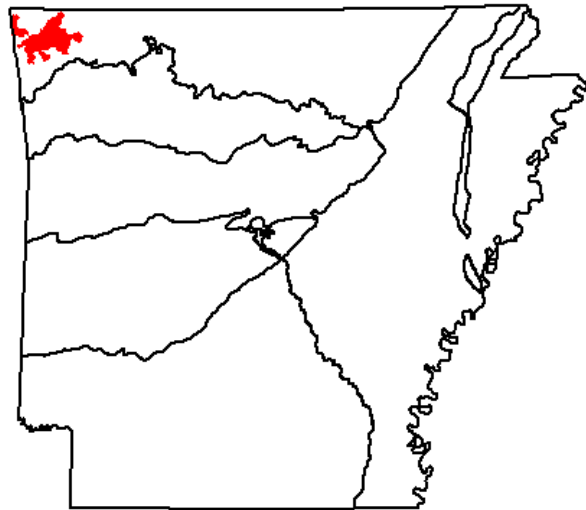


Figure 35. Distribution of *A. rosae* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

*Typhlichthys subterraneus*  
Girard 1859 (Figure 36)

Locality information: Fulton  
County (Paige et al. 1981), Randolph  
County (Woods and Inger 1957), Stone  
County (Graening et al. 2010, Dillman et  
al. 2011).

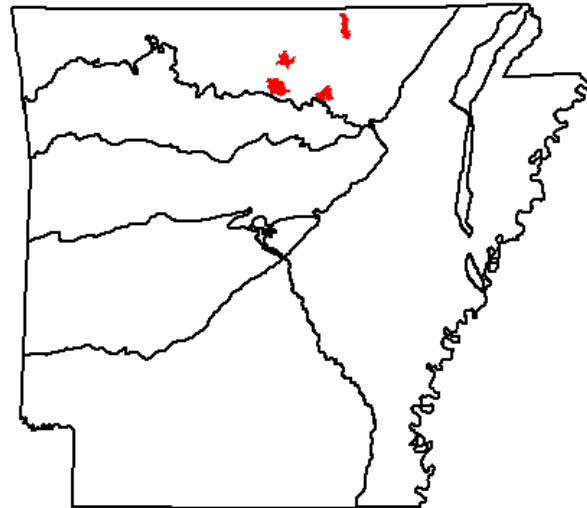


Figure 36. Distribution of *T. subterraneus* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented

Class Amphibia  
Order Urodela  
Family Plethodontidae

*Eurycea spelaea*  
(Stejneger 1892) (Figure 37)

Locality information: Baxter County (Graening et al. unpublished), Benton County (Noble and Marshall 1929, Graening et al. unpublished), Boone County (Graening et al. unpublished), Carroll County (Brandon 1966, Graening et al. unpublished), Fulton County (Brandon 1966, Dunivan et al. 1982), Independence County (Brandon and Black 1970, Graening et al. unpublished), IZard County (Graening et al. unpublished), Johnson County (Graening et al. unpublished), Madison County (Schram 1983, Graening et al. unpublished), Marion County (Graening et al. 2006c, Graening et al. unpublished), Newton (Brandon and Black 1970, Graening et al. 2006c, Graening et al. unpublished), Searcy County (Graening et al. unpublished), Sharp County (Brandon 1966, Graening et al. unpublished), Stone County (Schuier et al. 1972, Dunivan et al. 1982, Graening et al. 2006b, Graening et al. unpublished), Washington County (Trauth et al. 2004).

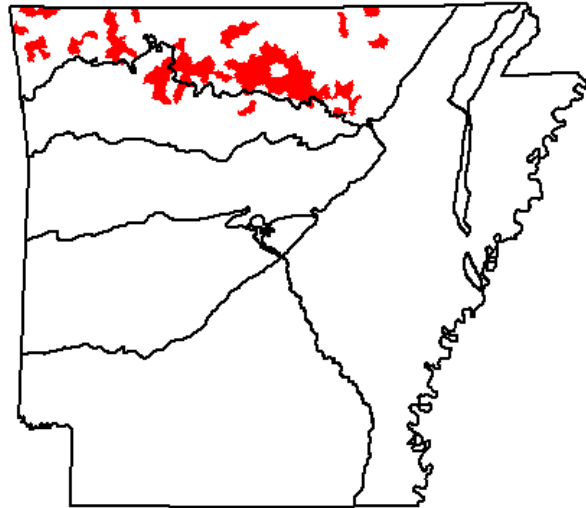


Figure 37. Distribution of *E. spelaea* in Arkansas. The red polygons are the 12 HUCs that contain the sites where this species was documented.

## Summary Maps

Currently, in Arkansas, 93 sub-watersheds (categorized as HUC 12s) contain subterranean habitats with populations of the karst species listed in AWAP (Table 2). Of these sub-watersheds, 32 (34%) had at least one population of terrestrial karst species (**Error! Reference source not found.**) and while 87 (94%) had at least one population of aquatic karst species (Figure 39). For the 38 sub-watersheds with a single record of a karst species, 16 of these records were for the grotto salamander (*E. spelaea*). Sub-watersheds containing the most terrestrial karst species occurred mainly in the western part of the state. The sub-watershed with the highest number of terrestrial karst species was Koger Branch-Middle Fork White River located in Washington County. This watershed contained the only known population of the cave beetle, *Rhadine ozarkensis*, and the only Arkansas population of the cave springtail, *Pseudosinella testa*.

Sub-watersheds containing the most aquatic karst species were more evenly distributed across the state. The sub-watershed with the highest number of aquatic karst species (6) was Spavinaw-Eucha Lakes located in Benton County. Although the sub-watershed does not include any species that are single site endemics, it does include a population of Ozark cavefish (*A. rosae*), a species listed as threatened by the Endangered Species Act. The other aquatic species found within the sub-watershed include *C. ancyla*, *C. stiladactyla*, *C. setosus*, *E. spelaea*, *Py. clarus*, and *S. ozarkensis*. The next highest ranking sub-watershed for aquatic richness was Prong Cove-Rocky Bayou in Stone County with had 5 aquatic species including the endangered Hell Creek cave crayfish (*C. zophonastes*).

Table 2. The 93 sub-watersheds that contain subterranean habitats for the aquatic and terrestrial karst species (not including bat species) listed in the Arkansas Wildlife Action Plan (AWAP) ranked by total number of species. Total number of species overall (Tt. Sp.), total aquatic species (Aq. Sp.), total terrestrial species (Tr. Sp.), and species names are listed for each HUC 12 sub-watershed.

HUC 10	HUC 12	Tt. Sp.	Aq. Sp.	Tr. Sp.	Species List
Middle Fork White River	Koger Branch-Middle Fork White River	7	1	6	<i>C. macropododa</i> , <i>Ps. dubia</i> , <i>Ps. testa</i> , <i>H. occidentalis</i> , <i>Py. clarus</i> , <i>R. ozarkensis</i> , <i>T. parca</i>
Headwaters Buffalo River	Cove Creek-Buffalo River	7	4	3	<i>C. ancyla</i> , <i>C. stiladactyla</i> , <i>C. distincta</i> , <i>E. spelaea</i> , <i>H. occidentalis</i> , <i>Py. clarus</i> , <i>S. ozarkensis</i>
Spavinaw-Eucha Lakes	Upper Spavinaw Creek	7	6	1	<i>A. rosae</i> , <i>C. ancyla</i> , <i>C. stiladactyla</i> , <i>C. setosus</i> , <i>E. spelaea</i> , <i>Py. clarus</i> , <i>S. ozarkensis</i>
Headwaters Buffalo River	Whiteley Creek-Buffalo River	6	3	3	<i>C. stiladactyla</i> , <i>D. americana</i> , <i>E. spelaea</i> , <i>H. occidentalis</i> , <i>Py. clarus</i> , <i>T. parca</i>
Osage Creek-Illinois River	Osage Creek-Illinois River	6	4	2	<i>A. rosae</i> , <i>C. aculabrum</i> , <i>E. spelaea</i> , <i>H. occidentalis</i> , <i>S. ozarkensis</i> , <i>T. parca</i>

Headwaters Buffalo River	Smith Creek-Buffalo River	5	3	2	<i>C. stiladactyla, D. americana, E. spelaea, Py. clarus, T. parca</i>
Richland Creek-Buffalo River	Outlet Big Creek-Buffalo River	5	4	1	<i>C. ancyla, C. stiladactyla, E. spelaea, Py. clarus, S. ozarkensis</i>
Beaver Lake-White River	Beaver Lake	5	4	1	<i>C. stiladactyla, C. roeweri, D. americana, E. spelaea, S. ozarkensis</i>
Lafferty Creek-White River	Prong Cove-Rocky Bayou	5	5	0	<i>C. ancyla, C. dimorpha, C. zophonastes, E. spelaea, S. ozarkensis</i>
Wolf Bayou-White River	Betsey Gill Creek-White River	4	3	1	<i>A. cora, C. ancyla, E. spelaea, T. fousheensis</i>
Outlet Buffalo River	Boat Creek-Buffalo River	4	3	1	<i>C. dimorpha, E. spelaea, H. occidentalis, S. ozarkensis</i>
Hicks Creek-White River	Sneeds Creek-White River	4	4	0	<i>C. dimorpha, C. stiladactyla, E. spelaea, T. subterraneus</i>
War Eagle Creek	Berry Branch-War Eagle Creek	4	4	0	<i>C. ancyla, C. steevesi, E. spelaea, S. ozarkensis</i>
Upper Table Rock Lake-White River	Leatherwood Creek	4	4	0	<i>C. steevesi, C. stiladactyla, E. spelaea, S. ozarkensis</i>
Little Sugar Creek	Browning Creek-Little Sugar Creek	4	4	0	<i>C. ancyla, C. aculabrum, E. spelaea, S. ozarkensis</i>
Robert S. Kerr Reservoir	Headwaters Lee Creek	3	0	3	<i>A. diabolus, Ps. dubia, Ps. testa, T. parca</i>
South Sylamore Creek-North Sylamore Creek	Outlet North Sylamore Creek	3	1	2	<i>A. titanicus, E. spelaea, Py. clarus</i>
Kings River-Table Rock Lake	Rockhouse Creek-Kings River	3	2	1	<i>E. spelaea, Py. clarus, S. ozarkensis</i>
Upper Table Rock Lake-White River	Cedar Creek-Table Rock Lake	3	2	1	<i>C. stiladactyla, S. ozarkensis, T. parca</i>
Upper Kings River	Pine Creek-Upper Kings River	3	2	1	<i>c. ancyla, E. spelaea, Py. clarus</i>
Clear Creek-Crooked Creek	Headwaters Clear Creek	3	2	1	<i>C. ancyla, E. spelaea, Py. clarus</i>
Little Sugar Creek	McKisic Creek-Little Sugar Creek	3	3	0	<i>A. rosae, C. stiladactyla, S. ozarkensis</i>
Lower Elk River-Lake O'	Butler Creek	3	3	0	<i>C. steevesi, C. stiladactyla, E. spelaea</i>

The Cherokees					
Little Sugar Creek	Tanyard Creek-Little Sugar Creek	3	3	0	<i>C. stiladactyla, E. spelaea, S. ozarkensis</i>
Beaver Lake-White River	West Fork Little Clifty Creek-Beaver Lake	3	3	0	<i>C. stiladactyla, E. spelaea, S. ozarkensis</i>
Upper Illinois River	Chambers Hollow-Illinois River	3	3	0	<i>A. rosae, C. stiladactyla, E. spelaea</i>
Headwaters Buffalo River	Hoskin Creek-Buffalo River	2	1	1	<i>E. spelaea, Py. clarus</i>
Little Buffalo River	Henson Creek	2	1	1	<i>E. spelaea, Py. clarus</i>
Lower Eleven Point River	Eassis Creek-Eleven Point River	2	1	1	<i>B. pseudomucronatus, H. occidentalis</i>
Outlet Spring River	Rock Creek-Spring River	2	1	1	<i>E. spelaea, Py. clarus</i>
Hicks Creek-White River	Perry Creek-White River	2	1	1	<i>E. spelaea, Py. clarus</i>
Outlet Buffalo River	Hickory Creek-Buffalo River	2	1	1	<i>E. spelaea, H. occidentalis</i>
Headwaters Crooked Creek	Dry Jordan Creek-Crooked Creek	2	1	1	<i>E. spelaea, H. occidentalis</i>
Little Buffalo River	Outlet Little Buffalo River	2	1	1	<i>C. stiladactyla, Py. clarus</i>
Hicks Creek-White River	Farris Creek-White River	2	1	1	<i>E. spelaea, H. occidentalis</i>
Richland Creek-Buffalo River	Cane Branch-Buffalo River	2	1	1	<i>E. spelaea, Py. clarus</i>
Outlet Crooked Creek	Georges Creek-Crooked Creek	2	1	1	<i>E. spelaea, H. occidentalis</i>
Lafferty Creek-White River	East Twin Creek-White River	2	2	0	<i>C. zophonastes, E. spelaea</i>
South Fork Spring River	Camp Creek-South Fork Spring River	2	2	0	<i>E. spelaea, T. subterraneus</i>
Poke Bayou	Lower Poke Bayou	2	2	0	<i>C. setosus, E. spelaea</i>
Bull Shoals Lake-White River	Outlet Bull Shoals Lake-White River	2	2	0	<i>C. stiladactyla, E. spelaea</i>

South Sylamore Creek-North	Headwaters Roasting Ear Creek	2	2	0	<i>E. spelaea, T. subterraneus</i>
Sylamore Creek	Creek				
Bear Creek- Buffalo River	Spring Creek- Buffalo River	2	2	0	<i>C. dimorpha, E. spelaea</i>
South Sylamore Creek-North	Outlet Roasting Ear Creek	2	2	0	<i>E. spelaea, T. subterraneus</i>
Sylamore Creek					
South Sylamore Creek-North	Outlet South Sylamore Creek	2	2	0	<i>C. zophonastes, E. spelaea</i>
Sylamore Creek					
Lafferty Creek- White River	Livingston Creek	2	2	0	<i>C. dimorpha, E. spelaea</i>
Outlet Buffalo River	Leatherwood Creek- Buffalo River	2	2	0	<i>C. stiladactyla, E. spelaea</i>
Bull Shoals Lake- White River	Jimmie Creek- Bull Shoals Lake	2	2	0	<i>E. spelaea, S. ozarkensis</i>
Black Fork	Big Creek	2	2	0	<i>C. oculata, D. americana</i>
Lafferty Creek- White River	Cagens Creek- White River	2	2	0	<i>E. spelaea, T. subterraneus</i>
Hicks Creek- White River	Sugarloaf Creek- White River	2	2	0	<i>E. spelaea, S. ozarkensis</i>
Headwaters Crooked Creek	West Fork Crooked Creek	2	2	0	<i>C. stiladactyla, L. bidentatus</i>
Beaver Lake- White River	Phillips Creek- Beaver Lake	2	2	0	<i>A. rosae, C. steevesi</i>
Richland Creek	Cherry Creek- Richland Creek	2	2	0	<i>C. stiladactyla, D. americana</i>
West Fork White River	Town Branch- West Fork White River	2	2	0	<i>C. simulator, C. stiladactyla</i>
Bear Creek- Buffalo River	Outlet Bear Creek	1	0	1	<i>H. occidentalis</i>
Wolf Bayou- White River	Mill Creek- White River	1	0	1	<i>H. occidentalis</i>
Upper Table Rock Lake- White River	Owl Creek- Table Rock Lake	1	0	1	<i>Py. clarus</i>
Clear Creek- Crooked Creek	Hog Creek	1	0	1	<i>Py. clarus</i>
Salado Creek- White River	Middle Salado Creek	1	0	1	<i>Py. clarus</i>
Headwaters Spring River	Trace Creek- Spring River	1	1	0	<i>E. spelaea</i>

Osage Creek- Illinois River	Little Osage Creek	1	1	0	<i>A. rosae</i>
Clear Creek- Illinois River	Mud Creek- Clear Creek	1	1	0	<i>C. simulator</i>
Bear Creek- Buffalo River	Dry Creek- Buffalo River	1	1	0	<i>E. spelaea</i>
Flint Creek	Headwaters Flint Creek	1	1	0	<i>A. rosae</i>
Headwaters Middle Fork Little Red River	Peyton Creek- Middle Fork Little Red River	1	1	0	<i>E. spelaea</i>
Osage Creek- Illinois River	Headwaters Osage Creek- Illinois River	1	1	0	<i>A. rosae</i>
Poke Bayou	Middle Poke Bayou	1	1	0	<i>E. spelaea</i>
Outlet Spring River	Brushy Creek- Spring River	1	1	0	<i>B. pseudomucronatus</i>
Lafferty Creek- White River	Lafferty Creek	1	1	0	<i>E. spelaea</i>
Little Buffalo River	Headwaters Little Buffalo River	1	1	0	<i>E. spelaea</i>
Upper Kings River	Lower Dry Fork	1	1	0	<i>E. spelaea</i>
Headwaters Crooked Creek	East Fork Crooked Creek- Crooked Creek	1	1	0	<i>E. spelaea</i>
Lafferty Creek- White River	Wideman Creek- White River	1	1	0	<i>E. spelaea</i>
Headwaters Buffalo River	Flatrock Creek	1	1	0	<i>E. spelaea</i>
Muddy Fork- Illinois River	Lower Muddy Fork-Illinois River	1	1	0	<i>C. macroproda</i>
Headwaters Illinois River	Lake Weddington- Illinois River	1	1	0	<i>S. ozarkensis</i>
Muddy Fork- Illinois River	Upper Muddy Fork-Illinois River	1	1	0	<i>C. ancyla</i>
Bear Creek- Buffalo River	Water Creek	1	1	0	<i>E. spelaea</i>
Osage Creek- Illinois River	Brush Creek- Osage Creek	1	1	0	<i>C. aculabrum</i>
Spavinaw-	Beaty Creek	1	1	0	<i>A. rosae</i>



Eucha Lakes					
Outlet Buffalo River	Bratton Creek-Big River	1	1	0	<i>E. spelaea</i>
Glade Creek-Bayou Des Arc	Lake Barnett	1	1	0	<i>A. hubrichti</i>
Richland Creek-Buffalo River	Left Fork Creek	1	1	0	<i>E. spelaea</i>
Kings River-Table Rock Lake	Keels Creek	1	1	0	<i>E. spelaea</i>
Headwaters Buffalo River	Beech Creek-Headwaters Buffalo River	1	1	0	<i>C. stiladactyla</i>
Beaver Lake-White River	Long Hollow-Beaver Lake	1	1	0	<i>C. stiladactyla</i>
War Eagle Creek	Clear Creek-War Eagle Creek	1	1	0	<i>C. ancyla</i>
Lafferty Creek-White River	Hidden Creek-White River	1	1	0	<i>S. ozarkensis</i>
Middle Table Rock Lake	Headwaters Indian Creek	1	1	0	<i>E. spelaea</i>
Outlet Buffalo River	Davis Creek-Big River	1	1	0	<i>E. spelaea</i>
Sixmile Creek	Upper Short Mountain Creek	1	1	0	<i>D. americana</i>
Osage Creek-Illinois River	Spring Creek-Osage Creek	1	1	0	<i>A. rosae</i>

Overall, three sub-watersheds had the highest richness (7 species) when terrestrial and aquatic species were combined. Two of these sub-watersheds were in northwest Arkansas, while the third was in Newton County (Figure 40). These 3 sub-watersheds collectively include at least one population of 13 of the AWAP karst species: *A. rosae*, *C. ancyla*, *C. macropropoda*, *C. stiladactyla*, *Cambarus setosus*, *Crosbyella distincta*, *E. spelaea*, *H. occidentalis*, *Ps. dubia*, *Ps. testa*, *Py. clarus*, *S. ozarkensis*, and *T. parca*. By adding the next 6 highest ranking sub-watersheds (i.e. the 9 sub-watersheds with total richness  $\geq 5$ ) at least one population of an additional 5 species are included. The additional species are: *C. dimorpha*, *Cambarus aculabrum*, *Cambarus zophonastes*, *Crosbyella roeweri*, and *D. americana*.

Regarding bat sites, only 4 sites had the highest number of bat species (Figure 41). For most sites, only one species of bat was documented. Because these sites are sensitive to disturbance, a list of sites prioritized by bat species richness is not provided here. However, the information is available from Arkansas Natural Heritage Commission or Arkansas Game and Fish Commission for valid research or conservation use. The gray bat was distributed across the state, while the Indiana bat and the Ozark Big-eared bat were clustered in more specific areas.

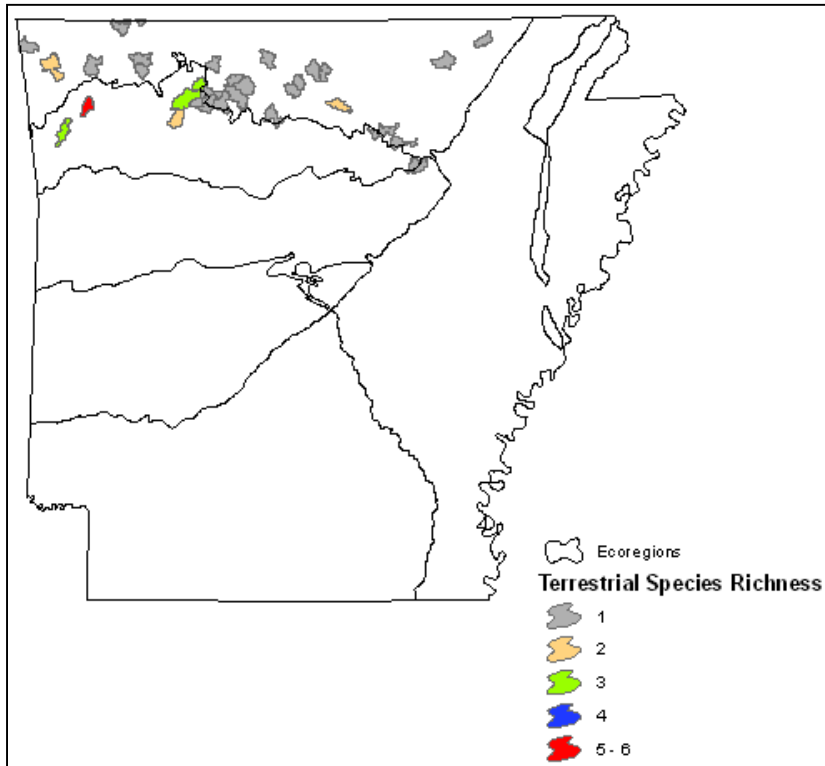


Figure 38. Total number of terrestrial species by HUC-12.

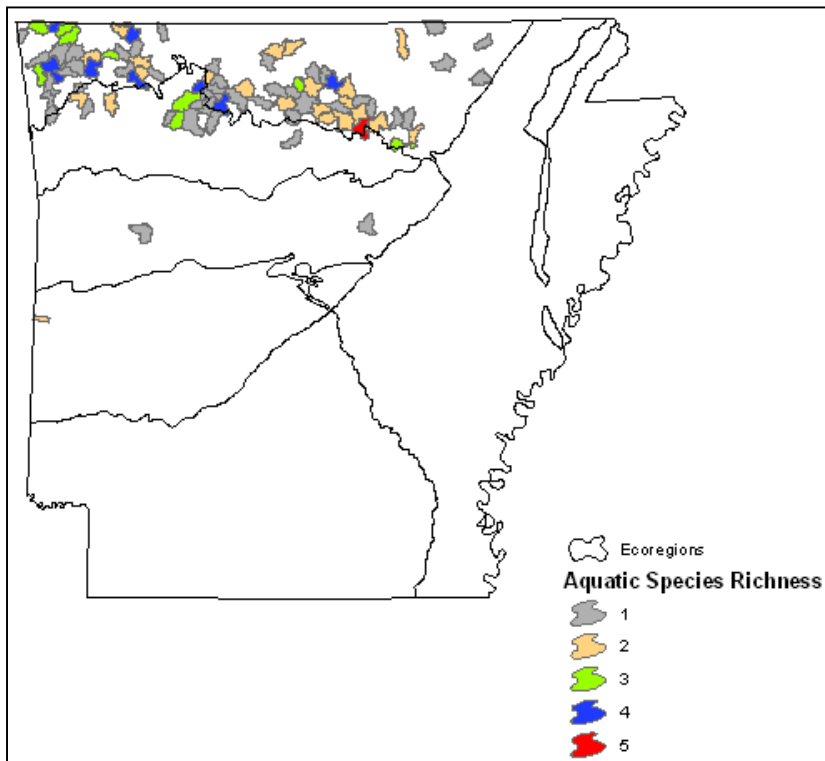


Figure 39. Total number of aquatic species by HUC-12.

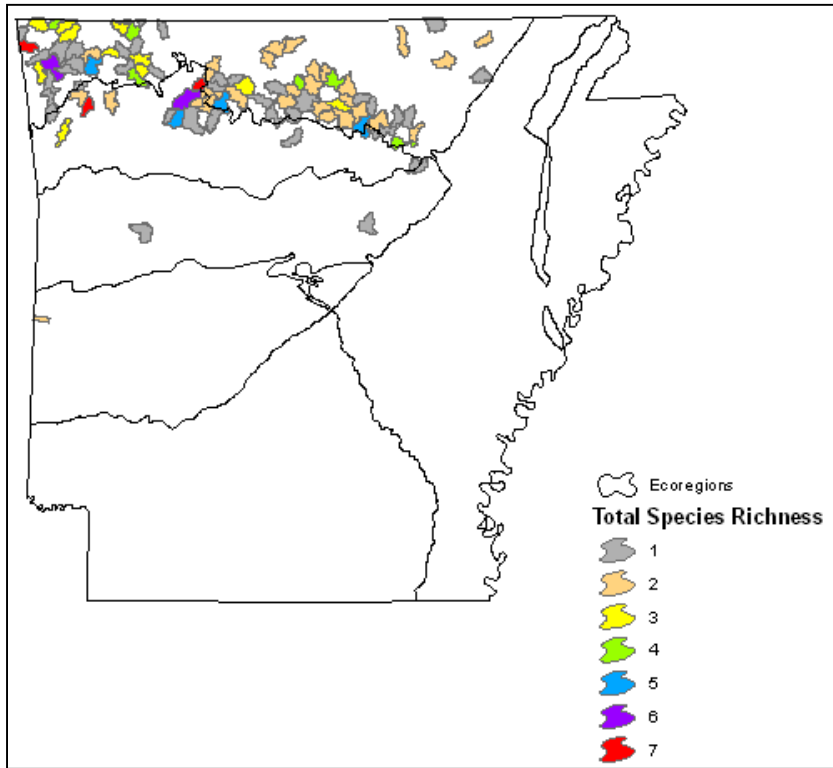


Figure 40. Total number of terrestrial and aquatic species by HUC-12.

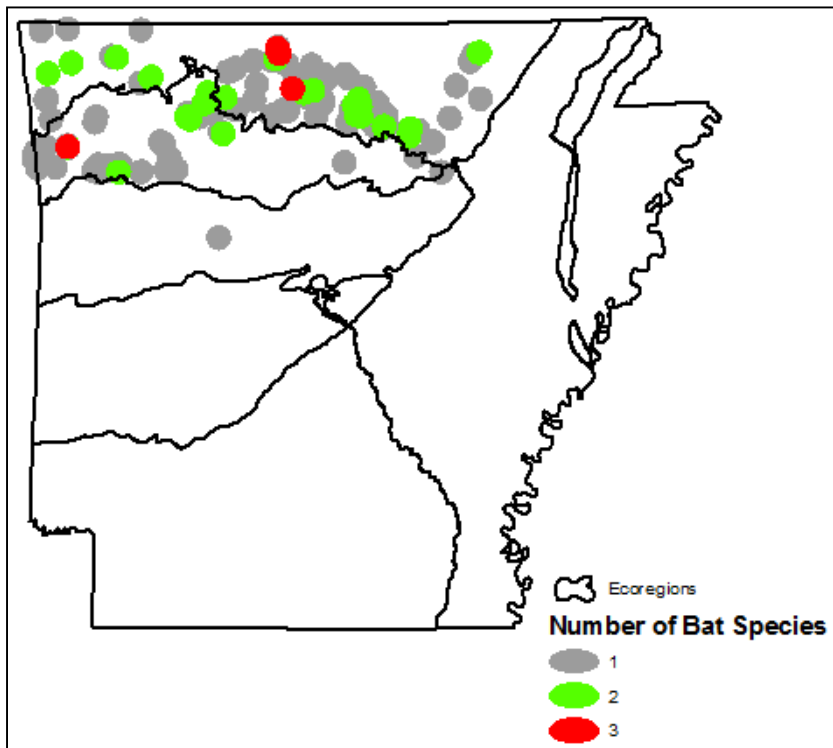


Figure 41. Total number of bat species by 5-mile radius ring from sites.

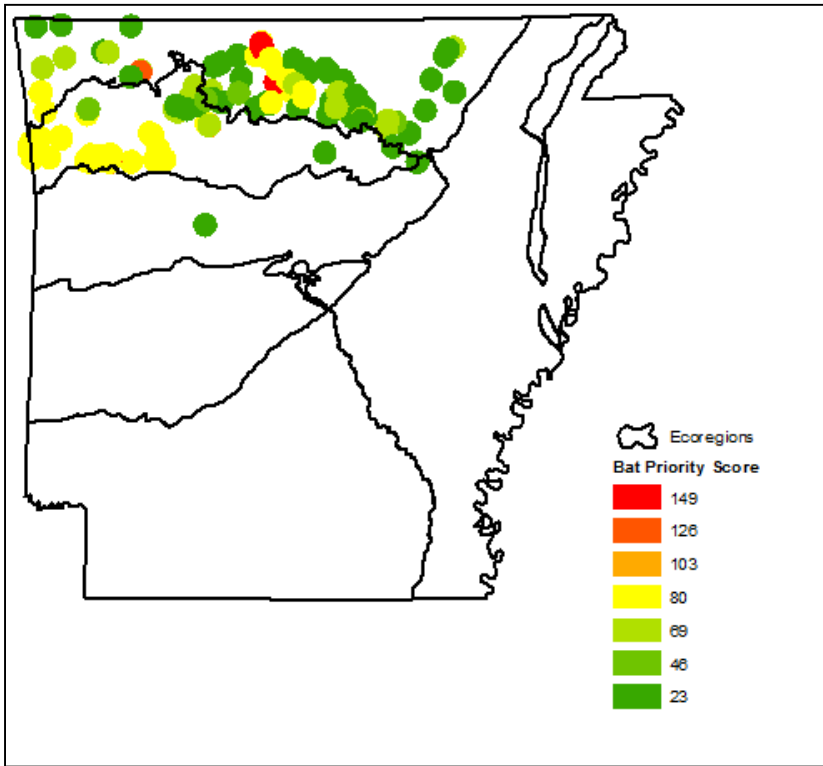


Figure 42. Sum of AWAP priority scores for bat species by 5-mile radius ring from sites.

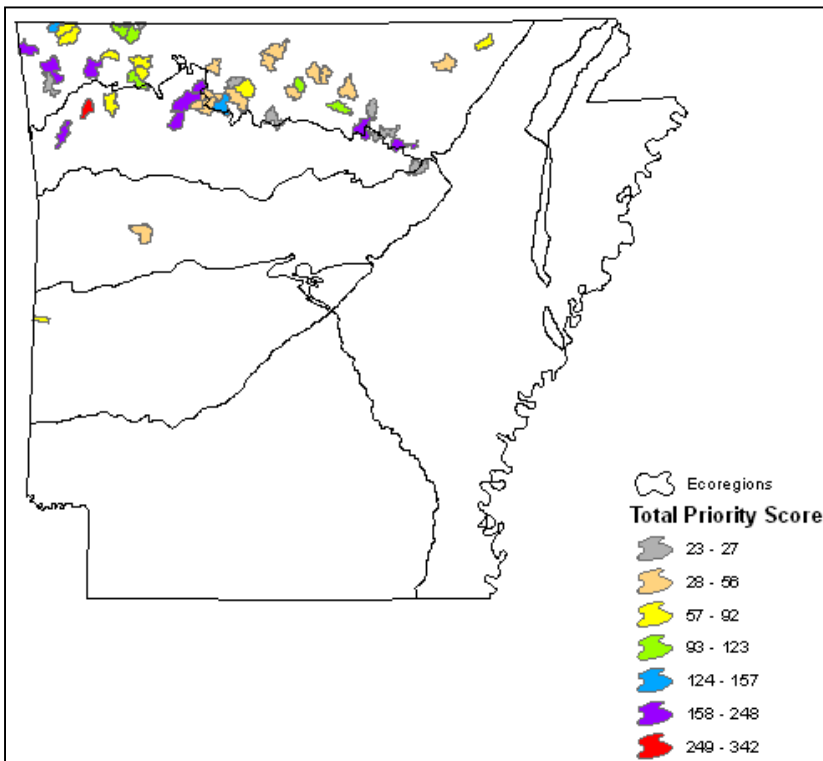


Figure 43. Sum of AWAP priority scores for terrestrial and aquatic species by HUC-12.

An alternative ranking was calculated using AWAP priority scores rather than richness. Using the AWAP priority score for each species, a cumulative score was calculated for each sub-watershed and each bat site based on the AWAP species present (Figure 42 and Figure 43). Generally, there is little difference between the highest ranking sub-watersheds and bats using richness or cumulative AWAP scores.

### Threat Assessment

#### Terrestrial Community Group

Assessing threats associated with the terrestrial cave species was somewhat more complex given that these species could occur at sites that contained bat species, aquatic cave species, or both. For sites containing aquatic species or both aquatic species and bats, the assessment area was determined using the aquatic community method (recharge area or catchment). For sites containing bats (but no aquatic species), the assessment area was determined using the bat community method (5 mi radius). For example, the cave pseudoscorpion, *H. occidentalis*, occurs in Forest Trail Pit (no aquatic cave species or bats), Summit Cave (bats), Van Dyke Spring Cave (aquatic cave species but not bats), and Logan Cave (aquatic species and bats). Many of the terrestrial cave species co-occurred with aquatic cave species or bat species. Of the 297 sites assessed overall, less than 25 sites contained only terrestrial cave species (Figure 44). Additional sites that contained terrestrial cave species were assessed within the aquatic community (28 sites) or bat community framework (6 sites).

Table 3. Mean index values for threats associated with terrestrial cave species, ordered in decreasing values of RVI. RVIP is the derived threat score generated from proximate human population. RVIA is the derived threat score generated from available access to the site. RVIX is the derived threat score generated from the proximity of the site to a road. RVI is the overall threat from visitation generated by combining RVIP, RVIA, and RVIX.

Terrestrial Cave Species	No. sites	RVIP	RVIA	RVIX	RVI
<i>Crosbyella roeweri</i>	1		1.00	0.89	0.96
<i>Rhadine ozarkensis</i>	1	0.55	0.64	0.97	0.69
<i>Pseudosinella testa</i>	1	0.55	0.64	0.97	0.69
<i>Pseudosinella dubia</i>	2	0.33	0.55	0.87	0.54
<i>Trigenotyla parca</i>	6	0.17	0.47	0.84	0.44
<i>Hesperochernes occidentalis</i>	19	0.17	0.46	0.80	0.42
<i>Pygmarrhopalites clarus</i>	25	0.16	0.45	0.79	0.41
<i>Typhlogastrura fousheensis</i>	1	0.13	0.41	0.82	0.39
<i>Apochthonius titanicus</i>	1	0.05	0.38	0.89	0.38
<i>Apochthonius diabolus</i>	1	0.05	0.40	0.88	0.38
<i>Crosbyella distincta</i>	3	0.04	0.35	0.81	0.34

To characterize threats for each terrestrial cave species, Visitation Risk Model values (RVIP, RVIA, RVIX, and RVI) were extracted from each community threat model and averaged (Table 3). All terrestrial cave species experienced some level of threat from visitation. The species with the highest threat score was the cave harvestman, *C. roeweri*. Four species had overall scores greater than 0.5. The most frequently occurring species (*H. occidentalis* and *Py.*

*clarus*) had average threat values of 0.42 and 0.41, respectively. Separate threat values for each terrestrial cave species population at each site are included in Appendix C.

Bat Community Group

The overall threat assessment for bat sites included assessing threats generated by two risk models: visitation (RVI) and available foraging habitat (RBH). Relative to all bat sites, only two caves are highly threatened by visitation (Figure 45). However, numerous sites were scored as having a medium or higher threat associated with visitation. Bat sites with the highest threat scores associated with foraging habitat were not the same sites as those identified by using the visitation indices (Figure 46). In fact, only one site, Cave Springs Cave, ranked as highly threatened for each of these risk models separately. Combining these two risk models produced an overall threat index for bat sites that suggests some of these threats may interact to produce cumulative impacts (Figure 47). Bat sites categorized with the highest threat scores were fairly evenly distributed across the study area, although some broad scale clustering is noticeable (e.g. northwest Arkansas).

Table 4. Mean index scores for threats associated with bat species, ordered in decreasing values of overall threat (THREAT). Table is broken into 2 sections with “Species” and “No. Sites” repeating in each section. See Appendix A for definitions of threat variables.

Bat Species	No. Sites	RBHF 01	RBHF 02	RBHF	RBHR 01	RBHR 02	RBHR
<i>Corynorhinus townsendii ingens</i>	42	0.17	0.59	0.20	0.31	0.14	0.19
<i>Myotis grisescens</i>	70	0.24	0.46	0.16	0.27	0.20	0.20
<i>Myotis leibii</i>	3	0.17	0.62	0.21	0.21	0.13	0.13
<i>Myotis sodalis</i>	30	0.18	0.59	0.20	0.25	0.15	0.16

Bat Species	No. Sites	RBH	RVIP	RVIA	RVIX	RVI	THREAT
<i>Corynorhinus townsendii ingens</i>	42	0.13	0.06	0.40	0.70	0.32	0.18
<i>Myotis grisescens</i>	70	0.11	0.10	0.46	0.81	0.39	0.22
<i>Myotis leibii</i>	3	0.11	0.08	0.42	0.83	0.38	0.20
<i>Myotis sodalis</i>	30	0.12	0.09	0.43	0.83	0.39	0.21

For the purpose of generating threat scores for bat sites, a cave was considered “occupied” regardless of whether the species is currently known from the site. In some instances, bat species are no longer occupying sites (e.g. several historic gray bat and Indiana bat sites). However, all sites were included for analysis because even currently unoccupied sites have the potential to house bats should conditions change. Assessing and reducing threats associated with currently unoccupied sites may allow bats to re-colonize historic locations.

Average overall threat scores were low for all four species (Table 4). Some threats due to visitation and foraging habitat may be more important than others. Average values for proximity

to roads (RVIX) ranged from 0.70 to 0.83, and average values for relative amount forest edge (RBHF 02) ranged from 0.46 to 0.62. Threat scores associated with proximate human population (RVIP) were low. Separate threat values for each bat species at each site are included in Appendix D.

### Aquatic Community Group

The overall threat assessment for aquatic cave species sites included assessing threats generated from a visitation risk model (RVI) and a groundwater sensitivity model (SENS). The groundwater sensitivity model was generated from a water quality and quantity risk model (RWQ) and a groundwater vulnerability model (VULN). The groundwater vulnerability model was generated using a modification of the model DRASTIC. Each of these models are comprised of threat indices which, in addition to overall threat scores, are useful in describing threats for each of the aquatic cave species. Separate threat values for each aquatic cave species at each site are included in Appendix E.

All 18 aquatic cave species are experiencing some level of threat, and average overall threat values ranged from 0.19 to 0.63 (Table 5). Two species that occurred in the top 5 were the Ozark cavefish (*A. rosae*) and the Benton cave crayfish (*C. aculabrum*). Interestingly, the overall threat score for the Hell Creek cave crayfish (*C. zophonastes*) was in the bottom third of values. The Foushee cavsnaill (*A. cora*) had the lowest overall threat score.

The highest visitation threats were at sites in northwestern Arkansas along the Interstate 540 corridor (Figure 48). Aquatic cave species within these sites include populations of *A. rosae*, *C. macropropoda*, *C. steevesi*, *C. stiladactyla*, *Cambarus aculabrum*, *D. americana*, *E. spelaea*, and *S. ozarkensis*. Many sites had lower threat scores relative to water quality and quantity threats (Figure 49), with the exception of Cave Springs Cave in Benton County which had a RWQ score of 0.70 (Appendix E). In addition to providing habitat for several aquatic cave species, Cave Springs Cave has the largest observable population of Ozark Cavefish (*A. rosae*) within its species range. The average RWQ score for the 10 sites containing *A. rosae* was 0.19 (Table 5), suggesting Cave Springs Cave is more threatened by water quality and quantity issues than the other Ozark cavefish sites assessed. Sediment (RWQS) may be an important threat for Ozark cavefish in general as the mean value for this index was higher than most of the other aquatic cave species assessed (Table 5). The most important component of threats from sediment for Ozark cavefish appear to come from RWQS 03 and RWQS 04 (both estimates of forested land) rather than other factors (Table 6 and Table 7).

Across northern Arkansas, karst areas with the highest vulnerabilities, as modeled by DRASTIK, occurred primarily in the western and eastern part of the state (Figure 50). As expected, vulnerabilities are also highest along the streams and rivers that drain the uplands. Sites with aquatic cave species that occurred in karst areas of high vulnerability, as modeled by DRASTIC, were typically characterized as highly vulnerable (Figure 51). Groundwater vulnerability is an estimate of how easy contaminants can enter groundwater systems. In some instances, locations (such as a sinking stream, cave, or spring) may be highly vulnerable but relatively well protected because the sites have few or no potential groundwater threats. Alternatively, sites may be highly vulnerable and have many threats. Intuitively, highly vulnerable sites with many threats should be more sensitive to groundwater degradation. This

relationship was characterized using a Groundwater Sensitivity Index (SENS) which combined values generated from the groundwater vulnerability assessment with threat scores water quality and quantity threat indices (RWQ). Aquatic cave species sites with the highest groundwater sensitivities occurred mainly in northwest Arkansas (Figure 52). A similar pattern is observed overall when groundwater sensitivity is combined with threats due to visitation (Figure 53). Aquatic cave species that occur in sites found in northwest Arkansas and along the Interstate 540 corridor generally had higher overall threat scores relative to the rest of the state.

## DISCUSSION

This project updated species range maps for 36 karst species listed in the Arkansas Wildlife Action Plan (AWAP). In addition, the project generated threat assessments for each of these species and for the 297 habitats where these species occur. Below, the results are briefly summarized relative to the objectives of the project.

**Objective 1.** To generate updated species range maps for each of the 36 Arkansas SGCN karst species occurring in the Ozark and Boston Mountains Ecoregions. These species maps will be derived from TNC's karst database, which integrates a variety of data sources beyond those of the Arkansas Natural Heritage database.

Range maps were produced for each of the 36 species. For terrestrial and aquatic cave species, maps were produced using sub-watersheds (HUC 12). For each species, a sub-watershed contained a minimum of 1 population. Other suitable habitats within identified sub-watersheds have a high probability of containing additional populations. For bat species, range maps were produced by buffering known locations with a 5 mile radius. Other suitable habitats within the buffers have a high probability of containing additional populations.

**Objective 2.** To assess the current status of threats to each of these 36 species.

Threat assessments were generated for each of the 36 species and each of the 297 sites where the species occurred. Tables and appendices provide details and summaries of the threat assessments.

**Objective 3.** To produce a conservation implementation priorities list based on the species distribution maps and threats.

The 36 species were characterized as part of an aquatic, terrestrial, or bat community, and threats were assessed accordingly. Therefore conservation implementation priorities can be set within each of these three groups, for a group of sites or species, or for a single site or species. Tables and appendices provide details and summaries of the threat assessments and are ranked according to highest overall threat.



**Objective 4.** To create the first Ozark Karst Habitat Map, a critical step toward future predictive mapping efforts for karst species.

The groundwater vulnerability map, generated by the model DRASTIK, provides a first attempt at developing an Arkansas Ozark Karst Habitat Map (Figure 50). The model was heavily weighted for karst landscapes including characteristics such as permeability of various carboniferous rock units, presence of faults, and density of photo lineaments. These characteristics are expressions of the solutional nature of karst and correlate well with known subterranean habitats such as caves and springs. It is likely that areas identified as highly vulnerable on Figure 50 are places where additional populations of these karst species may be found. However, conducting biological inventories of additional habitats in Arkansas will be necessary to validate this hypothesis.

**Objective 5.** To identify species-habitat affinities by comparing the species ranges to the karst habitat map.

Because our groundwater vulnerability map was only a preliminary attempt to develop an Arkansas Ozark Karst Habitat Map, exploring species-habitat affinities was not explored. However, a few observations can be made relative to the distribution of karst species included in this project. Figure 44, Figure 47, and Figure 53 not only identify overall threats associated with karst species. In addition, the distribution of points on these maps identifies places within the study area where focused biological inventory of caves, springs, and other subterranean habitats may yield new populations of karst species. For example, Figure 53 identifies two large areas where little biological inventory has been focused: 1.) north central Arkansas from Highway 65 west to Mountain Home north of Highway 412 and 2.) nearly all of northeast Arkansas. Several species such as the cave isopod, *C. salemensis*, and the Southern cavefish, *T. subterraneus*, are rare in Arkansas and occur near or within these large un-inventoried areas. The rarity of these species in the state may be due to lack of sampling rather than inherent geographical rarity.

Table 5. Mean index scores for threats associated with aquatic cave species, ordered in decreasing values of overall threat (THREAT). See Appendix A for definitions of threat variables.

Aquatic Cave Species	No. sites	RWQS	RWQN	RWQP	RWQH	RWQ	VULN	SENS	RVIP	RVIA	RVIX	RVI	THREAT
<i>Typhlichthys subterraneus</i>	2	0.61	0.51	0.50	0.50	0.52	0.78	0.52	0.54	0.83	0.97	0.75	0.63
<i>Dendrocoelopsis americana</i>	4	0.53	0.37	0.27	0.25	0.33	0.79	0.40	0.53	0.66	0.95	0.68	0.53
<i>Amblyopsis rosae</i>	10	0.40	0.21	0.12	0.13	0.19	0.78	0.29	0.55	0.76	0.95	0.72	0.49
<i>Cambarus aculabrum</i>	4	0.44	0.32	0.09	0.17	0.23	0.73	0.29	0.47	0.72	0.94	0.68	0.47
<i>Caecidotea macropropoda</i>	4	0.37	0.10	0.07	0.01	0.11	0.75	0.21	0.46	0.61	0.94	0.63	0.41
<i>Caecidotea ancyla</i>	16	0.41	0.24	0.14	0.17	0.22	0.72	0.26	0.24	0.54	0.92	0.52	0.38
<i>Caecidotea salemensis</i>	1	0.38	0.10	0.00	0.00	0.09	1.00	0.38	0.05	0.36	0.97	0.40	0.37
<i>Caecidotea stiladactyla</i>	34	0.36	0.19	0.15	0.15	0.19	0.68	0.22	0.31	0.58	0.88	0.54	0.37
<i>Stygobromus ozarkensis</i>	21	0.31	0.17	0.10	0.13	0.15	0.68	0.20	0.24	0.56	0.89	0.52	0.34
<i>Bactrurus pseudomucronatus</i>	2	0.35	0.09	0.00	0.00	0.08	0.92	0.32	0.07	0.39	0.87	0.39	0.33
<i>Eurycea spelaea</i>	112	0.34	0.19	0.16	0.16	0.19	0.70	0.23	0.22	0.51	0.82	0.46	0.33
<i>Caecidotea steevesi</i>	5	0.28	0.06	0.01	0.01	0.06	0.63	0.10	0.19	0.55	0.95	0.52	0.29
<i>Cambarus setosus</i>	3	0.20	0.03	0.00	0.00	0.03	0.77	0.17	0.16	0.50	0.64	0.37	0.25
<i>Cambarus zophonastes</i>	3	0.32	0.15	0.02	0.05	0.11	0.66	0.15	0.07	0.40	0.79	0.36	0.24
<i>Lirceus bidentatus</i>	1	0.21	0.07	0.00	0.00	0.04	0.53	0.02	0.17	0.46	0.94	0.47	0.23
<i>Caecidotea dimorpha</i>	7	0.25	0.04	0.00	0.00	0.05	0.69	0.13	0.04	0.38	0.85	0.36	0.23
<i>Lirceus bicuspidatus</i>	4	0.18	0.08	0.01	0.02	0.05	0.65	0.10	0.07	0.36	0.80	0.35	0.20
<i>Ammicola cora</i>	1	0.15	0.05	0.01	0.00	0.02	0.55	0.02	0.13	0.41	0.82	0.39	0.19

Table 6. Mean index scores for sediment (RWQS) and nutrient (RWQN) threats associated with aquatic cave species, ordered in decreasing values of overall threat (THREAT). See Appendix A for definitions of threat variables.

Aquatic Cave Species	No. sites	RWQS						RWQN						THREAT
		01	02	03	04	04	05	01	02	03	04	05	05	
<i>Typhlichthys subterraneus</i>	2	0.51	0.56	0.98	0.58	0.58	0.51	0.50	0.50	0.50	0.54	0.52	0.63	
<i>Dendrocoelopsis americana</i>	4	0.30	0.52	0.96	0.58	0.58	0.42	0.30	0.25	0.28	0.59	0.33	0.53	
<i>Amblyopsis rosae</i>	10	0.17	0.32	0.91	0.50	0.50	0.20	0.16	0.00	0.22	0.44	0.19	0.49	
<i>Cambarus aculabrum</i>	4	0.53	0.38	0.65	0.47	0.47	0.37	0.48	0.00	0.28	0.45	0.23	0.47	
<i>Caecidotea macropropoda</i>	4	0.03	0.24	0.97	0.57	0.57	0.05	0.00	0.00	0.03	0.43	0.11	0.41	
<i>Caecidotea ancyla</i>	16	0.27	0.39	0.84	0.42	0.42	0.30	0.21	0.13	0.19	0.40	0.22	0.38	
<i>Caecidotea salemensis</i>	1	0.04	0.46	0.98	0.36	0.36	0.03	0.00	0.00	0.02	0.43	0.09	0.37	
<i>Caecidotea stiladactyla</i>	34	0.18	0.31	0.90	0.37	0.37	0.20	0.15	0.12	0.17	0.32	0.19	0.37	
<i>Stygobromus ozarkensis</i>	21	0.24	0.28	0.77	0.31	0.31	0.22	0.17	0.05	0.18	0.24	0.15	0.34	
<i>Bactrurus pseudomucronatus</i>	2	0.04	0.38	0.97	0.33	0.33	0.02	0.00	0.00	0.02	0.42	0.08	0.33	
<i>Eurycea spelaea</i>	112	0.21	0.33	0.87	0.29	0.29	0.22	0.16	0.14	0.18	0.26	0.19	0.33	
<i>Caecidotea steevesi</i>	5	0.06	0.30	0.90	0.23	0.23	0.12	0.03	0.00	0.03	0.14	0.06	0.29	
<i>Cambarus setosus</i>	3	0.01	0.10	0.97	0.10	0.10	0.01	0.00	0.00	0.01	0.11	0.03	0.25	
<i>Cambarus zophonastes</i>	3	0.21	0.32	0.79	0.32	0.32	0.36	0.03	0.01	0.08	0.25	0.11	0.24	
<i>Lirceus bidentatus</i>	1	0.03	0.09	0.87	0.25	0.25	0.08	0.00	0.00	0.04	0.23	0.04	0.23	
<i>Caecidotea dimorpha</i>	7	0.03	0.26	0.93	0.17	0.17	0.01	0.01	0.00	0.01	0.19	0.05	0.23	
<i>Lirceus bicuspidatus</i>	4	0.09	0.15	0.79	0.12	0.12	0.27	0.01	0.00	0.04	0.10	0.05	0.20	
<i>Annicola cora</i>	1	0.03	0.08	0.82	0.07	0.07	0.15	0.00	0.00	0.02	0.09	0.02	0.19	

Table 7. Mean index scores for pollutant (RWQP) and hydrologic alteration (RWQH) threats associated with aquatic cave species, ordered in decreasing values of overall threat (THREAT). See Appendix A for definitions of threat variables.

Aquatic Cave Species	No. sites	RWQP										RWQH			THREAT	
		01	02	03	04	05	01	02	05	01	02	05				
<i>Typhlichthys subterraneus</i>	2	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.52	0.63
<i>Dendrocoelopsis americana</i>	4	0.25	0.25	0.26	0.26	0.30	0.26	0.26	0.26	0.30	0.26	0.25	0.25	0.25	0.33	0.53
<i>Amblyopsis rosae</i>	10	0.14	0.17	0.12	0.12	0.06	0.12	0.12	0.12	0.06	0.14	0.11	0.11	0.19	0.19	0.49
<i>Cambarus aculabrum</i>	4	0.03	0.09	0.12	0.09	0.11	0.12	0.09	0.11	0.11	0.17	0.17	0.17	0.23	0.23	0.47
<i>Caecidotea macropropoda</i>	4	0.00	0.00	0.07	0.03	0.25	0.07	0.03	0.25	0.25	0.02	0.00	0.00	0.11	0.11	0.41
<i>Caecidotea ancyla</i>	16	0.13	0.13	0.17	0.13	0.13	0.17	0.13	0.13	0.13	0.18	0.16	0.16	0.22	0.22	0.38
<i>Caecidotea salemensis</i>	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.37	
<i>Caecidotea stiladactyla</i>	34	0.15	0.14	0.16	0.15	0.14	0.16	0.15	0.14	0.14	0.16	0.15	0.15	0.19	0.19	0.37
<i>Stygobromus ozarkensis</i>	21	0.10	0.09	0.13	0.11	0.08	0.13	0.11	0.08	0.08	0.14	0.12	0.12	0.15	0.15	0.34
<i>Bactrurus pseudomucronatus</i>	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.33	
<i>Eurycea spelaea</i>	112	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.19	0.19	0.33
<i>Caecidotea steevesi</i>	5	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.06	0.06	0.29
<i>Cambarus setosus</i>	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.25	
<i>Cambarus zophonastes</i>	3	0.01	0.01	0.07	0.02	0.02	0.07	0.02	0.02	0.02	0.08	0.03	0.11	0.11	0.11	0.24
<i>Lirceus bidentatus</i>	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.23	
<i>Caecidotea dimorpha</i>	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.23	
<i>Lirceus bicuspidatus</i>	4	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.05	0.05	0.20	
<i>Annicola cora</i>	1	0.01	0.03	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.19	

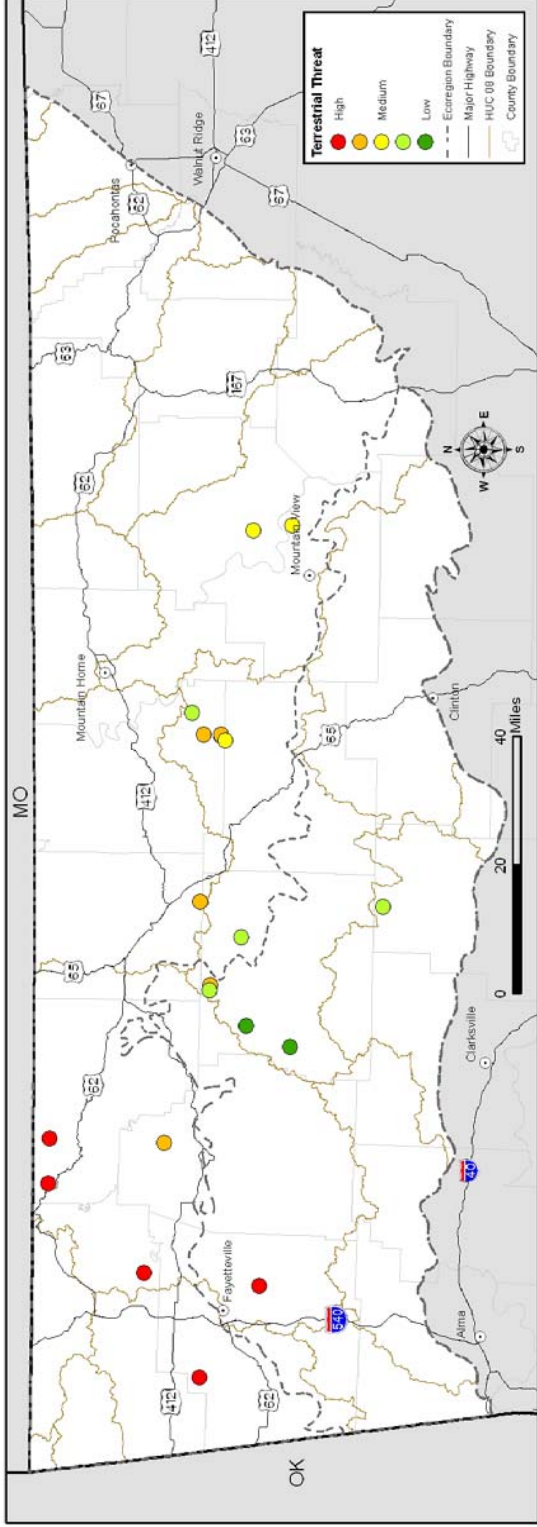


Figure 44. Threat score for sites occupied only by terrestrial cave species. Sites containing terrestrial cave species as well as bat species or aquatic cave species were included within bat community assessment or aquatic community assessments.

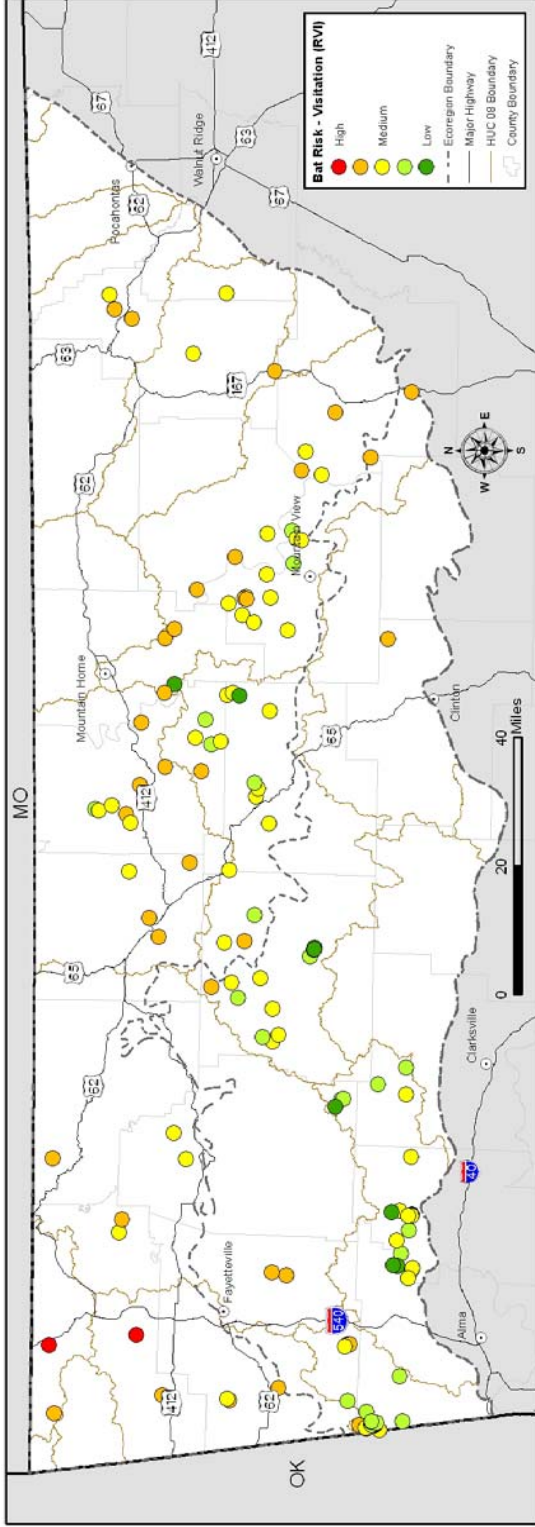


Figure 45. Threat scores generated from visitation indices (RVI) for sites occupied by bat species.

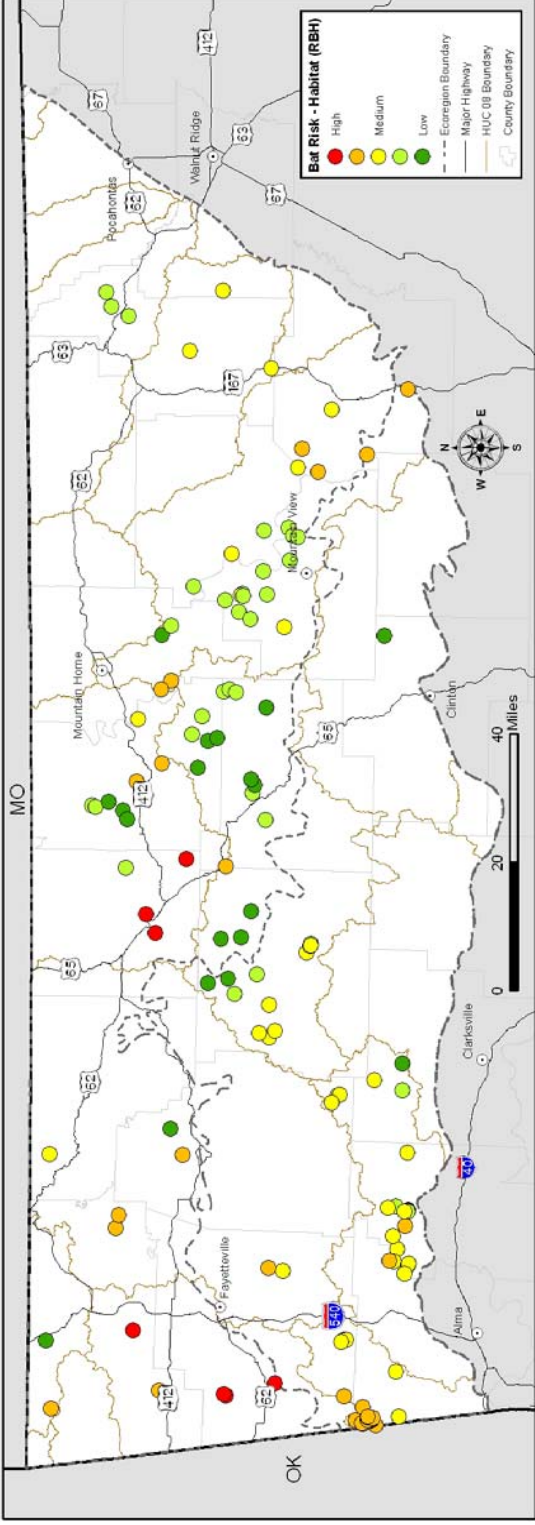


Figure 46. Threat scores generated from foraging habitat indices (RBH) for sites occupied by bat species.

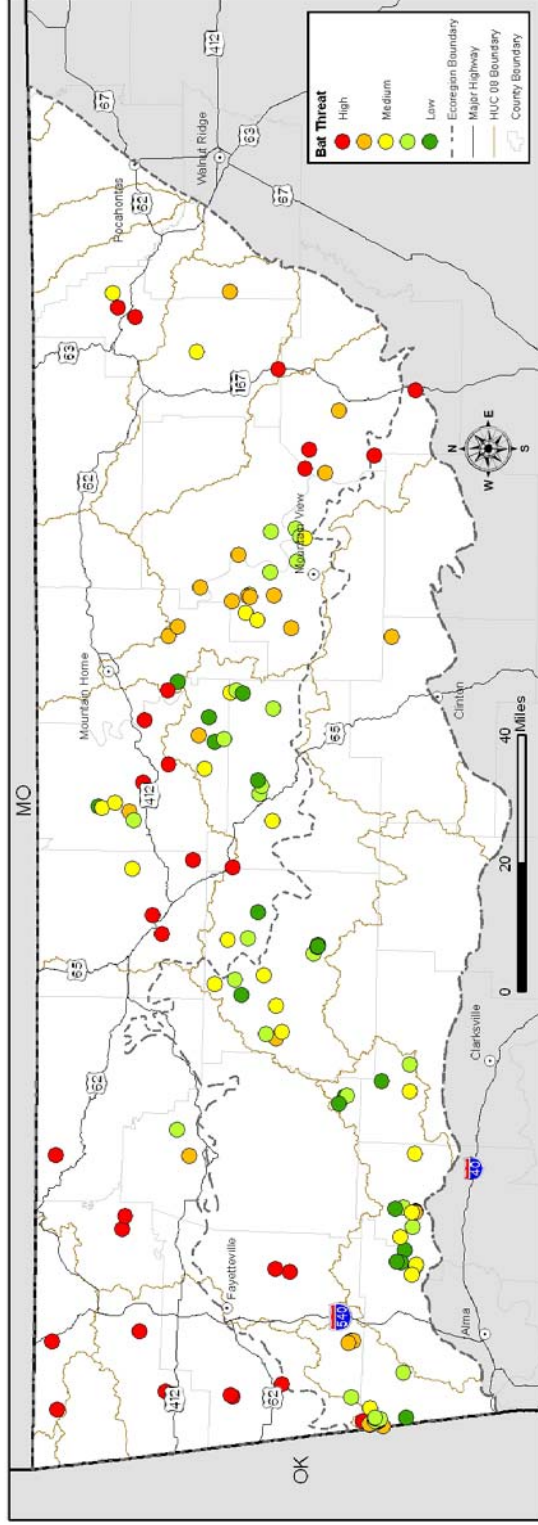


Figure 47. Overall threat scores for sites occupied by bat species. Scores were generated by combining values from visitation indices (RVI) and foraging habitat indices (RBH).



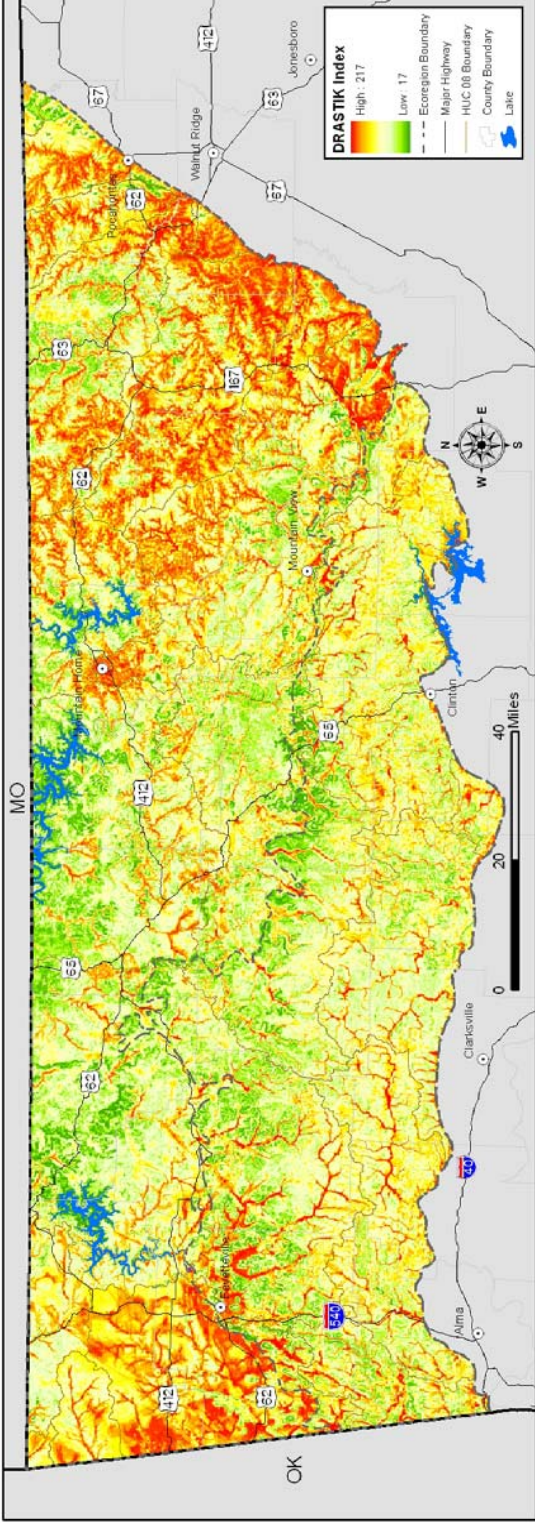


Figure 50. Groundwater vulnerability map, as modeled by DRASTIK, for northern Arkansas.

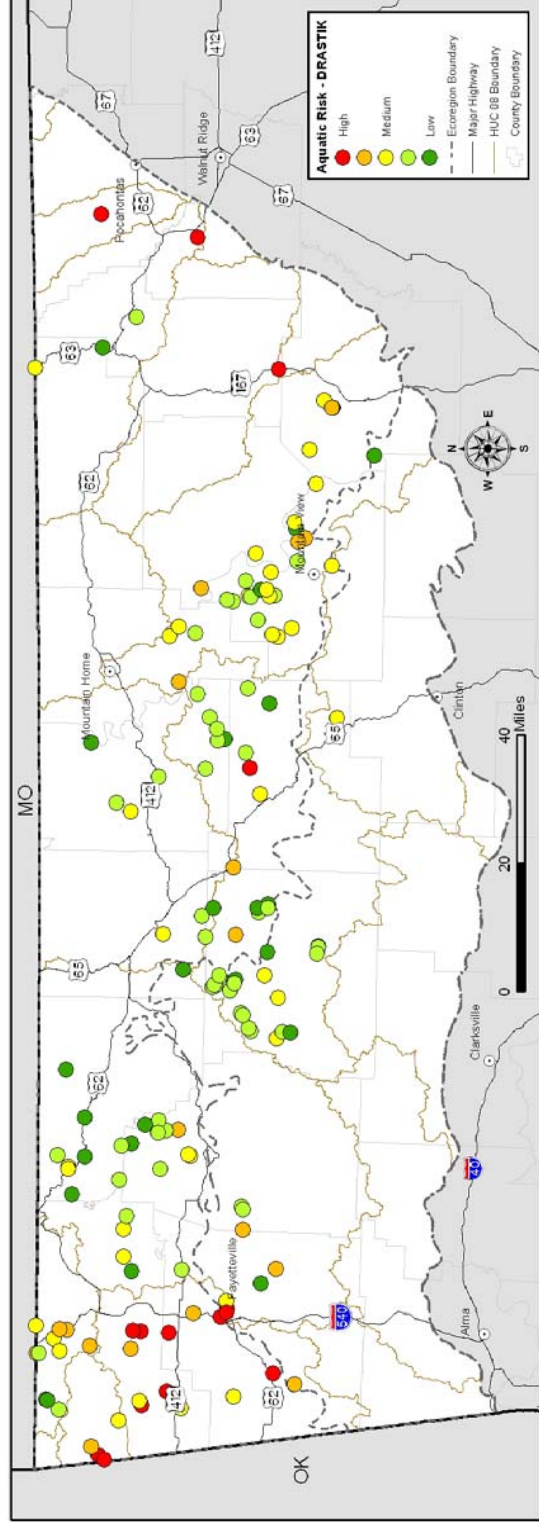


Figure 51. Groundwater vulnerability estimates were generated from the model DRASTIK for each site that contained aquatic cave species.



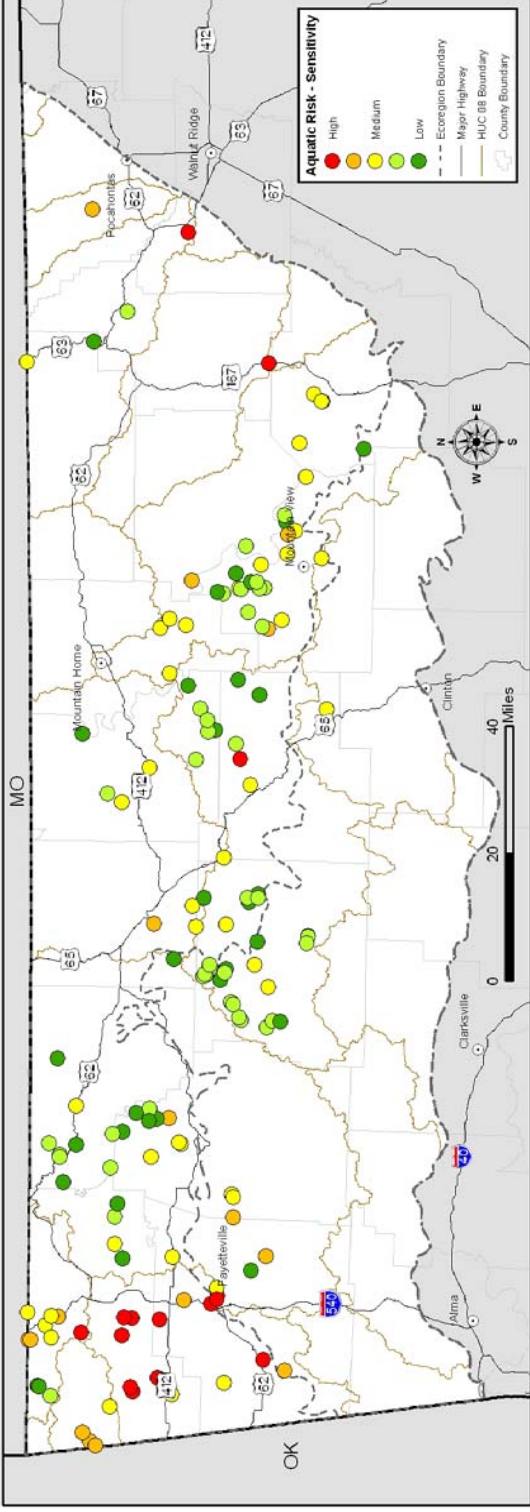


Figure 52. Groundwater sensitivity scores were generated by combining groundwater vulnerability (VULN) and RWQ values for each site that contained aquatic cave species.

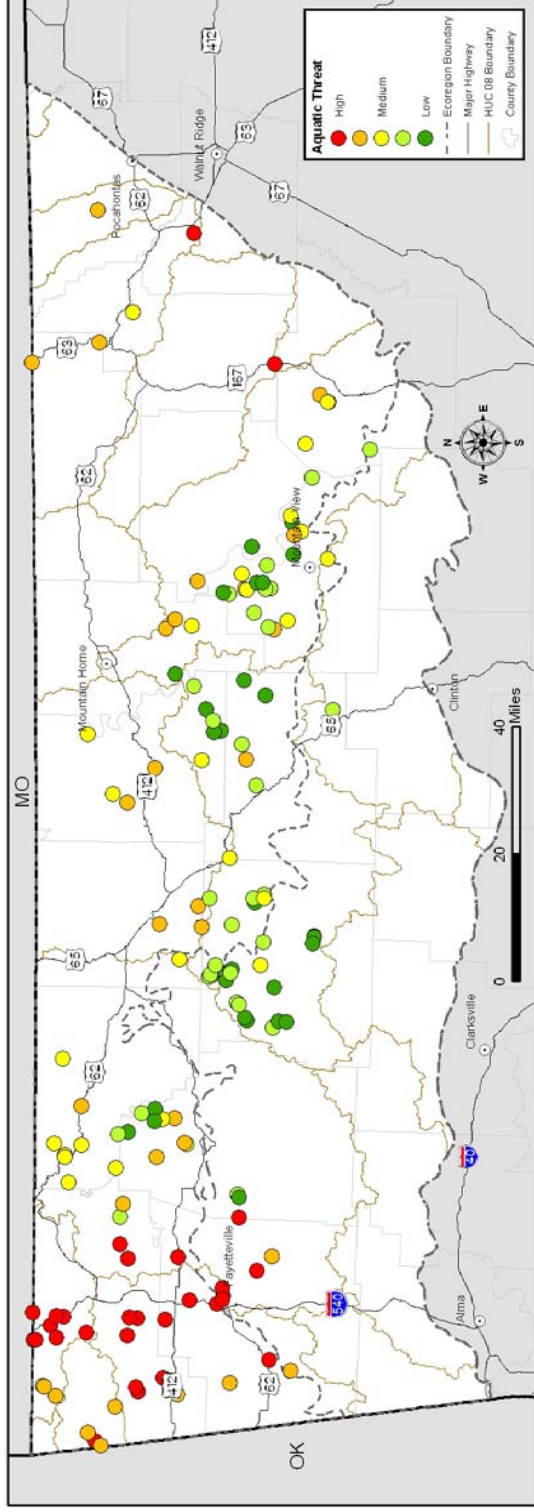


Figure 53. Overall threat scores for sites occupied by aquatic cave species. Scores were generated by combining groundwater sensitivity (SENS) and visitation (RVI) values.

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APPENDIX A. Descriptions of risk index variables and calculations.

**MODEL: Risk: Visitation (RVI)**

**SUB-MODEL: Population (RVIP)**

**Index: RVIP\_01**

**Name:** Population (Count)

**Assessment Area (AA):** 10-mile radius from site.

**Raw Score:** The human population within the AA.

**Highest Scaled Score:** The site with the lowest human population within its AA (inverted).

**Data Sources:** US Census Bureau 2000 Census.

**Notes:** Used population count (chronic) for census block points occurring within the AA.

**SUB-MODEL: Access (RVIA)**

**Index: RVIA\_01**

**Name:** Road Access

**Assessment Area (AA):** 10-mile radius from site.

**Raw Score:** The length of all roads in the AA

**Highest Scaled Score:** The site with the least amount of roads within its AA (inverted)

**Data Sources:** AHTD 2006 All Roads (AR), US Census TIGER 2010 Roads (OK), MoDOT 2006 Roads (MO).

**Notes:** Although all sites are within Arkansas, some areas within a 10-mile radius occurred within Oklahoma and Missouri. All road lines were rasterized to 30m cells for improved analysis efficiency. All road types were weighted equally.

**SUB-MODEL: Proximity (RVIX)**

**Index: RVIX\_01**

**Name:** Road Proximity

**Assessment Area (AA):** Site.

**Raw Score:** The distance from the site to the nearest road in the AA

**Highest Scaled Score:** The site that is farthest from a road

**Data Sources:** AHTD 2006 All Roads

**Notes:** This index was not calculated for sites that were located based on centroids because proximity to the site location is inaccurate.

**MODEL: Risk: Bat Habitat (RBH)**

**SUB-MODEL: Forest (RBHF)**

**Index: RBHF\_01**

**Name:** Forest Land Use (Percent)

**Assessment Area (AA):** 5-mile radius from site

**Raw Score:** The percent of the AA that has forest land use in the AA



**Highest Scaled Score:** The site with the highest percent of its AA in forest  
**Data Sources:** CAST LULC Fall 2006 (AR), USEPA NLCD 2001 (MO, OK).  
**Notes:**

**Index: RBHF\_02**

**Name:** Forest Edge (Relative)

**Assessment Area (AA):** 5-mile radius from site

**Raw Score:** The number of forest edge cells in the AA

**Highest Scaled Score:** The site with the highest number of forest edge cells

**Data Sources:** CAST LULC Fall 2006 (AR), USEPA NLCD 2001 (MO, OK)

**Notes:** Forest edges were detected with a high-pass filter run on a binary forest land use raster. The raw value of the index is a count of edge cells.

**SUB-MODEL: Riparian (RBHR)**

**Index: RBHR\_01**

**Name:** Riparian Forest (Area)

**Assessment Area (AA):** 5-mile radius from site

**Raw Score:** The total area of forest cells in the riparian zone in the AA

**Highest Scaled Score:** The site with the largest area of forest cells in the riparian zone

**Data Sources:** CAST LULC Fall 2006 (AR), USEPA NLCD 2001 (MO, OK), NHD High Resolution Flowlines

**Notes:** The riparian zone was defined by rasterizing the High Resolution NHD Flowline vector layer and cells within a 1 cell distance of a watercourse or water body were selected to define it. The raw value of the index is the calculated area of forest cells

**Index: RBHR\_02**

**Name:** Riparian Forest (Percent)

**Assessment Area (AA):** 5-mile radius from site

**Raw Score:** The percent of the riparian zone in forest cells in the AA

**Highest Scaled Score:** The site with the largest area of forest cells in the riparian zone

**Data Sources:** CAST LULC Fall 2006 (AR), USEPA NLCD 2001 (MO, OK), NHD High Resolution Flowlines

**Notes:** The riparian zone was defined by rasterizing the High Resolution NHD Flowline vector layer and cells within a 1 cell distance of a watercourse or water body were selected to define it. The raw value of the index is the calculated area of forest cells within the AA.

**MODEL: Risk: Water Quality (RWQ)**

**SUB-MODEL: Sediment (RWQS)**

**Index: RWQS\_01**

**Name:** Unpaved Road Length

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The total length of unpaved roads

**Highest Scaled Score:** The site with the shortest length of unpaved roads (inverted)

**Data Sources:** AHTD 2006 All Roads

**Notes:** Unpaved roads were summarized and their total length was calculated within the AA.

**Index: RWQS\_02**

**Name:** Unpaved Road Density

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The density of unpaved roads

**Highest Scaled Score:** The site with the lowest density of unpaved roads (inverted)

**Data Sources:** AHTD 2006 All Roads

**Notes:** Unpaved roads were summarized and their total length was divided by the total area of the AA.

**Index: RWQS\_03**

**Name:** Forest Land Use (Area)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The total area of forest cells

**Highest Scaled Score:** The site with the largest amount of forested area

**Data Sources:** AGIO / CAST LULC Fall 2006

**Notes:** The calculated area of forest cells within the AA.

**Index: RWQS\_04**

**Name:** Forest Land Use (Percent)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The percent of the AA in forest cells

**Highest Scaled Score:** The site with the highest percent of forested area

**Data Sources:** AGIO / CAST LULC Fall 2006

**Notes:** The calculated area of forest cells within the AA divided by the total area of the AA.

**SUB-MODEL: Nutrients (RWQN)**

**Index: RWQN\_01**

**Name:** Households (Density)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The density of households

**Highest Scaled Score:** The site with the lowest density of households (inverted)

**Data Sources:** US Census Bureau 2000 Census.

**Notes:** Used household count for census block points occurring within the AA. Only blocks outside of city limits were included as this was a surrogate measure of the number of septic systems. It was assumed that incorporated municipalities had managed wastewater facilities. Number of households per pixel was calculated by mathematical conversions and then the number of pixels was summed to get household density in each AA.

**Index: RWQN\_02**

**Name:** CAFO (Chicken Houses Count)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The number of chicken houses

**Highest Scaled Score:** The site with the smallest number of chicken houses (inverted)

**Data Sources:** AHTD Chicken Houses

**Notes:** The total number of chicken houses within the AA.

**Index: RWQN\_03**

**Name:** CAFO (Chicken Houses Density)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The density of chicken houses

**Highest Scaled Score:** The site with the lowest density of chicken houses (inverted)

**Data Sources:** AHTD Chicken Houses

**Notes:** The total number of chicken houses within the AA divided by the total area of the AA.

**Index: RWQN\_04**

**Name:** Pasture Land Use (Area)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The total area of pasture cells

**Highest Scaled Score:** The site with the smallest amount of pasture area (inverted)

**Data Sources:** AGIO / CAST LULC Fall 2006

**Notes:** The calculated area of cool and warm season pasture cells within the AA.

**Index: RWQN\_05**

**Name:** Pasture Land Use (Percent)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The percent of the AA in pasture cells

**Highest Scaled Score:** The site with the lowest percent of pasture area (inverted)

**Data Sources:** AGIO / CAST LULC Fall 2006

**Notes:** The calculated area of cool and warm season pasture cells within the AA divided by the total area of the AA.

**SUB-MODEL: Pollutants (RWQP)**

**Index: RWQP\_01**

**Name:** Paved Roads (Weighted Length)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The total length of paved roads

**Highest Scaled Score:** The site with the shortest length of weighted paved roads (inverted)

**Data Sources:** AHTD 2006 All Roads

**Notes:** Paved roads were summarized and their total length was calculated within the AA. Some roads in the “Miscellaneous” class were included in this index including airport runways and service roads.

**Weight:** This index is a measure of spill potential along transportation corridors. Road types were weighted based on their traffic volume and road type with “Interstate” receiving the highest weight of 50 and “City” or “County” roads receiving the lowest weight of 1.

**Index: RWQP\_02**

**Name:** Paved Roads (Weighted Density)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The density of weighted paved roads

**Highest Scaled Score:** The site with the shortest length of weighted paved roads (inverted)

**Data Sources:** AHTD 2006 All Roads

**Notes:** Weighted paved roads were summarized and their total length was calculated within the AA divided by the total area of the AA. Some roads in the “Miscellaneous” class were included in this index including airport runways and service roads.

#### **Index: RWQP\_03**

**Name:** Population (Density)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The density of the human population within the AA.

**Highest Scaled Score:** The site with the lowest human population density within its AA (inverted)

**Data Sources:** US Census Bureau 2000 Census.

**Notes:** Used population count (chronic) for census block points occurring within the AA.

Number of people per pixel was calculated by mathematical conversions and then the number of pixels was summed to get population density in each AA.

#### **Index: RWQP\_04**

**Name:** Environmental Permitted Sites (Count)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The number of environmental permitted sites

**Highest Scaled Score:** The site with the smallest number of environmental permitted sites (inverted)

**Data Sources:** ADEQ Environmental Permitted Sites

**Notes:** The total number of environmental permitted sites within the AA.

#### **Index: RWQP\_05**

**Name:** Environmental Permitted Sites (Density)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The density of environmental permitted sites

**Highest Scaled Score:** The site with the lowest density of environmental permitted sites (inverted)

**Data Sources:** ADEQ Environmental Permitted Sites

**Notes:** The total number of environmental permitted sites within the AA divided by the total area of the AA.

### **SUB-MODEL: Hydrologic Alteration (RWQH)**

#### **Index: RWQH\_01**

**Name:** Impervious Land Use (Area)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The area of impervious surfaces

**Highest Scaled Score:** The site with the smallest amount of impervious surfaces area (inverted)

**Data Sources:** AHTD 2006 All Roads, CAST LULC Fall 2006.

**Notes:** The calculated area of impervious cells within the AA. Impervious was defined as being either the “bare” or any of the “urban” classes from the Fall 2006 raster, merged with the paved roads from the AHTD roads layer used in the RWQP indices above.

**Index: RWQH\_02**

**Name:** Impervious Land Use (Percent)

**Assessment Area (AA):** Dye-traced recharge area/NHD Plus Catchment area

**Raw Score:** The percent of the AA in impervious surfaces

**Highest Scaled Score:** The site with the smallest percent of impervious surfaces area (inverted)

**Data Sources:** AHTD 2006 All Roads, CAST LULC Fall 2006.

**Notes:** The calculated area of impervious cells within the AA divided by the total area of the AA. Impervious was defined as being either the “bare” or any of the “urban” classes from the Fall 2006 raster, merged with the paved roads from the AHTD roads layer used in the RWQP indices above.

APPENDIX B. DRASTIC Parameter ratings.

<b>(D) Depth to Water Table</b>	
Range (ft)	Rating
0	10
1 - 30	9
31 - 50	8
51 - 75	5
76 - 100	3
100+	1

<b>(R) Recharge</b>	
Range	Rating
0	0
1 - 6	1
7 - 9	2
10 - 11	3
12 - 13	4
14 - 15	5
16 - 17	6
18 - 19	7
20 - 21	8
22 - 23	9
24 - 28	10

==>

<b>PRISM (Rainfall in/yr)</b>	
Range	Rating
42 - 45	1
46 - 47	2
48	3
49	4
50	5
51	6
52 - 53	7
54 - 56	8
57 - 59	9
60+	10

+

<b>Ksat (Soil Permeability)</b>	
Range	Rating
0.01 - 0.99	1
1 - 1.9	2
2 - 2.6	3
2.7 - 5.9	4
6 - 8.9	5
9 - 14	6
14.1 - 22.9	7
23 - 71.9	8
72 - 91.9	9
92+	10
0	10

+

<b>(T) Topography (Percent Slope)</b>	
Range	Rating
0 - 1	10
2 - 5	9
6 - 11	5
12 - 17	3
18 +	1

<b>(A) Aquifer Media</b>	
Range	Rating
Cretaceous rocks, Sand and clay	1
Chattanooga Shale (Lower Mississippian and Upper Devonian), Clifty Limestone (Middle Devonian), and Penters Chert (Lower Devonian), Moorefield Formation	4
Alluvium, Terrace deposits, Silt and sand, Wilcox Group	6
Atoka Formation, undivided, Bloyd Shale, and Prairie Grove Member of the Hale Formation, Pitkin Limestone, Fayetteville Shale (including the Wedington Sandstone member), and Batesville Sandstone (including the Hindsville Limestone Member)	7
Dune sand, Gravel	8
Boone Formation, Cason Shale and Fernvale Limestone (Upper Ordovician) and Kimmswick Limestone, Plattin Limestone, and Joachim Dolomite, Cotter and Jefferson City Dolomites, Lafferty, St. Clair and Brassfield Limestones, Powell Dolomite	10

<b>(S) Soil Media</b>	
Range	Rating
Silty Clay	1
Silty Clay Loam	2
Silt Loam	4
Loam	5
Sandy Loam	6
Loamy Sand	7
Sand	8
Riverwash	9
Rock, Water	10

<b>(T) Topography (Percent Slope)</b>	
Range	Rating
0 - 1	10
2 - 5	9
6 - 11	5
12 - 17	3
18 +	1

<b>(I) Impact on Vadose Zone Media</b>	
Range	Rating
0	0
1 - 2	1
3 - 4	2
5 - 6	3
7 - 8	4
9 - 10	5
11 - 12	6
13 - 14	7
15 - 16	8
17 - 18	9
19 - 20	10

====>

<b>Ksat (Soil Permeability)</b>	
Range	Rating
0.01 - 0.99	1
1 - 1.9	2
2 - 2.6	3
2.7 - 5.9	4
6 - 8.9	5
9 - 14	6
14.1 - 22.9	7
23 - 71.9	8
72 - 91.9	9
92+	10
0	10

+

<b>(D) Depth to Water Table</b>	
Range (ft)	Rating (Dr)
0	10
1 - 30	9
31 - 50	8
51 - 75	5
76 - 100	3
100+	1

<b>(K) Lineament Density</b>	
Range (lineament/sq mi)	Rating
.01 - .26	1
.27 - .73	2
.74 - 1.16	3
1.17 - 1.60	4
1.61 - 2.04	5
2.05 - 2.50	6
2.51 - 3.03	7
3.04 - 3.67	8
3.68 - 4.66	9
4.67 - 7.40	10



APPENDIX C. Raw index values and scaled scores for components of the Visitation Risk Model for each terrestrial cave species population at each site. Scaled values are scaled from 0-1, with 1 being the score with the most ecological benefit. Threat scores discussed in the text are generated by subtracting scaled values from 1 (e.g. [1-(RVI Scaled)] equals overall threat from visitation). Descriptions of abbreviations used in this table can be found in Appendix A.

Species	Site	RVIP Raw	RVIP Scaled	RVIA Raw	RVIA Scaled	RVIX Raw	RVIX Scaled	RVY Raw	RVY Scaled	RVI Raw	RVI Scaled	Assessment Area
<i>Apoththonius diabolus</i>												
	Devil's Den Cave	6,494	0.95	0.04	0.60	0.20	0.12	1.66	0.62	1.66	0.62	Bats
<i>Apoththonius titanicus</i>												
	Blanchard Springs Caverns	7,286	0.95	0.05	0.62	0.19	0.11	1.68	0.62	1.68	0.62	Aquatic
<i>Crosbyella distincta</i>												
	Fitton Cave	6,073	0.96	0.04	0.65	0.07	0.04	1.64	0.61	1.64	0.61	Aquatic
	Friday the 13th Cave	5,858	0.96	0.04	0.65	0.48	0.29	1.90	0.70	1.90	0.70	Aquatic
	Willis Cave	6,230	0.95	0.04	0.65	0.40	0.24	1.85	0.68	1.85	0.68	Aquatic
<i>Crosbyella roeweri</i>												
	Tom Danforth Cave	119,347		0.11	0.00	0.16	0.11	0.11	0.04	0.11	0.04	Terrestrial
<i>Hesperocheernes occidentalis</i>												
	Cave Springs Cave	134,411	0.01	0.11	0.08	0.13	0.08	0.17	0.06	0.17	0.06	Aquatic
	Coon Cave	3,917	0.97	0.04	0.65	0.30	0.18	1.81	0.67	1.81	0.67	Aquatic
	Crane Cave	5,242	0.96	0.04	0.61	0.60	0.36	1.92	0.72	1.92	0.72	Bats
	Dodd Cave	6,278	0.95	0.04	0.62	0.15	0.09	1.66	0.62	1.66	0.62	Bats
	Earl's Cave	3,188	0.97	0.03	0.68	0.71	0.52	2.17	0.80	2.17	0.80	Terrestrial
	Fallout Cave	5,236	0.96	0.04	0.60	0.55	0.32	1.89	0.70	1.89	0.70	Bats
	Fincher Cave	75,017	0.45	0.08	0.36	0.05	0.03	0.83	0.31	0.83	0.31	Aquatic
	Fitton Spring Cave	6,924	0.95	0.04	0.64	0.30	0.18	1.77	0.65	1.77	0.65	Aquatic
	Forest Trail Pit	3,779	0.97	0.04	0.62	0.16	0.12	1.71	0.63	1.71	0.63	Terrestrial
	Granny Deen Cave	72,260	0.39	0.08	0.29	0.19	0.14	0.83	0.30	0.83	0.30	Terrestrial
	Len House Cave	3,188	0.97	0.03	0.68	0.71	0.52	2.17	0.80	2.17	0.80	Terrestrial
	Logan Cave	31,431	0.77	0.07	0.43	0.16	0.10	1.29	0.48	1.29	0.48	Aquatic

Species	Site	RVIP		RVIA		RVIX		RVIA		RVIX		RVI		Assessment Area
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	
	Major's Cave	26,637	0.80	0.06	0.49	0.03	0.02	0.49	0.03	0.02	1.32	0.48		Aquatic
	Mansell Cave	12,955	0.90	0.05	0.58	0.38	0.23	0.58	0.38	0.23	1.72	0.63		Aquatic
	Norfolk Bat Cave	11,297	0.92	0.06	0.52	0.09	0.05	0.52	0.09	0.05	1.49	0.55		Aquatic
	Summer Cave	3,083	0.98	0.04	0.66	0.82	0.49	0.66	0.82	0.49	2.13	0.79		Aquatic
	Summit Cave	12,554	0.91	0.05	0.51	0.23	0.13	0.51	0.23	0.13	1.55	0.58		Bats
	Van Dyke Spring Cave	6,364	0.95	0.04	0.64	0.46	0.28	0.64	0.46	0.28	1.87	0.69		Aquatic
	Walnut Cave	6,326	0.95	0.04	0.61	0.02	0.01	0.61	0.02	0.01	1.56	0.58		Terrestrial
<i>Pseudosinella dubia</i>														
	Devil's Den Cave	6,494	0.95	0.04	0.60	0.20	0.12	0.60	0.20	0.12	1.66	0.62		Bats
	Granny Deen Cave	72,260	0.39	0.08	0.29	0.19	0.14	0.29	0.19	0.14	0.83	0.30		Terrestrial
<i>Pseudosinella testa</i>														
	Fincher Cave	75,017	0.45	0.08	0.36	0.05	0.03	0.36	0.05	0.03	0.83	0.31		Aquatic
<i>Pygmarrhopalites clarus</i>														
	Big Bear Cave	6,212	0.95	0.04	0.58	0.77	0.57	0.58	0.77	0.57	2.10	0.77		Terrestrial
	Big Hole Cave	19,234	0.84	0.05	0.50	0.29	0.21	0.50	0.29	0.21	1.55	0.57		Terrestrial
	Blanchard Springs Caverns	7,286	0.95	0.05	0.62	0.19	0.11	0.62	0.19	0.11	1.68	0.62		Aquatic
	Bonanza Cave	10,630	0.92	0.05	0.57	1.38	0.82	0.57	1.38	0.82	2.31	0.85		Aquatic
	Brewer Cave													Aquatic
	Cave Mountain Cave	2,347	0.98	0.03	0.74	0.05	0.03	0.74	0.05	0.03	1.76	0.65		Aquatic
	Cave Spring Cave	18,469	0.86	0.05	0.57	0.30	0.18	0.57	0.30	0.18	1.61	0.60		Bats
	Diamond Cave	4,922	0.96	0.04	0.68	0.19	0.11	0.68	0.19	0.11	1.76	0.65		Aquatic
	Earl's Cave	3,188	0.97	0.03	0.68	0.71	0.52	0.68	0.71	0.52	2.17	0.80		Terrestrial
	Eckel Cave	9,824	0.93	0.07	0.42	0.27	0.16	0.42	0.27	0.16	1.51	0.56		Aquatic
	Fitton Cave	6,073	0.96	0.04	0.65	0.07	0.04	0.65	0.07	0.04	1.64	0.61		Aquatic
	Granny Deen Cave	72,260	0.39	0.08	0.29	0.19	0.14	0.29	0.19	0.14	0.83	0.30		Terrestrial
	Huckleberry Point Cave	16,976	0.86	0.06	0.43	0.21	0.16	0.43	0.21	0.16	1.44	0.53		Terrestrial
	Hurricane River Cave	5,913	0.96	0.04	0.66	0.06	0.03	0.66	0.06	0.03	1.65	0.61		Aquatic

Species	Site	RVIP Raw	RVIP Scaled	RVIA Raw	RVIA Scaled	RVIX Raw	RVIX Scaled	RVIA Raw	RVIA Scaled	RVIX Raw	RVIX Scaled	RVY Raw	RVY Scaled	Assessment Area
	John Eddings Cave	5,692	0.96	0.04	0.64	0.69	0.41	2.01	0.74	2.01	0.41	2.01	0.74	Aquatic
	Len House Cave	3,188	0.97	0.03	0.68	0.71	0.52	2.17	0.80	2.17	0.52	2.17	0.80	Terrestrial
	Lewis Spring Cave													Aquatic
	Mr. Clean Cave	7,491	0.94	0.05	0.61	0.52	0.31	1.87	0.69	1.87	0.31	1.87	0.69	Aquatic
	Rootville Cave	17,093	0.87	0.06	0.49	0.01	0.01	1.37	0.51	1.37	0.01	1.37	0.51	Aquatic
	Sherfield Cave	2,556	0.98	0.03	0.75	0.13	0.08	1.81	0.67	1.81	0.08	1.81	0.67	Aquatic
	Sunk Bluff Cave	585	1.00	0.02	0.78	0.53	0.39	2.17	0.80	2.17	0.39	2.17	0.80	Terrestrial
	Walnut Cave	6,326	0.95	0.04	0.61	0.02	0.01	1.56	0.58	1.56	0.01	1.56	0.58	Terrestrial
	Whippoorwill Cave	6,932	0.95	0.05	0.59	0.00	0.00	1.54	0.57	1.54	0.00	1.54	0.57	Aquatic
	Womack Spring Cave	7,686	0.94	0.05	0.54	0.05	0.04	1.52	0.56	1.52	0.04	1.52	0.56	Terrestrial
	Wounded Knee Cave	5,072	0.96	0.05	0.59	0.55	0.33	1.88	0.69	1.88	0.33	1.88	0.69	Aquatic
	<i>Rhadine ozarkensis</i>													
	Fincher Cave	75,017	0.45	0.08	0.36	0.05	0.03	0.83	0.31	0.83	0.03	0.83	0.31	Aquatic
	<i>Trigenotyla parca</i>													
	Blue Spring	13,731	0.88	0.06	0.44	0.11	0.08	1.41	0.52	1.41	0.08	1.41	0.52	Terrestrial
	Cave Mountain Cave	2,347	0.98	0.03	0.74	0.05	0.03	1.76	0.65	1.76	0.03	1.76	0.65	Aquatic
	Devil's Den Cave	6,494	0.95	0.04	0.60	0.20	0.12	1.66	0.62	1.66	0.12	1.66	0.62	Bats
	Granny Deen Cave	72,260	0.39	0.08	0.29	0.19	0.14	0.83	0.30	0.83	0.14	0.83	0.30	Terrestrial
	Len House Cave	3,188	0.97	0.03	0.68	0.71	0.52	2.17	0.80	2.17	0.52	2.17	0.80	Terrestrial
	Logan Cave	31,431	0.77	0.07	0.43	0.16	0.10	1.29	0.48	1.29	0.10	1.29	0.48	Aquatic
	<i>Typhlogastrura fousheensis</i>													
	Foushee Cave	17,478	0.87	0.05	0.59	0.31	0.18	1.64	0.61	1.64	0.18	1.64	0.61	Aquatic

APPENDIX D. Raw index values and scaled scores for components of the Visitation Risk Model, Bat Habitat Risk Model, and overall Bat Community Threat Model for each bat species population at each site. Scaled values are scaled from 0-1, with 1 being the score with the most ecological benefit. Threat scores discussed in the text are generated by subtracting scaled values from 1 (e.g. [1-(RVI Scaled)] equals overall threat from visitation). Descriptions of abbreviations used in these tables can be found in Appendix A.

Table Appendix D-1. Index values and scaled scores for RBHF\_01 Raw through RBHR\_01 Scaled.

Species	Site	RBHF_01		RBHF_02		RBHF_01		RBHF_02		RBHF_01		RBHR_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Corynorhinus townsendii ingens</i>													
	AACS # CW2307	0.88	0.90	16174	0.31	1.21	0.79	18793	0.60				
	AACS # CW2318	0.81	0.83	20724	0.40	1.23	0.80	17791	0.57				
	AACS # CW2337	0.88	0.90	15992	0.31	1.21	0.78	18704	0.60				
	AACS # CW2339	0.88	0.90	15765	0.30	1.20	0.78	18077	0.58				
	AACS # CW2365	0.88	0.90	15919	0.31	1.21	0.78	18649	0.60				
	AACS # CW2367	0.88	0.90	16355	0.32	1.22	0.79	18792	0.60				
	AACS # CW2385	0.83	0.86	20063	0.39	1.24	0.81	18287	0.58				
	AACS # CW23BT1	0.88	0.90	15757	0.30	1.21	0.78	18896	0.60				
	AACS # CW29BT2	0.95	0.98	7084	0.14	1.11	0.72	22859	0.73				
	AACS # CW29BT3	0.95	0.97	7528	0.15	1.12	0.72	20836	0.67				
	AACS # FR17BT1a	0.89	0.92	12108	0.23	1.15	0.75	24792	0.79				
	AACS # FR17BT1b	0.89	0.92	12656	0.24	1.16	0.75	23420	0.75				
	AACS # FR17BT1g	0.89	0.91	12182	0.23	1.15	0.75	24895	0.79				
	AACS # FR17BT1h	0.89	0.91	12119	0.23	1.15	0.74	24800	0.79				
	AACS # FR19BT1a	0.92	0.95	9787	0.19	1.14	0.74	24876	0.79				
	AACS # FR28BT2a,b	0.97	1.00	3461	0.07	1.07	0.69	23534	0.75				
	Bassett Cave	0.77	0.79	28591	0.55	1.35	0.87	20071	0.64				
	Bat Cave	0.90	0.93	13522	0.26	1.19	0.77	28421	0.91				
	Big-eared Bat Crevice	0.90	0.92	14327	0.28	1.20	0.78	20804	0.66				
	Blue Heaven Cave	0.72	0.74	36278	0.70	1.44	0.93	23232	0.74				
	Bradley Shelter	0.41	0.42	34617	0.67	1.08	0.70	14909	0.48				

Species	Site	RBHF_01		RBHF_02		RBHF_01		RBHF_02		RBHF_01		RBHF_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Brown Cave	0.70	0.72	39302	0.76	1.47	0.96	22652	0.72				
	Charley One Ridge Cave	0.78	0.80	29218	0.56	1.37	0.89	22824	0.73				
	Coon Cave	0.93	0.96	12345	0.24	1.19	0.77	28775	0.92				
	CW11BT1	0.87	0.89	16917	0.33	1.22	0.79	21993	0.70				
	Delap Cave	0.44	0.45	37702	0.73	1.18	0.76	11405	0.36				
	Devil's Den Cave	0.90	0.92	13748	0.26	1.19	0.77	22278	0.71				
	Devil's Icebox Cave	0.90	0.92	14371	0.28	1.20	0.78	22411	0.72				
	Elm Cave	0.77	0.79	25996	0.50	1.29	0.84	29159	0.93				
	FR17BT2	0.93	0.95	7829	0.15	1.11	0.72	22556	0.72				
	Garrett Hollow Cave	0.85	0.87	17231	0.33	1.21	0.78	18772	0.60				
	Goard Cave	0.62	0.63	40374	0.78	1.41	0.92	18813	0.60				
	Hewlitt / Ezel Cave(s)	0.42	0.43	33222	0.64	1.07	0.69	15706	0.50				
	Imp's Leap Crevice	0.90	0.93	13459	0.26	1.19	0.77	22404	0.72				
	Marble Falls Cave	0.78	0.80	29276	0.56	1.37	0.89	21962	0.70				
	Mitchell Cave	0.65	0.67	39491	0.76	1.43	0.93	26859	0.86				
	Morning Star Mine # 15	0.86	0.88	17037	0.33	1.21	0.78	27369	0.87				
	Reed Cave	0.80	0.82	28858	0.56	1.37	0.89	25034	0.80				
	Summit Cave	0.67	0.69	36805	0.71	1.40	0.91	19140	0.61				
	Switchback Cave	0.71	0.73	35960	0.69	1.42	0.92	25510	0.81				
	WA5201	0.44	0.45	37702	0.73	1.18	0.76	11405	0.36				
	Yellow Rock Crevice	0.89	0.91	15510	0.30	1.21	0.78	22197	0.71				
<i>Myotis grisescens</i>													
	AACS # FR17BT1c	0.89	0.92	12058	0.23	1.15	0.75	25642	0.82				
	AACS # FR17BT1h	0.89	0.91	12119	0.23	1.15	0.74	24800	0.79				
	Back o' Beyond Cave	0.68	0.70	37756	0.73	1.42	0.92	23532	0.75				
	Bald Scrapy Cave	0.89	0.92	16850	0.32	1.24	0.80	24016	0.77				
	Bennett Cave	0.79	0.81	27419	0.53	1.33	0.86	19538	0.62				

Species Site	RBHF_01		RBHF_02		RBHF_01		RBHF_02		RBHF_01		RBHF_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Bergren Cave	0.71	0.73	33827	0.65	1.38	0.90	20699	0.66				
Big Creek Cave	0.74	0.76	35437	0.68	1.44	0.93	24434	0.78				
Blagg Cave	0.74	0.75	29535	0.57	1.32	0.86	23219	0.74				
Blanchard Springs Caverns	0.90	0.92	16612	0.32	1.24	0.80	24033	0.77				
Blue Heaven Cave	0.72	0.74	36278	0.70	1.44	0.93	23232	0.74				
Bonanza Cave	0.83	0.85	19781	0.38	1.23	0.80	20760	0.66				
Bone Cave	0.59	0.60	38647	0.74	1.35	0.87	25200	0.80				
Brewer Cave	0.29	0.30	49773	0.96	1.26	0.82	10179	0.32				
Cave Mountain Cave	0.89	0.91	13793	0.27	1.17	0.76	23276	0.74				
Cave River Cave	0.85	0.88	21281	0.41	1.29	0.83	23461	0.75				
Cave Spring Cave	0.68	0.69	32377	0.62	1.32	0.85	20784	0.66				
Cave Springs Cave	0.21	0.22	45446	0.88	1.09	0.71	9495	0.30				
Corkscrew Cave	0.87	0.90	17655	0.34	1.24	0.80	27179	0.87				
Crane Cave	0.69	0.71	35971	0.69	1.41	0.91	24935	0.80				
Crystal Cave	0.63	0.65	46390	0.89	1.54	1.00	24295	0.78				
Crystal River Cave	0.60	0.62	44615	0.86	1.48	0.96	18374	0.59				
Denny Cave	0.65	0.67	39491	0.76	1.43	0.93	26859	0.86				
Devil's Den Cave	0.90	0.92	13748	0.26	1.19	0.77	22278	0.71				
Diamond Cave	0.85	0.87	22233	0.43	1.30	0.84	24589	0.78				
Dodd Cave	0.66	0.68	30733	0.59	1.27	0.82	21053	0.67				
Eckel Cave	0.84	0.86	21918	0.42	1.28	0.83	24277	0.77				
Elm Cave	0.77	0.79	25996	0.50	1.29	0.84	29159	0.93				
Fallout Cave	0.69	0.71	37511	0.72	1.43	0.93	24908	0.80				
Fitton Cave	0.83	0.85	22077	0.43	1.28	0.83	25547	0.82				
Flea Cave	0.82	0.84	23795	0.46	1.29	0.84	26994	0.86				
Foushee Cave	0.67	0.69	30683	0.59	1.28	0.83	19641	0.63				

Species Site	RBHF_01		RBHF_02		RBHF_01		RBHF_02		RBHF_01		RBHF_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Gunner Cave	0.95	0.98	7015	0.14	1.11	0.72	28085	0.90	0.95	0.98	28085	0.90
Gustafson Cave	0.91	0.93	11898	0.23	1.16	0.75	27257	0.87	0.91	0.93	27257	0.87
Hankin's Cave	0.73	0.74	28192	0.54	1.29	0.84	23464	0.75	0.73	0.74	23464	0.75
Hell Creek Cave	0.76	0.78	26602	0.51	1.29	0.84	25272	0.81	0.76	0.78	25272	0.81
Hidden Spring Cave	0.96	0.99	6197	0.12	1.10	0.72	26426	0.84	0.96	0.99	26426	0.84
Huffman Cave	0.58	0.59	41353	0.80	1.39	0.90	20079	0.64	0.58	0.59	20079	0.64
Hurricane River Cave	0.61	0.62	36056	0.69	1.32	0.85	18913	0.60	0.61	0.62	18913	0.60
Indian Creek Cave	0.88	0.90	17212	0.33	1.23	0.80	23964	0.76	0.88	0.90	23964	0.76
Joe Bright Cave	0.83	0.85	23524	0.45	1.30	0.84	23393	0.75	0.83	0.85	23393	0.75
John Eddings Cave	0.78	0.80	26830	0.52	1.32	0.86	29507	0.94	0.78	0.80	29507	0.94
Jones Cave	0.62	0.63	41544	0.80	1.43	0.93	21362	0.68	0.62	0.63	21362	0.68
Land's End Cave	0.39	0.40	48184	0.93	1.33	0.86	15748	0.50	0.39	0.40	15748	0.50
Little Bear Cave	0.84	0.86	24523	0.47	1.33	0.86	31330	1.00	0.84	0.86	31330	1.00
Logan Cave	0.54	0.55	44738	0.86	1.41	0.92	19687	0.63	0.54	0.55	19687	0.63
Major's Cave	0.26	0.27	49025	0.94	1.21	0.79	8935	0.29	0.26	0.27	8935	0.29
Marble Falls Cave	0.78	0.80	29276	0.56	1.37	0.89	21962	0.70	0.78	0.80	21962	0.70
Miner's Cave	0.78	0.80	29411	0.57	1.37	0.89	19331	0.62	0.78	0.80	19331	0.62
Morris Cave	0.82	0.85	25555	0.49	1.34	0.87	23558	0.75	0.82	0.85	23558	0.75
Nesbitt Spring Cave	0.81	0.83	25150	0.48	1.31	0.85	24742	0.79	0.81	0.83	24742	0.79
Norfolk Bat Cave	0.74	0.76	34328	0.66	1.42	0.92	22848	0.73	0.74	0.76	22848	0.73
Old Joe Cave	0.79	0.81	29553	0.57	1.38	0.89	23009	0.73	0.79	0.81	23009	0.73
Optimus Cave	0.89	0.91	15756	0.30	1.21	0.79	23301	0.74	0.89	0.91	23301	0.74
Ozark Acres Cave	0.81	0.83	26165	0.50	1.33	0.86	24071	0.77	0.81	0.83	24071	0.77
Ozark Mystery Cave	0.89	0.91	17196	0.33	1.24	0.80	24904	0.79	0.89	0.91	24904	0.79
Pentrance Cave	0.90	0.92	15090	0.29	1.21	0.79	24474	0.78	0.90	0.92	24474	0.78
Peter Cave	0.67	0.68	37863	0.73	1.41	0.92	23422	0.75	0.67	0.68	23422	0.75
Pigeon Roost Cave	0.65	0.67	24294	0.47	1.14	0.74	20567	0.66	0.65	0.67	20567	0.66

Species	Site	RBHF_01		RBHF_02		RBHF_01		RBHF_02		RBHF_01		RBHF_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Rory Cave	0.72	0.74	28347	0.55	1.28	0.83	23598	0.75				
	Sherfield Cave	0.90	0.93	13679	0.26	1.19	0.77	24062	0.77				
	Shirley Bat Cave	0.82	0.84	22887	0.44	1.28	0.83	27698	0.88				
	Silver Valley Mines	0.28	0.29	51907	1.00	1.29	0.84	10830	0.35				
	Spanish Piano Cave	0.89	0.92	15351	0.30	1.21	0.79	23084	0.74				
	Still Cave	0.76	0.78	25295	0.49	1.26	0.82	19421	0.62				
	Summer Cave	0.94	0.96	9680	0.19	1.15	0.74	26830	0.86				
	Villines Spring Cave	0.86	0.88	17461	0.34	1.22	0.79	23056	0.74				
	War Eagle Cave	0.51	0.52	48854	0.94	1.46	0.95	19498	0.62				
	War Eagle Cavern	0.68	0.69	27624	0.53	1.23	0.80	22261	0.71				
	Wet Cave	0.59	0.61	45047	0.87	1.48	0.96	21236	0.68				
	Wolf Creek Cave	0.90	0.93	14788	0.28	1.21	0.79	22734	0.73				
<i>Myotis leibii</i>													
	Amphitheater Cave	0.96	0.98	6822	0.13	1.11	0.72	26212	0.84				
	Bone Cave	0.59	0.60	38647	0.74	1.35	0.87	25200	0.80				
	Cave Mountain Cave	0.89	0.91	13793	0.27	1.17	0.76	23276	0.74				
<i>Myotis sodalis</i>													
	AACS # FR17BT1g	0.89	0.91	12182	0.23	1.15	0.75	24895	0.79				
	AACS # FR17BT1h	0.89	0.91	12119	0.23	1.15	0.74	24800	0.79				
	Amphitheater Cave	0.96	0.98	6822	0.13	1.11	0.72	26212	0.84				
	Barkshed Saltpeter Cave	0.96	0.98	5475	0.11	1.09	0.71	27120	0.87				
	Bat Cave	0.90	0.93	13522	0.26	1.19	0.77	28421	0.91				
	Big-eared Bat Crevice	0.90	0.92	14327	0.28	1.20	0.78	20804	0.66				
	Biology Cave	0.95	0.98	6544	0.13	1.10	0.72	24901	0.79				
	Blanchard Springs Caverns	0.90	0.92	16612	0.32	1.24	0.80	24033	0.77				
	Cave Mountain Cave	0.89	0.91	13793	0.27	1.17	0.76	23276	0.74				



Species	Site	RBHF_01		RBHF_02		RBHF_01		RBHF_02		RBHF_01		RBHF_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Cave Springs Cave	0.21	0.22	45446	0.88	1.09	0.71	9495	0.30				
	Corkscrew Cave	0.87	0.90	17655	0.34	1.24	0.80	27179	0.87				
	Cushman Cave	0.63	0.64	35150	0.68	1.32	0.86	20541	0.66				
	Denny Cave	0.65	0.67	39491	0.76	1.43	0.93	26859	0.86				
	Devil's Den Cave	0.90	0.92	13748	0.26	1.19	0.77	22278	0.71				
	Dodd Cave	0.66	0.68	30733	0.59	1.27	0.82	21053	0.67				
	Elm Cave	0.77	0.79	25996	0.50	1.29	0.84	29159	0.93				
	Fitton Cave	0.83	0.85	22077	0.43	1.28	0.83	25547	0.82				
	Flea Cave	0.82	0.84	23795	0.46	1.29	0.84	26994	0.86				
	Gustafson Cave	0.91	0.93	11898	0.23	1.16	0.75	27257	0.87				
	Hankin's Cave	0.73	0.74	28192	0.54	1.29	0.84	23464	0.75				
	Hidden Spring Cave	0.96	0.99	6197	0.12	1.10	0.72	26426	0.84				
	Hurricane River Cave	0.61	0.62	36056	0.69	1.32	0.85	18913	0.60				
	Indian Creek Cave	0.88	0.90	17212	0.33	1.23	0.80	23964	0.76				
	Logan Cave	0.54	0.55	44738	0.86	1.41	0.92	19687	0.63				
	Marble Falls Cave	0.78	0.80	29276	0.56	1.37	0.89	21962	0.70				
	Morris Cave	0.82	0.85	25555	0.49	1.34	0.87	23558	0.75				
	Nichol's Cave	0.70	0.72	32866	0.63	1.35	0.88	18285	0.58				
	Sherfield Cave	0.90	0.93	13679	0.26	1.19	0.77	24062	0.77				
	War Eagle Cavern	0.68	0.69	27624	0.53	1.23	0.80	22261	0.71				
	Wolf Creek Cave	0.90	0.93	14788	0.28	1.21	0.79	22734	0.73				

Table Appendix D-2. Index values and scaled scores for RBHR\_02 Raw through RVIA Scaled.

Species	Site	RBHR_02		RBHR_02		RBHR		RBH		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Corynorhinus townsendii ingens</i>													
	AACS # CW2307	0.90	0.91	1.51	0.79	1.57	0.85	5938	0.96	0.04	0.65		
	AACS # CW2318	0.83	0.84	1.41	0.74	1.53	0.83	6932	0.95	0.04	0.62		
	AACS # CW2337	0.90	0.91	1.51	0.79	1.57	0.85	5889	0.96	0.04	0.65		
	AACS # CW2339	0.90	0.91	1.49	0.78	1.56	0.84	5796	0.96	0.04	0.65		
	AACS # CW2365	0.91	0.92	1.52	0.79	1.57	0.85	5768	0.96	0.04	0.65		
	AACS # CW2367	0.91	0.92	1.52	0.80	1.58	0.86	5779	0.96	0.04	0.65		
	AACS # CW2385	0.86	0.87	1.45	0.76	1.56	0.85	7165	0.95	0.04	0.63		
	AACS # CW23BT1	0.91	0.92	1.52	0.79	1.57	0.85	5635	0.96	0.04	0.66		
	AACS # CW29BT2	0.97	0.98	1.71	0.90	1.61	0.87	5151	0.96	0.04	0.65		
	AACS # CW29BT3	0.97	0.98	1.64	0.86	1.58	0.86	5033	0.96	0.04	0.66		
	AACS # FR17BT1a	0.94	0.95	1.74	0.91	1.65	0.90	3965	0.97	0.04	0.64		
	AACS # FR17BT1b	0.94	0.95	1.69	0.89	1.63	0.89	3966	0.97	0.04	0.65		
	AACS # FR17BT1g	0.94	0.95	1.74	0.91	1.65	0.90	4088	0.97	0.04	0.64		
	AACS # FR17BT1h	0.94	0.95	1.74	0.91	1.65	0.89	3966	0.97	0.04	0.64		
	AACS # FR19BT1a	0.95	0.96	1.75	0.92	1.65	0.89	8344	0.94	0.04	0.61		
	AACS # FR28BT2a,b	0.99	1.00	1.75	0.92	1.60	0.87	3215	0.98	0.03	0.69		
	Bassett Cave	0.79	0.80	1.44	0.75	1.62	0.88	16535	0.88	0.05	0.51		
	Bat Cave	0.92	0.93	1.84	0.96	1.73	0.94	4212	0.97	0.04	0.61		
	Big-eared Bat Crevice	0.94	0.95	1.61	0.84	1.62	0.88	6351	0.95	0.04	0.60		
	Blue Heaven Cave	0.79	0.80	1.54	0.81	1.74	0.94	7821	0.94	0.05	0.56		
	Bradley Shelter	0.52	0.53	1.00	0.52	1.22	0.66	24474	0.82	0.06	0.47		
	Brown Cave	0.78	0.78	1.51	0.79	1.74	0.94	7782	0.94	0.05	0.57		
	Charley One Ridge Cave	0.85	0.86	1.59	0.83	1.71	0.93	7518	0.94	0.05	0.56		
	Coon Cave	0.95	0.96	1.88	0.98	1.75	0.95	3917	0.97	0.04	0.62		
	CW11BT1	0.87	0.88	1.58	0.83	1.62	0.88	9218	0.93	0.04	0.61		

Species	Site	RBHR_02		RBHR		RBH		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Delap Cave	0.50	0.51	0.87	0.46	1.22	0.66	18877	0.86	0.05	0.52
	Devil's Den Cave	0.94	0.95	1.66	0.87	1.63	0.89	6494	0.95	0.04	0.60
	Devil's Icebox Cave	0.94	0.95	1.66	0.87	1.64	0.89	6583	0.95	0.04	0.60
	Elm Cave	0.85	0.86	1.79	0.94	1.77	0.96	6371	0.95	0.04	0.59
	FR17BT2	0.96	0.97	1.69	0.89	1.60	0.87	3240	0.98	0.04	0.67
	Garrett Hollow Cave	0.88	0.89	1.48	0.78	1.56	0.84	5348	0.96	0.04	0.64
	Goard Cave	0.65	0.66	1.26	0.66	1.57	0.85	11682	0.91	0.05	0.51
	Hewlitt / Ezel Cave(s)	0.54	0.54	1.05	0.55	1.24	0.67	24997	0.81	0.06	0.47
	Imp's Leap Crevice	0.94	0.95	1.66	0.87	1.63	0.89	6223	0.95	0.04	0.60
	Marble Falls Cave	0.85	0.86	1.56	0.82	1.70	0.92	7883	0.94	0.05	0.56
	Mitchell Cave	0.75	0.75	1.61	0.84	1.77	0.96	7480	0.94	0.05	0.56
	Morning Star Mine # 15	0.88	0.89	1.77	0.92	1.70	0.92	7063	0.95	0.05	0.59
	Reed Cave	0.87	0.87	1.67	0.88	1.76	0.95	10276	0.92	0.05	0.54
	Summit Cave	0.68	0.69	1.30	0.68	1.59	0.86	12554	0.91	0.05	0.51
	Switchback Cave	0.80	0.81	1.62	0.85	1.77	0.96	5456	0.96	0.04	0.60
	WA5201	0.50	0.51	0.87	0.46	1.22	0.66	18877	0.86	0.05	0.52
	Yellow Rock Crevice	0.93	0.94	1.65	0.86	1.64	0.89	6713	0.95	0.04	0.59
<i>Myotis grisescens</i>											
	AACS # FR17BT1c	0.94	0.95	1.77	0.93	1.67	0.90	3986	0.97	0.04	0.64
	AACS # FR17BT1h	0.94	0.95	1.74	0.91	1.65	0.89	3966	0.97	0.04	0.64
	Back o' Beyond Cave	0.77	0.78	1.53	0.80	1.72	0.93	4848	0.96	0.04	0.62
	Bald Scrapy Cave	0.91	0.92	1.69	0.88	1.68	0.91	6921	0.95	0.05	0.57
	Bennett Cave	0.84	0.85	1.47	0.77	1.63	0.88	12694	0.91	0.06	0.44
	Bergren Cave	0.80	0.81	1.47	0.77	1.66	0.90	5013	0.96	0.05	0.53
	Big Creek Cave	0.81	0.81	1.59	0.83	1.77	0.96	4970	0.96	0.04	0.63
	Blagg Cave	0.76	0.77	1.51	0.79	1.64	0.89	5413	0.96	0.05	0.57
	Blanchard Springs	0.91	0.92	1.68	0.88	1.68	0.91	7286	0.95	0.05	0.58

Species	Site	RBHR_02		RBHR		RBH		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Caverns										
	Blue Heaven Cave	0.79	0.80	1.54	0.81	1.74	0.94	7821	0.94	0.05	0.56
	Bonanza Cave	0.86	0.87	1.53	0.80	1.60	0.86	10630	0.92	0.05	0.53
	Bone Cave	0.69	0.70	1.50	0.78	1.65	0.90	24786	0.82	0.06	0.47
	Brewer Cave	0.36	0.36	0.68	0.36	1.17	0.64	8378	0.94	0.05	0.58
	Cave Mountain Cave	0.91	0.92	1.67	0.87	1.63	0.88	2347	0.98	0.03	0.72
	Cave River Cave	0.85	0.86	1.61	0.84	1.67	0.91	6744	0.95	0.05	0.58
	Cave Spring Cave	0.73	0.73	1.40	0.73	1.58	0.86	18469	0.86	0.05	0.57
	Cave Springs Cave	0.31	0.32	0.62	0.32	1.03	0.56	134411	0.00	0.11	0.00
	Corkscrew Cave	0.90	0.91	1.78	0.93	1.73	0.94	5539	0.96	0.04	0.62
	Crane Cave	0.79	0.79	1.59	0.83	1.74	0.94	5242	0.96	0.04	0.61
	Crystal Cave	0.70	0.71	1.48	0.78	1.77	0.96	60465	0.55	0.10	0.10
	Crystal River Cave	0.64	0.65	1.24	0.65	1.60	0.87	8190	0.94	0.05	0.53
	Denny Cave	0.75	0.75	1.61	0.84	1.77	0.96	7480	0.94	0.05	0.56
	Devil's Den Cave	0.94	0.95	1.66	0.87	1.63	0.89	6494	0.95	0.04	0.60
	Diamond Cave	0.86	0.87	1.66	0.87	1.71	0.92	4922	0.96	0.04	0.65
	Dodd Cave	0.76	0.76	1.44	0.75	1.57	0.85	6278	0.95	0.04	0.62
	Eckel Cave	0.84	0.84	1.62	0.85	1.67	0.91	9824	0.93	0.07	0.37
	Elm Cave	0.85	0.86	1.79	0.94	1.77	0.96	6371	0.95	0.04	0.59
	Fallout Cave	0.78	0.79	1.59	0.83	1.76	0.95	5236	0.96	0.04	0.60
	Fitton Cave	0.92	0.93	1.74	0.91	1.74	0.94	6073	0.95	0.04	0.62
	Flea Cave	0.85	0.86	1.72	0.90	1.73	0.94	8161	0.94	0.05	0.58
	Foushee Cave	0.78	0.78	1.41	0.74	1.56	0.85	17478	0.87	0.05	0.55
	Gunner Cave	0.97	0.97	1.87	0.98	1.69	0.92	3462	0.97	0.04	0.62
	Gustafson Cave	0.93	0.94	1.81	0.95	1.70	0.92	4229	0.97	0.05	0.56
	Hankin's Cave	0.75	0.76	1.51	0.79	1.62	0.88	5611	0.96	0.04	0.60
	Hell Creek Cave	0.82	0.83	1.63	0.85	1.69	0.92	7658	0.94	0.05	0.58

Species	Site	RBHR_02		RBHR		RBH		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Hidden Spring Cave	0.98	0.99	1.83	0.96	1.67	0.90	4566	0.97	0.05	0.57
	Huffman Cave	0.70	0.71	1.35	0.71	1.60	0.87	27133	0.80	0.07	0.38
	Hurricane River Cave	0.64	0.64	1.25	0.65	1.50	0.82	5913	0.96	0.04	0.63
	Indian Creek Cave	0.91	0.92	1.68	0.88	1.68	0.91	4845	0.96	0.04	0.64
	Joe Bright Cave	0.85	0.86	1.61	0.84	1.68	0.91	6863	0.95	0.05	0.59
	John Eddings Cave	0.86	0.86	1.81	0.94	1.80	0.97	5692	0.96	0.04	0.61
	Jones Cave	0.66	0.67	1.35	0.71	1.63	0.89	4537	0.97	0.04	0.62
	Land's End Cave	0.54	0.55	1.05	0.55	1.41	0.76	0	0.00	0.00	0.00
	Little Bear Cave	0.88	0.89	1.89	0.99	1.84	1.00	6463	0.95	0.04	0.60
	Logan Cave	0.59	0.60	1.23	0.64	1.55	0.84	31431	0.77	0.07	0.37
	Major's Cave	0.30	0.31	0.59	0.31	1.10	0.59	26637	0.80	0.06	0.45
	Marble Falls Cave	0.85	0.86	1.56	0.82	1.70	0.92	7883	0.94	0.05	0.56
	Miner's Cave	0.84	0.84	1.46	0.76	1.65	0.89	12711	0.91	0.06	0.45
	Morris Cave	0.79	0.80	1.55	0.81	1.68	0.91	5379	0.96	0.05	0.50
	Nesbitt Spring Cave	0.84	0.85	1.64	0.86	1.70	0.92	7626	0.94	0.04	0.59
	Norfolk Bat Cave	0.82	0.83	1.56	0.81	1.73	0.94	11297	0.92	0.06	0.48
	Old Joe Cave	0.84	0.85	1.58	0.83	1.72	0.93	8412	0.94	0.06	0.49
	Optimus Cave	0.89	0.90	1.64	0.86	1.64	0.89	6164	0.95	0.05	0.56
	Ozark Acres Cave	0.80	0.80	1.57	0.82	1.68	0.91	9002	0.93	0.06	0.43
	Ozark Mystery Cave	0.90	0.91	1.70	0.89	1.69	0.92	7858	0.94	0.05	0.56
	Pentrance Cave	0.91	0.92	1.70	0.89	1.67	0.91	3469	0.97	0.03	0.71
	Peter Cave	0.76	0.77	1.52	0.80	1.71	0.93	3205	0.98	0.04	0.68
	Pigeon Roost Cave	0.80	0.81	1.46	0.77	1.50	0.81	25901	0.81	0.08	0.30
	Rory Cave	0.78	0.79	1.55	0.81	1.64	0.89	6795	0.95	0.04	0.60
	Sherfield Cave	0.92	0.92	1.69	0.89	1.65	0.90	2556	0.98	0.03	0.73
	Shirley Bat Cave	0.90	0.91	1.79	0.94	1.76	0.96	7610	0.94	0.05	0.52
	Silver Valley Mines	0.36	0.36	0.71	0.37	1.20	0.65	25912	0.81	0.06	0.44

Species	Site	RBHR_02		RBHR		RBH		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Spanish Piano Cave	0.89	0.90	1.64	0.86	1.64	0.89	3838	0.97	0.03	0.70
	Still Cave	0.81	0.82	1.44	0.75	1.57	0.85	16979	0.87	0.06	0.49
	Summer Cave	0.93	0.94	1.80	0.94	1.68	0.91	3083	0.98	0.04	0.63
	Villines Spring Cave	0.90	0.91	1.64	0.86	1.65	0.89	2774	0.98	0.03	0.71
	War Eagle Cave	0.62	0.63	1.25	0.65	1.60	0.87	7899	0.94	0.05	0.57
	War Eagle Cavern	0.78	0.79	1.50	0.78	1.58	0.85	16349	0.88	0.07	0.36
	Wet Cave	0.70	0.70	1.38	0.72	1.68	0.91	13816	0.90	0.05	0.53
	WolfCreek Cave	0.92	0.93	1.66	0.87	1.65	0.89	3458	0.97	0.03	0.71
<i>Myotis leibii</i>											
	Amphitheater Cave	0.97	0.98	1.82	0.95	1.67	0.90	5267	0.96	0.05	0.57
	Bone Cave	0.69	0.70	1.50	0.78	1.65	0.90	24786	0.82	0.06	0.47
	Cave Mountain Cave	0.91	0.92	1.67	0.87	1.63	0.88	2347	0.98	0.03	0.72
<i>Myotis sodalis</i>											
	AACS # FR17BT1g	0.94	0.95	1.74	0.91	1.65	0.90	4088	0.97	0.04	0.64
	AACS # FR17BT1h	0.94	0.95	1.74	0.91	1.65	0.89	3966	0.97	0.04	0.64
	Amphitheater Cave	0.97	0.98	1.82	0.95	1.67	0.90	5267	0.96	0.05	0.57
	Barkshed Saltpetter Cave	0.98	0.99	1.86	0.97	1.67	0.91	3945	0.97	0.05	0.58
	Bat Cave	0.92	0.93	1.84	0.96	1.73	0.94	4212	0.97	0.04	0.61
	Big-eared Bat Crevice	0.94	0.95	1.61	0.84	1.62	0.88	6351	0.95	0.04	0.60
	Biology Cave	0.97	0.98	1.77	0.93	1.64	0.89	5075	0.96	0.05	0.57
Blanchard Springs											
	Caverns	0.91	0.92	1.68	0.88	1.68	0.91	7286	0.95	0.05	0.58
	Cave Mountain Cave	0.91	0.92	1.67	0.87	1.63	0.88	2347	0.98	0.03	0.72
	Cave Springs Cave	0.31	0.32	0.62	0.32	1.03	0.56	134411	0.00	0.11	0.00
	Corkscrew Cave	0.90	0.91	1.78	0.93	1.73	0.94	5539	0.96	0.04	0.62
	Cushman Cave	0.63	0.64	1.29	0.68	1.53	0.83	9247	0.93	0.05	0.57
	Denny Cave	0.75	0.75	1.61	0.84	1.77	0.96	7480	0.94	0.05	0.56

Species	Site	RBHR_02		RBHR		RBH		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Devil's Den Cave	0.94	0.95	1.66	0.87	1.63	0.89	6494	0.95	0.04	0.60
	Dodd Cave	0.76	0.76	1.44	0.75	1.57	0.85	6278	0.95	0.04	0.62
	Elm Cave	0.85	0.86	1.79	0.94	1.77	0.96	6371	0.95	0.04	0.59
	Fitton Cave	0.92	0.93	1.74	0.91	1.74	0.94	6073	0.95	0.04	0.62
	Flea Cave	0.85	0.86	1.72	0.90	1.73	0.94	8161	0.94	0.05	0.58
	Gustafson Cave	0.93	0.94	1.81	0.95	1.70	0.92	4229	0.97	0.05	0.56
	Hankin's Cave	0.75	0.76	1.51	0.79	1.62	0.88	5611	0.96	0.04	0.60
	Hidden Spring Cave	0.98	0.99	1.83	0.96	1.67	0.90	4566	0.97	0.05	0.57
	Hurricane River Cave	0.64	0.64	1.25	0.65	1.50	0.82	5913	0.96	0.04	0.63
	Indian Creek Cave	0.91	0.92	1.68	0.88	1.68	0.91	4845	0.96	0.04	0.64
	Logan Cave	0.59	0.60	1.23	0.64	1.55	0.84	31431	0.77	0.07	0.37
	Marble Falls Cave	0.85	0.86	1.56	0.82	1.70	0.92	7883	0.94	0.05	0.56
	Morris Cave	0.79	0.80	1.55	0.81	1.68	0.91	5379	0.96	0.05	0.50
	Nicholl's Cave	0.72	0.73	1.31	0.69	1.56	0.85	28440	0.79	0.06	0.47
	Sherfield Cave	0.92	0.92	1.69	0.89	1.65	0.90	2556	0.98	0.03	0.73
	War Eagle Cavern	0.78	0.79	1.50	0.78	1.58	0.85	16349	0.88	0.07	0.36
	Wolf Creek Cave	0.92	0.93	1.66	0.87	1.65	0.89	3458	0.97	0.03	0.71

Table Appendix D-3. Index values and scaled scores for RVIX Raw through THREAT Scaled.

Species	Site	RVIX	RVIX	RV I	RV I	THREAT	THREAT
		Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Corynorhinus townsendii ingens</i>							
	AACS # CW2307	0.95	0.57	2.17	0.81	1.66	0.88
	AACS # CW2318	0.07	0.04	1.60	0.60	1.43	0.75
	AACS # CW2337	1.16	0.69	2.30	0.86	1.71	0.90
	AACS # CW2339	1.09	0.65	2.26	0.84	1.68	0.89
	AACS # CW2365	1.22	0.72	2.33	0.87	1.72	0.91
	AACS # CW2367	1.26	0.75	2.35	0.88	1.73	0.92
	AACS # CW2385	0.25	0.15	1.72	0.64	1.49	0.79
	AACS # CW23BT1	0.94	0.56	2.18	0.81	1.66	0.88
	AACS # CW29BT2	1.24	0.73	2.34	0.87	1.75	0.92
	AACS # CW29BT3	1.38	0.82	2.44	0.91	1.76	0.93
	AACS # FR17BT1a	0.33	0.20	1.81	0.67	1.57	0.83
	AACS # FR17BT1b	0.12	0.07	1.69	0.63	1.51	0.80
	AACS # FR17BT1g	0.36	0.22	1.83	0.68	1.58	0.83
	AACS # FR17BT1h	0.32	0.19	1.80	0.67	1.57	0.83
	AACS # FR19BT1a	0.40	0.24	1.79	0.66	1.56	0.82
	AACS # FR28BT2a,b	0.32	0.19	1.85	0.69	1.56	0.82
	Bassett Cave	0.25	0.15	1.54	0.57	1.45	0.77
	Bat Cave	0.64	0.38	1.96	0.73	1.66	0.88
	Big-eared Bat Crevice	0.21	0.12	1.67	0.62	1.50	0.79
	Blue Heaven Cave	0.10	0.06	1.55	0.58	1.52	0.80
	Bradley Shelter	0.46	0.27	1.56	0.58	1.24	0.66
	Brown Cave	0.36	0.21	1.72	0.64	1.59	0.84
	Charley One Ridge Cave	0.79	0.47	1.97	0.73	1.66	0.88
	Coon Cave	0.30	0.18	1.77	0.66	1.61	0.85
	CW11BT1	0.95	0.56	2.11	0.78	1.66	0.88



Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Delap Cave	0.28	0.17	1.55	0.58	1.24	0.65
	Devil's Den Cave	0.20	0.12	1.66	0.62	1.50	0.79
	Devil's Icebox Cave	0.16	0.10	1.64	0.61	1.50	0.79
	Elm Cave	0.08	0.05	1.59	0.59	1.55	0.82
	FR17BT2	0.83	0.49	2.14	0.79	1.66	0.88
	Garrett Hollow Cave	0.78	0.46	2.06	0.77	1.61	0.85
	Goard Cave	0.12	0.07	1.49	0.56	1.41	0.74
	Hewlitt / Ezel Cave(s)	0.69	0.41	1.69	0.63	1.30	0.69
	Imp's Leap Crevice	0.04	0.02	1.57	0.58	1.47	0.78
	Marble Falls Cave	0.33	0.20	1.70	0.63	1.55	0.82
	Mitchell Cave	0.32	0.19	1.69	0.63	1.59	0.84
	Morning Star Mine # 15	0.14	0.09	1.62	0.60	1.53	0.81
	Reed Cave	0.26	0.15	1.62	0.60	1.56	0.82
	Summit Cave	0.23	0.13	1.55	0.58	1.44	0.76
	Switchback Cave	0.63	0.37	1.93	0.72	1.68	0.88
	WA5201	0.28	0.17	1.55	0.58	1.24	0.65
	Yellow Rock Crevice	0.32	0.19	1.73	0.64	1.54	0.81
<i>Myotis grisescens</i>							
	AACS # FR17BT1c	0.14	0.09	1.70	0.63	1.54	0.81
	AACS # FR17BT1h	0.32	0.19	1.80	0.67	1.57	0.83
	Back o' Beyond Cave	0.44	0.26	1.84	0.69	1.62	0.85
	Bald Scrappy Cave	0.63	0.37	1.89	0.70	1.62	0.85
	Bennett Cave	0.23	0.14	1.49	0.55	1.44	0.76
	Bergren Cave	0.04	0.02	1.52	0.57	1.47	0.77
	Big Creek Cave	0.12	0.07	1.67	0.62	1.58	0.83
	Blagg Cave	0.47	0.28	1.81	0.67	1.56	0.83
	Blanchard Springs	0.19	0.11	1.64	0.61	1.52	0.80

Species Site	RVIX		RVI		THREAT	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Caverns						
Blue Heaven Cave	0.10	0.06	1.55	0.58	1.52	0.80
Bonanza Cave	1.38	0.82	2.26	0.84	1.71	0.90
Bone Cave	0.44	0.26	1.55	0.58	1.47	0.78
Brewer Cave	0.16	0.09	1.61	0.60	1.23	0.65
Cave Mountain Cave	0.05	0.03	1.73	0.64	1.53	0.81
Cave River Cave	0.79	0.47	2.00	0.74	1.65	0.87
Cave Spring Cave	0.30	0.18	1.61	0.60	1.46	0.77
Cave Springs Cave	0.13	0.08	0.08	0.03	0.59	0.31
Corkscrew Cave	0.41	0.24	1.82	0.68	1.61	0.85
Crane Cave	0.60	0.36	1.92	0.72	1.66	0.88
Crystal Cave	0.04	0.02	0.67	0.25	1.21	0.64
Crystal River Cave	0.07	0.04	1.51	0.56	1.43	0.75
Denny Cave	0.32	0.19	1.69	0.63	1.59	0.84
Devil's Den Cave	0.20	0.12	1.66	0.62	1.50	0.79
Diamond Cave	0.19	0.11	1.73	0.64	1.57	0.83
Dodd Cave	0.15	0.09	1.66	0.62	1.47	0.78
Eckel Cave	0.27	0.16	1.46	0.54	1.45	0.77
Elm Cave	0.08	0.05	1.59	0.59	1.55	0.82
Fallout Cave	0.55	0.32	1.89	0.70	1.66	0.87
Fitton Cave	0.07	0.04	1.61	0.60	1.54	0.81
Flea Cave	0.18	0.11	1.63	0.60	1.54	0.82
Foushee Cave	0.31	0.18	1.60	0.60	1.44	0.76
Gunner Cave	0.24	0.15	1.74	0.65	1.56	0.83
Gustafson Cave	0.23	0.14	1.66	0.62	1.54	0.81
Hankin's Cave	0.00	0.00	1.56	0.58	1.46	0.77
Hell Creek Cave	0.77	0.46	1.98	0.74	1.65	0.87

Species Site	RVIX		RVI		THREAT	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Hidden Spring Cave	0.07	0.04	1.58	0.59	1.49	0.79
Huffman Cave	0.04	0.02	1.20	0.45	1.32	0.70
Hurricane River Cave	0.06	0.03	1.62	0.60	1.42	0.75
Indian Creek Cave	0.93	0.55	2.16	0.80	1.71	0.91
Joe Bright Cave	0.43	0.25	1.79	0.67	1.58	0.83
John Eddings Cave	0.69	0.41	1.97	0.73	1.71	0.90
Jones Cave	0.14	0.08	1.67	0.62	1.51	0.80
Land's End Cave	0.00	0.00	0.00	0.00	0.00	0.00
Little Bear Cave	0.06	0.04	1.59	0.59	1.59	0.84
Logan Cave	0.16	0.10	1.24	0.46	1.30	0.69
Major's Cave	0.03	0.02	1.27	0.47	1.07	0.56
Marble Falls Cave	0.33	0.20	1.70	0.63	1.55	0.82
Miner's Cave	0.25	0.15	1.50	0.56	1.45	0.77
Morris Cave	0.54	0.32	1.78	0.66	1.57	0.83
Nesbitt Spring Cave	0.27	0.16	1.70	0.63	1.55	0.82
Norfolk Bat Cave	0.09	0.05	1.45	0.54	1.48	0.78
Old Joe Cave	0.23	0.14	1.56	0.58	1.51	0.80
Optimus Cave	0.07	0.04	1.55	0.58	1.47	0.77
Ozark Acres Cave	0.16	0.10	1.46	0.54	1.46	0.77
Ozark Mystery Cave	0.51	0.31	1.81	0.67	1.59	0.84
Pentrance Cave	1.55	0.92	2.60	0.97	1.88	0.99
Peter Cave	0.11	0.06	1.72	0.64	1.56	0.83
Pigeon Roost Cave	0.92	0.55	1.65	0.62	1.43	0.75
Rory Cave	0.18	0.11	1.66	0.62	1.51	0.80
Sherfield Cave	0.13	0.08	1.79	0.66	1.56	0.82
Shirley Bat Cave	0.11	0.06	1.53	0.57	1.52	0.80
Silver Valley Mines	0.21	0.12	1.37	0.51	1.16	0.61

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Spanish Piano Cave	0.16	0.10	1.76	0.66	1.54	0.82
	Still Cave	0.17	0.10	1.47	0.55	1.40	0.74
	Summer Cave	0.82	0.49	2.10	0.78	1.69	0.89
	Villines Spring Cave	0.41	0.24	1.93	0.72	1.61	0.85
	War Eagle Cave	0.19	0.11	1.62	0.60	1.47	0.78
	War Eagle Cavern	0.04	0.02	1.26	0.47	1.32	0.70
	Wet Cave	0.45	0.27	1.70	0.63	1.54	0.81
	Wolf Creek Cave	1.67	0.99	2.68	1.00	1.89	1.00
<i>Myotis leibii</i>							
	Amphitheater Cave	0.37	0.22	1.75	0.65	1.55	0.82
	Bone Cave	0.44	0.26	1.55	0.58	1.47	0.78
	Cave Mountain Cave	0.05	0.03	1.73	0.64	1.53	0.81
<i>Myotis sodalis</i>							
	AACS # FR17BT1g	0.36	0.22	1.83	0.68	1.58	0.83
	AACS # FR17BT1h	0.32	0.19	1.80	0.67	1.57	0.83
	Amphitheater Cave	0.37	0.22	1.75	0.65	1.55	0.82
	Barkshed Salt peter Cave	0.30	0.18	1.73	0.64	1.55	0.82
	Bat Cave	0.64	0.38	1.96	0.73	1.66	0.88
	Big-eared Bat Crevice	0.21	0.12	1.67	0.62	1.50	0.79
	Biology Cave	0.03	0.02	1.55	0.58	1.46	0.77
	Blanchard Springs Caverns	0.19	0.11	1.64	0.61	1.52	0.80
	Cave Mountain Cave	0.05	0.03	1.73	0.64	1.53	0.81
	Cave Springs Cave	0.13	0.08	0.08	0.03	0.59	0.31
	Corkscrew Cave	0.41	0.24	1.82	0.68	1.61	0.85
	Cushman Cave	0.26	0.16	1.66	0.62	1.45	0.76
	Denny Cave	0.32	0.19	1.69	0.63	1.59	0.84

Species Site	RVIX		RVI		THREAT	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Devil's Den Cave	0.20	0.12	1.66	0.62	1.50	0.79
Dodd Cave	0.15	0.09	1.66	0.62	1.47	0.78
Elm Cave	0.08	0.05	1.59	0.59	1.55	0.82
Fitton Cave	0.07	0.04	1.61	0.60	1.54	0.81
Flea Cave	0.18	0.11	1.63	0.60	1.54	0.82
Gustafson Cave	0.23	0.14	1.66	0.62	1.54	0.81
Hankin's Cave	0.00	0.00	1.56	0.58	1.46	0.77
Hidden Spring Cave	0.07	0.04	1.58	0.59	1.49	0.79
Hurricane River Cave	0.06	0.03	1.62	0.60	1.42	0.75
Indian Creek Cave	0.93	0.55	2.16	0.80	1.71	0.91
Logan Cave	0.16	0.10	1.24	0.46	1.30	0.69
Marble Falls Cave	0.33	0.20	1.70	0.63	1.55	0.82
Morris Cave	0.54	0.32	1.78	0.66	1.57	0.83
Nicholl's Cave	0.24	0.14	1.40	0.52	1.36	0.72
Sherfield Cave	0.13	0.08	1.79	0.66	1.56	0.82
War Eagle Cavern	0.04	0.02	1.26	0.47	1.32	0.70
Wolf Creek Cave	1.67	0.99	2.68	1.00	1.89	1.00

APPENDIX E. Raw index values and scaled scores for components of the Visitation Risk Model, Water Quality and Quantity Risk Model, Groundwater Vulnerability Model, Groundwater Sensitivity Model, and overall Aquatic Community Threat Model for each aquatic cave species population at each site. Scaled values are scaled from 0-1, with 1 being the score with the most ecological benefit. Threat scores discussed in the text are generated by subtracting scaled values from 1 (e.g. [1- (RVI Scaled)] equals overall threat from visitation). Descriptions of abbreviations used in these tables can be found in Appendix A.

Table Appendix E-1. Index values and scaled scores for RWQS 01 Raw through RWQS 03 Scaled.

Species	Site	RWQS_01 Raw	RWQS_01 Scaled	RWQS_01 Raw	RWQS_01 Scaled	RWQS_02 Raw	RWQS_02 Scaled	RWQS_02 Raw	RWQS_02 Scaled	RWQS_03 Raw	RWQS_03 Scaled
<i>Amblyopsis rosae</i>											
	AGFC Nursery Pond on Beaver Lake	0.96	0.99	2.83	0.35	249360.75	0.01				
	Cave Springs Cave	29.48	0.60	0.60	0.86	3932102.25	0.11				
	Civil War Cave	17.01	0.77	1.43	0.67	2781144.00	0.08				
	Hewlitt's Spring Hole	16.72	0.77	1.24	0.71	2888361.00	0.08				
	James-Ditto Cave	3.48	0.95	2.37	0.46	705033.00	0.02				
	Logan Cave	48.70	0.33	1.60	0.63	16335972.00	0.46				
	Monte Ne Sinkhole	1.12	0.98	0.35	0.92	2261304.00	0.06				
	Mule Hole Sink	0.57	0.99	1.33	0.70	215246.25	0.01				
	Rootville Cave	1.77	0.98	0.87	0.80	1483980.75	0.04				
	Tom Allen's Cave	2.96	0.96	1.33	0.69	1542462.75	0.04				
<i>Amnicola cora</i>											
	Foushee Cave	2.44	0.97	0.36	0.92	6294125.25	0.18				
<i>Batrachus pseudomucronatus</i>											
	Deep cistern 5.5 mi. S of Imboden	2.73	0.96	2.02	0.54	860172.75	0.02				
	Mansell Cave	2.52	0.97	1.32	0.70	1345898.25	0.04				
<i>Caecidotea ancyla</i>											
	Bear Hollow Cave	21.55	0.70	2.40	0.45	3313167.75	0.09				
	Brewer Cave										
	Denny Cave	9.42	0.87	1.07	0.75	4200144.75	0.12				
	Fitton Spring Cave	23.48	0.68	0.70	0.84	28463676.75	0.80				

Species	Site	RWQS_01		RWQS_02		RWQS_03	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Foushee Cave	2.44	0.97	0.36	0.92	6294125.25	0.18
	Greasy Valley Cave	3.85	0.95	1.91	0.56	960079.50	0.03
	Ivy Springs Cave	5.19	0.93	2.65	0.39	689600.25	0.02
	Major's Cave	3.99	0.95	0.52	0.88	1480731.75	0.04
	Marshall Caves	1.83	0.97	2.27	0.48	435366.00	0.01
	Nesbitt Spring Cave	3.00	0.96	1.11	0.75	2098854.00	0.06
	Old Pendergrass Cave	72.83	0.00	1.47	0.66	29493609.75	0.83
	Pretty Clean Cave	3.44	0.95	1.52	0.65	2209320.00	0.06
	Rootville Cave	1.77	0.98	0.87	0.80	1483980.75	0.04
	Spavinaw Creek Cave						
	War Eagle Cave	7.18	0.90	0.83	0.81	6021209.25	0.17
	Withrow Springs Cave	7.18	0.90	0.83	0.81	6021209.25	0.17
<i>Caecidotea dimorpha</i>							
	Elm Cave	1.16	0.98	1.05	0.76	1014500.25	0.03
	Martin Hollow Cave	0.10	1.00	0.04	0.99	1722782.25	0.05
	Mr. Griffin's Cave # 1	2.06	0.97	0.37	0.92	5627268.00	0.16
	Nesbitt Spring Cave	3.00	0.96	1.11	0.75	2098854.00	0.06
	Riley's Springbox	4.99	0.93	2.35	0.46	1846244.25	0.05
	Stovepipe Cave	1.49	0.98	1.91	0.56	437802.75	0.01
	Summer Cave	4.58	0.94	0.97	0.78	4607894.25	0.13
<i>Caecidotea macropropoda</i>							
	Fincher Cave	3.96	0.95	1.68	0.61	2085858.00	0.06
	Spring at Bradley Shelter	0.85	0.99	0.50	0.88	694473.75	0.02
	Stormdrain Spring at University of Arkansas	0.00	1.00	0.00	1.00	89347.50	0.00
	Watson Cave	4.31	0.94	1.94	0.55	852050.25	0.02
<i>Caecidotea salemensis</i>							

Species Site	RWQS_01		RWQS_02		RWQS_03	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Deep cistern 5.5 mi. S of Imboden	2.73	0.96	2.02	0.54	860172.75	0.02
<i>Caecidotea steevesi</i>						
AGFC Nursery Pond on Beaver Lake	0.96	0.99	2.83	0.35	249360.75	0.01
Cave on Pond Above Black Bass Lake	4.41	0.94	1.17	0.73	3318853.50	0.09
Old Spanish Treasure Cave	2.60	0.96	0.86	0.80	2578893.75	0.07
War Eagle Cave	7.18	0.90	0.83	0.81	6021209.25	0.17
Withrow Springs Cave	7.18	0.90	0.83	0.81	6021209.25	0.17
<i>Caecidotea stiladactyla</i>						
Arkansas Archaeological Survey Site #3BE352	1.97	0.97	1.56	0.64	676604.25	0.02
Bently Cave	0.00	1.00	0.00	1.00	185193.00	0.01
Big Mouth Cave						
Brock Spring	8.09	0.89	1.87	0.57	1767456.00	0.05
Bull Shoals Caverns	2.31	0.97	0.81	0.81	2068800.75	0.06
Cal Cave	4.63	0.94	1.15	0.74	2528534.25	0.07
Cave Mountain Cave	2.80	0.96	0.91	0.79	2551277.25	0.07
Cave on North Boundary Trail	0.00	1.00	0.00	1.00	1388135.25	0.04
Cave Springs Cave	29.48	0.60	0.60	0.86	3932102.25	0.11
Cold Cave	0.52	0.99	1.33	0.69	167323.50	0.00
Covington's Cave						
Dickerson Cave	5.39	0.93	0.96	0.78	3481303.50	0.10
Eden Falls Cave	2.37	0.97	0.47	0.89	3915045.00	0.11
Fish Pond Cave	0.50	0.99	0.73	0.83	487350.00	0.01
Fitton Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
Granny Parker's Cave						
John Eddings Cave	0.31	1.00	0.25	0.94	1036431.00	0.03
Laningham's Cave	4.63	0.94	1.15	0.74	2528534.25	0.07



Species	Site	RWQS_01		RWQS_02		RWQS_03	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Middle Creek Spring Cave						
	Novack Spring Cave	2.37	0.97	0.47	0.89	3915045.00	0.11
	Old Joe Cave	8.42	0.88	1.48	0.66	3934539.00	0.11
	Sherfield Cave	14.52	0.80	0.66	0.85	19961856.00	0.56
	Simpson's Cave	10.31	0.86	1.04	0.76	5013207.00	0.14
	Spring at Hogscald	6.94	0.90	1.11	0.74	5598839.25	0.16
	Spring at Sequoyah Woods	2.56	0.96	0.58	0.87	1987575.75	0.06
	Spring on Butler Creek Road	10.51	0.86	1.06	0.76	9325442.25	0.26
	Spring on North Boundary Trail	0.00	1.00	0.00	1.00	1388135.25	0.04
	Stillhouse Hollow Cave	0.83	0.99	1.55	0.64	346830.75	0.01
	Tanyard Creek Nature Trail Cave	3.06	0.96	2.99	0.31	697722.75	0.02
	Unnamed seep 4 mi. S of Boxley	1.46	0.98	0.71	0.84	1902289.50	0.05
	Unnamed seep 9 mi. SW of Harrison	2.37	0.97	0.39	0.91	4504738.50	0.13
	Unnamed spring 3.5 mi. S of Jasper	3.97	0.95	1.71	0.61	2130531.75	0.06
	War Eagle Cavern	6.95	0.90	1.19	0.73	5548479.75	0.16
	White River Below Beaver Dam	2.80	0.96	1.12	0.74	1964832.75	0.06
	<i>Cambarus aculabrum</i>						
	Bear Hollow Cave	21.55	0.70	2.40	0.45	3313167.75	0.09
	Brush Creek	10.22	0.86	1.12	0.74	540146.25	0.02
	Logan Cave	48.70	0.33	1.60	0.63	16335972.00	0.46
	Old Pendergrass Cave	72.83	0.00	1.47	0.66	29493609.75	0.83
	<i>Cambarus setosus</i>						
	Blowing Cave	0.00	1.00	0.00	1.00	585632.25	0.02
	Poke Cave	0.00	1.00	0.00	1.00	585632.25	0.02
	Tom Allen's Cave	2.96	0.96	1.33	0.69	1542462.75	0.04
	<i>Cambarus zophonastes</i>						
	Hell Creek Cave	17.62	0.76	0.89	0.79	15036372.00	0.42

Species	Site	RWQS_01		RWQS_02		RWQS_03	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Nesbitt Spring Cave	3.00	0.96	1.11	0.75	2098854.00	0.06
	site in Yellville	24.35	0.67	2.17	0.50	5485936.50	0.16
<i>Dendrocoelopsis americana</i>	Brock Spring	8.09	0.89	1.87	0.57	1767456.00	0.05
	Granny Parker's Cave						
	Steel Creek Campground Cave	3.23	0.96	0.84	0.81	3507295.50	0.10
	Watson Cave	4.31	0.94	1.94	0.55	852050.25	0.02
<i>Eurycea spelaea</i>	Alexander Cave	36.21	0.50	1.25	0.71	15735719.25	0.44
	Allen Cave						
	Back o' Beyond Cave	1.30	0.98	0.49	0.89	1634247.00	0.05
	Bald Scrappy Cave	3.20	0.96	1.40	0.68	2106976.50	0.06
	Bear Hollow Cave	21.55	0.70	2.40	0.45	3313167.75	0.09
	Bear Pit	0.00	1.00	0.00	1.00	1613128.50	0.05
	Bell Cave						
	Bently Cave	0.00	1.00	0.00	1.00	185193.00	0.01
	Big Mouth Cave						
	Big Spring Cave						
	Biology Cave	1.45	0.98	1.58	0.64	925152.75	0.03
	Blanchard Springs Caverns	20.68	0.72	0.53	0.88	35379985.50	1.00
	Blowing Cave	0.00	1.00	0.00	1.00	585632.25	0.02
	Blowing Spring Cave	0.00	1.00	0.00	1.00	3064619.25	0.09
	Blowing Springs Cave	1.31	0.98	0.54	0.88	1719533.25	0.05
	Blowing Springs Cave	2.95	0.96	1.24	0.71	1888481.25	0.05
	Blue Heaven Cave	4.91	0.93	0.85	0.80	3882555.00	0.11
	Bonanza Cave	0.98	0.99	0.29	0.93	2932222.50	0.08
	Bonanza Mine	4.35	0.94	1.21	0.72	3582022.50	0.10

Species	Site	RWQS_01		RWQS_02		RWQS_03	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Breakdown Cave	2.05	0.97	0.50	0.89	3996270.00	0.11
	Brewer Cave						
	Bull Shoals Caverns	2.31	0.97	0.81	0.81	2068800.75	0.06
	Cave River Cave	4.23	0.94	1.10	0.75	3617761.50	0.10
	Cave Springs Cave	29.48	0.60	0.60	0.86	3932102.25	0.11
	Chambers Hollow Cave	3.85	0.95	1.17	0.73	3135285.00	0.09
	Chilly Bowl Cave	7.24	0.90	2.26	0.48	2962275.75	0.08
	Chinn Springs Cave	11.19	0.85	0.65	0.85	14145333.75	0.40
	Congo Crawl						
	Coon Cave	0.43	0.99	0.43	0.90	955206.00	0.03
	Copperhead Cave	5.78	0.92	1.86	0.57	2551277.25	0.07
	Corkscrew Cave	3.92	0.95	0.91	0.79	4085617.50	0.12
	Cosmic Caverns	4.87	0.93	0.85	0.80	3870371.25	0.11
	Crystal Dome Cave	10.99	0.85	1.99	0.54	3324539.25	0.09
	Cushman Cave	2.82	0.96	1.22	0.72	2051743.50	0.06
	Cyner Cave	6.14	0.92	0.46	0.89	10584429.75	0.30
	Davis Creek Cave						
	Dear Buster Cave	2.06	0.97	0.23	0.95	7778918.25	0.22
	Diamond Cave	3.28	0.95	0.63	0.86	4718360.25	0.13
	Dickerson Cave	5.39	0.93	0.96	0.78	3481303.50	0.10
	Eckel Cave	1.27	0.98	1.05	0.76	1004753.25	0.03
	Elm Cave	1.16	0.98	1.05	0.76	1014500.25	0.03
	Ennis Cave	11.67	0.84	1.74	0.60	5988719.25	0.17
	Fancher Cave						
	Fish Pond Cave	0.50	0.99	0.73	0.83	487350.00	0.01
	Fitton Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
	Fitton Spring Cave	23.48	0.68	0.70	0.84	28463676.75	0.80

Species Site	RWQS_01		RWQS_02		RWQS_03	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Foushee Cave	2.44	0.97	0.36	0.92	6294125.25	0.18
Friday the 13th Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
Green River Cave	5.14	0.93	1.95	0.55	1651304.25	0.05
Gunner Cave	8.60	0.88	0.90	0.79	8399477.25	0.24
Gustafson Cave	4.29	0.94	2.03	0.53	2114286.75	0.06
Hammer Springs Cave	0.96	0.99	0.17	0.96	5563100.25	0.16
Hell Creek Cave	17.62	0.76	0.89	0.79	15036372.00	0.42
Herald Hollow Cave	1.73	0.98	1.02	0.76	1678108.50	0.05
Hickory Creek Cave						
Hidden Spring Cave	3.27	0.96	4.35	0.00	753768.00	0.02
Hog Head Cave	0.73	0.99	0.13	0.97	4583526.75	0.13
Huchingson's Waterfall Cave						
Hunter's Cave	0.73	0.99	0.19	0.96	3731476.50	0.11
Hurricane River Cave	3.10	0.96	0.72	0.83	4031196.75	0.11
Icebox Cave						
Indian Rockhouse Cave	7.29	0.90	0.80	0.82	8146055.25	0.23
In-D-Pendants Cave	6.45	0.91	1.85	0.57	3058933.50	0.09
Janus Pit	0.63	0.99	0.39	0.91	1602569.25	0.05
Jelico Hollow Cave	6.05	0.92	1.38	0.68	4332541.50	0.12
John Eddings Cave	0.31	1.00	0.25	0.94	1036431.00	0.03
Lewis Spring Cave						
Little Den Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
Logan Cave	48.70	0.33	1.60	0.63	16335972.00	0.46
Major's Cave	3.99	0.95	0.52	0.88	1480731.75	0.04
Mammoth Spring	1.35	0.98	0.88	0.80	134021.25	0.00
Martin Hollow Cave	0.10	1.00	0.04	0.99	1722782.25	0.05
Miner's Cave	1.38	0.98	0.38	0.91	3024006.75	0.09

Species Site	RWQS_01		RWQS_02		RWQS_03	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Mr. Clean Cave	3.34	0.95	0.93	0.79	3228693.75	0.09
Mr. Griffin's Cave # 1	2.06	0.97	0.37	0.92	5627268.00	0.16
Needles Cave	4.12	0.94	2.11	0.52	1072982.25	0.03
Nesbitt Spring Cave	3.00	0.96	1.11	0.75	2098854.00	0.06
Norfolk Bat Cave	5.16	0.93	1.92	0.56	1477482.75	0.04
Old Joe Cave	8.42	0.88	1.48	0.66	3934539.00	0.11
Omega Cave						
Panther Mountain Cave						
Pigeon Roost Cave	0.05	1.00	0.04	0.99	1426311.00	0.04
Potato Cave						
Pregnant Nun Cave	10.51	0.86	1.06	0.76	9325442.25	0.26
Pretty Clean Cave	3.44	0.95	1.52	0.65	2209320.00	0.06
Reed Cave	1.65	0.98	1.26	0.71	1214313.75	0.03
Richardson Cave	0.90	0.99	0.56	0.87	1357269.75	0.04
Riley's Springbox	4.99	0.93	2.35	0.46	1846244.25	0.05
Rootville Cave	1.77	0.98	0.87	0.80	1483980.75	0.04
Rory Cave	0.70	0.99	0.45	0.90	1085166.00	0.03
Salamander Cave	4.18	0.94	2.42	0.44	1715472.00	0.05
Salt peter Cave	0.17	1.00	0.12	0.97	1410066.00	0.04
Slick Rock Hollow Cave						
Springhouse at Steel Creek Ranger Cabin	1.76	0.98	0.71	0.84	2306790.00	0.07
Steel Creek Campground Cave	3.23	0.96	0.84	0.81	3507295.50	0.10
Stillhouse Hollow Cave	0.83	0.99	1.55	0.64	346830.75	0.01
Stovepipe Cave	1.49	0.98	1.91	0.56	437802.75	0.01
Summer Cave	4.58	0.94	0.97	0.78	4607894.25	0.13
Tom Allen's Cave	2.96	0.96	1.33	0.69	1542462.75	0.04
Tom Barnes Cave	0.88	0.99	0.87	0.80	856923.75	0.02

Species	Site	RWQS_01		RWQS_02		RWQS_03	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Toney Bend Mine # 2	3.33	0.95	0.43	0.90	6999158.25	0.20
	Tweet's Cave	1.63	0.98	0.42	0.90	3486177.00	0.10
	Unnamed cave	0.24	1.00	0.86	0.80	219307.50	0.01
	Unnamed caves at Devil's Knob Natural Area	0.00	1.00	0.00	1.00	921903.75	0.03
	Van Dyke Spring Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
	Von Wadding's Memorial Cave	2.05	0.97	0.50	0.89	3996270.00	0.11
	War Eagle Cave	7.18	0.90	0.83	0.81	6021209.25	0.17
	War Eagle Cavern	6.95	0.90	1.19	0.73	5548479.75	0.16
	Whippoorwill Cave	6.05	0.92	1.38	0.68	4332541.50	0.12
	Willis Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
	Wolf Creek Cave	2.71	0.96	0.51	0.88	5168346.75	0.15
	Wounded Knee Cave	1.03	0.99	0.36	0.92	2698294.50	0.08
	<i>Lirceus bicuspidatus</i>						
	Diamond Cave	3.28	0.95	0.63	0.86	4718360.25	0.13
	Foushee Cave	2.44	0.97	0.36	0.92	6294125.25	0.18
	Hell Creek Cave	17.62	0.76	0.89	0.79	15036372.00	0.42
	Hurricane River Cave	3.10	0.96	0.72	0.83	4031196.75	0.11
	<i>Lirceus bidentatus</i>						
	Unnamed seep 9 mi. SW of Harrison	2.37	0.97	0.39	0.91	4504738.50	0.13
	<i>Stygobromus ozarkensis</i>						
	Bear Hollow Cave	21.55	0.70	2.40	0.45	3313167.75	0.09
	Blowing Springs Cave	1.31	0.98	0.54	0.88	1719533.25	0.05
	Cave on Pond Above Black Bass Lake	4.41	0.94	1.17	0.73	3318853.50	0.09
	Cave Springs Cave	29.48	0.60	0.60	0.86	3932102.25	0.11
	Civil War Cave	17.01	0.77	1.43	0.67	2781144.00	0.08
	Dickerson Cave	5.39	0.93	0.96	0.78	3481303.50	0.10

Species	Site	RWQS_01		RWQS_02		RWQS_03	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Fitton Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
	Fitton Spring Cave	23.48	0.68	0.70	0.84	28463676.75	0.80
	Hunter's Cave	0.73	0.99	0.19	0.96	3731476.50	0.11
	John Eddings Cave	0.31	1.00	0.25	0.94	1036431.00	0.03
	Logan Cave	48.70	0.33	1.60	0.63	16335972.00	0.46
	Needles Cave	4.12	0.94	2.11	0.52	1072982.25	0.03
	Old Pendergrass Cave	72.83	0.00	1.47	0.66	29493609.75	0.83
	Pretty Clean Cave	3.44	0.95	1.52	0.65	2209320.00	0.06
	Reed Cave	1.65	0.98	1.26	0.71	1214313.75	0.03
	Sherfield Cave	14.52	0.80	0.66	0.85	19961856.00	0.56
	Spavinaw Creek Cave						
	War Eagle Cave	7.18	0.90	0.83	0.81	6021209.25	0.17
	War Eagle Cavern	6.95	0.90	1.19	0.73	5548479.75	0.16
	White River Below Beaver Dam	2.80	0.96	1.12	0.74	1964832.75	0.06
	Withrow Springs Cave	7.18	0.90	0.83	0.81	6021209.25	0.17
	<i>Typhlichthys subterraneus</i>						
	Richardson Cave	0.90	0.99	0.56	0.87	1357269.75	0.04
	Unnamed well in Randolph County						

Table Appendix E-2. Index values and scaled scores for RWQS 04 Raw through RWQN 01 Scaled.

Species	Site	RWQS_04		RWQN_01		RWQN_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	<i>Amblyopsis rosae</i>						
	AGFC Nursery Pond on Beaver Lake	0.73	0.73	2.08	0.59	0.81	1.00
	Cave Springs Cave	0.08	0.08	1.65	0.47	74.04	0.62
	Civil War Cave	0.23	0.23	1.75	0.50	35.58	0.82

Species	Site	RWQS_04		RWQS_01		RWQN_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Hewlett's Spring Hole	0.21	0.21	1.78	0.51	1.45	0.99
	James-Ditto Cave	0.48	0.48	1.91	0.55	6.56	0.97
	Logan Cave	0.54	0.54	1.96	0.56	155.61	0.20
	Monte Ne Sinkhole	0.70	0.70	2.67	0.76	95.76	0.51
	Mule Hole Sink	0.51	0.51	2.21	0.63	0.00	1.00
	Rootville Cave	0.74	0.74	2.55	0.73	7.19	0.96
	Tom Allen's Cave	0.72	0.72	2.42	0.69	4.62	0.98
<i>Amnicola cora</i>							
	Foushee Cave	0.93	0.93	2.99	0.85	29.35	0.85
<i>Bactrurus pseudomucronatus</i>							
	Deep cistern 5.5 mi. S of Imboden	0.64	0.64	2.16	0.62	5.66	0.97
	Mansell Cave	0.70	0.70	2.40	0.69	2.66	0.99
<i>Caecidotea ancyla</i>							
	Bear Hollow Cave	0.88	0.88	2.13	0.61	0.00	1.00
	Brewer Cave						
	Denny Cave	0.48	0.48	2.22	0.63	37.03	0.81
	Fitton Spring Cave	0.85	0.85	3.17	0.90	62.96	0.68
	Foushee Cave	0.93	0.93	2.99	0.85	29.35	0.85
	Greasy Valley Cave	0.48	0.48	2.01	0.58	8.31	0.96
	Ivy Springs Cave	0.35	0.35	1.69	0.48	5.78	0.97
	Major's Cave	0.19	0.19	2.06	0.59	194.92	0.00
	Marshall Caves	0.57	0.57	2.03	0.58	0.89	1.00
	Nesbitt Spring Cave	0.77	0.77	2.54	0.73	3.11	0.98
	Old Pendergrass Cave	0.63	0.63	2.13	0.61	105.17	0.46
	Pretty Clean Cave	0.97	0.97	2.64	0.75	0.14	1.00
	Rootville Cave	0.74	0.74	2.55	0.73	7.19	0.96
	Spavinaw Creek Cave						



Species Site	RWQS_04		RWQS_04		RWQS		RWQN_01		RWQN_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
War Eagle Cave	0.70	0.70	2.58	0.74	2.58	0.74	40.82	0.79	40.82	0.79
Withrow Springs Cave	0.70	0.70	2.58	0.74	2.58	0.74	40.82	0.79	40.82	0.79
<i>Caecidotea dimorpha</i>										
Elm Cave	0.93	0.93	2.70	0.77	2.70	0.77	2.70	0.99	2.70	0.99
Martin Hollow Cave	0.73	0.73	2.77	0.79	2.77	0.79	5.18	0.97	5.18	0.97
Mr. Griffin's Cave # 1	1.00	1.00	3.05	0.87	3.05	0.87	0.01	1.00	0.01	1.00
Nesbitt Spring Cave	0.77	0.77	2.54	0.73	2.54	0.73	3.11	0.98	3.11	0.98
Riley's Springbox	0.88	0.88	2.32	0.66	2.32	0.66	4.76	0.98	4.76	0.98
Stovepipe Cave	0.56	0.56	2.11	0.60	2.11	0.60	1.07	0.99	1.07	0.99
Summer Cave	0.97	0.97	2.82	0.80	2.82	0.80	0.04	1.00	0.04	1.00
<i>Caecidotea macropropoda</i>										
Fincher Cave	0.89	0.89	2.50	0.72	2.50	0.72	10.35	0.95	10.35	0.95
Spring at Bradley Shelter	0.41	0.41	2.30	0.66	2.30	0.66	4.62	0.98	4.62	0.98
Stormdrain Spring at University of Arkansas	0.05	0.05	2.05	0.59	2.05	0.59	0.00	1.00	0.00	1.00
Watson Cave	0.38	0.38	1.90	0.54	1.90	0.54	23.14	0.88	23.14	0.88
<i>Caecidotea salemensis</i>										
Deep cistern 5.5 mi. S of Imboden	0.64	0.64	2.16	0.62	2.16	0.62	5.66	0.97	5.66	0.97
<i>Caecidotea steevesi</i>										
AGFC Nursery Pond on Beaver Lake	0.73	0.73	2.08	0.59	2.08	0.59	0.81	1.00	0.81	1.00
Cave on Pond Above Black Bass Lake	0.88	0.88	2.64	0.75	2.64	0.75	16.24	0.92	16.24	0.92
Old Spanish Treasure Cave	0.85	0.85	2.69	0.77	2.69	0.77	15.60	0.92	15.60	0.92
War Eagle Cave	0.70	0.70	2.58	0.74	2.58	0.74	40.82	0.79	40.82	0.79
Withrow Springs Cave	0.70	0.70	2.58	0.74	2.58	0.74	40.82	0.79	40.82	0.79
<i>Caecidotea stitladactyla</i>										
Arkansas Archaeological Survey Site #3BE352	0.54	0.54	2.18	0.62	2.18	0.62	10.63	0.95	10.63	0.95
Bently Cave	0.59	0.59	2.60	0.74	2.60	0.74	0.00	1.00	0.00	1.00

Species	Site	RWQS_04		RWQS_04		RWQS		RWQS	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Big Mouth Cave	0.41	0.41	1.92	0.55	106.37	0.45		
	Brock Spring	0.72	0.72	2.56	0.73	0.00	1.00		
	Bull Shoals Caverns	0.63	0.63	2.37	0.68	15.33	0.92		
	Cal Cave	0.83	0.83	2.66	0.76	1.68	0.99		
	Cave Mountain Cave	0.89	0.89	2.93	0.84	1.22	0.99		
	Cave on North Boundary Trail	0.08	0.08	1.65	0.47	74.04	0.62		
	Cave Springs Cave	0.43	0.43	2.12	0.61	15.72	0.92		
	Cold Cave								
	Covington's Cave	0.62	0.62	2.42	0.69	16.48	0.92		
	Dickerson Cave	0.77	0.77	2.74	0.78	7.96	0.96		
	Eden Falls Cave	0.71	0.71	2.55	0.73	4.25	0.98		
	Fish Pond Cave	0.85	0.85	3.17	0.90	62.96	0.68		
	Fitton Cave								
	Granny Parker's Cave	0.84	0.84	2.81	0.80	3.85	0.98		
	John Eddings Cave	0.63	0.63	2.37	0.68	15.33	0.92		
	Laningham's Cave								
	Middle Creek Spring Cave								
	Novack Spring Cave	0.77	0.77	2.74	0.78	7.96	0.96		
	Old Joe Cave	0.69	0.69	2.35	0.67	27.53	0.86		
	Sherfield Cave	0.91	0.91	3.12	0.89	22.29	0.89		
	Simpson's Cave	0.51	0.51	2.27	0.65	41.53	0.79		
	Spring at Hogscald	0.89	0.89	2.70	0.77	16.70	0.91		
	Spring at Sequoyah Woods	0.45	0.45	2.34	0.67	0.00	1.00		
	Spring on Butler Creek Road	0.94	0.94	2.82	0.80	4.72	0.98		
	Spring on North Boundary Trail	0.89	0.89	2.93	0.84	1.22	0.99		
	Stillhouse Hollow Cave	0.64	0.64	2.29	0.65	1.62	0.99		
	Tanyard Creek Nature Trail Cave	0.68	0.68	1.97	0.56	3.51	0.98		

Species	Site	RWQS_04		RWQS_04		RWQS		RWQS		
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	
	Unnamed seep 4 mi. S of Boxley	0.93	0.93	2.80	0.80	0.97	1.00			
	Unnamed seep 9 mi. SW of Harrison	0.75	0.75	2.76	0.79	15.04	0.92			
	Unnamed spring 3.5 mi. S of Jasper	0.92	0.92	2.53	0.72	6.06	0.97			
	War Eagle Cavern	0.95	0.95	2.74	0.78	23.87	0.88			
	White River Below Beaver Dam	0.79	0.79	2.55	0.73	7.79	0.96			
<i>Cambarus aculabrum</i>										
	Bear Hollow Cave	0.88	0.88	2.13	0.61	0.00	1.00			
	Brush Creek	0.06	0.06	1.68	0.48	28.48	0.85			
	Logan Cave	0.54	0.54	1.96	0.56	155.61	0.20			
	Old Pendergrass Cave	0.63	0.63	2.13	0.61	105.17	0.46			
<i>Cambarus setosus</i>										
	Blowing Cave	0.99	0.99	3.01	0.86	0.08	1.00			
	Poke Cave	0.99	0.99	3.01	0.86	0.08	1.00			
	Tom Allen's Cave	0.72	0.72	2.42	0.69	4.62	0.98			
<i>Cambarus zophonastes</i>										
	Hell Creek Cave	0.76	0.76	2.74	0.78	164.73	0.15			
	Nesbitt Spring Cave	0.77	0.77	2.54	0.73	3.11	0.98			
	site in Yellville	0.49	0.49	1.81	0.52	41.11	0.79			
<i>Dendrocoelopsis americana</i>										
	Brock Spring	0.41	0.41	1.92	0.55	106.37	0.45			
	Granny Parker's Cave									
	Steel Creek Campground Cave	0.91	0.91	2.77	0.79	3.60	0.98			
	Watson Cave	0.38	0.38	1.90	0.54	23.14	0.88			
<i>Eurycea spelaea</i>										
	Alexander Cave	0.55	0.55	2.20	0.63	83.34	0.57			
	Allen Cave									
	Back o' Beyond Cave	0.62	0.62	2.54	0.72	3.79	0.98			

Species	Site	RWQS_04		RWQS_04		RWQS		RWQN_01		RWQN_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Bald Scrappy Cave	0.93	0.93	2.62	0.75	1.39	0.99				
	Bear Hollow Cave	0.88	0.88	2.13	0.61	0.00	1.00				
	Bear Pit	0.81	0.81	2.86	0.82	1.10	0.99				
	Bell Cave										
	Bently Cave	0.59	0.59	2.60	0.74	0.00	1.00				
	Big Mouth Cave										
	Big Spring Cave										
	Biology Cave	1.00	1.00	2.64	0.75	0.00	1.00				
	Blanchard Springs Caverns	0.91	0.91	3.50	1.00	30.01	0.85				
	Blowing Cave	0.99	0.99	3.01	0.86	0.08	1.00				
	Blowing Spring Cave	1.00	1.00	3.09	0.88	1.02	0.99				
	Blowing Springs Cave	0.70	0.70	2.61	0.75	20.64	0.89				
	Blowing Springs Cave	0.80	0.80	2.52	0.72	2.77	0.99				
	Blue Heaven Cave	0.67	0.67	2.52	0.72	15.95	0.92				
	Bonanza Cave	0.85	0.85	2.86	0.82	2.88	0.99				
	Bonanza Mine	1.00	1.00	2.76	0.79	1.40	0.99				
	Breakdown Cave	0.96	0.96	2.93	0.84	0.00	1.00				
	Brewer Cave										
	Bull Shoals Caverns	0.72	0.72	2.56	0.73	0.00	1.00				
	Cave River Cave	0.94	0.94	2.73	0.78	3.67	0.98				
	Cave Springs Cave	0.08	0.08	1.65	0.47	74.04	0.62				
	Chambers Hollow Cave	0.95	0.95	2.72	0.78	4.83	0.98				
	Chilly Bowl Cave	0.92	0.92	2.39	0.68	7.29	0.96				
	Chinn Springs Cave	0.83	0.83	2.92	0.83	63.28	0.68				
	Congo Crawl										
	Coon Cave	0.94	0.94	2.86	0.82	1.75	0.99				
	Copperhead Cave	0.82	0.82	2.39	0.68	5.61	0.97				

Species	Site	RWQS_04		RWQS_04		RWQS		RWQS	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Corkscrew Cave	0.94	0.94	2.79	0.80	13.46	0.93		
	Cosmic Caverns	0.68	0.68	2.52	0.72	24.51	0.87		
	Crystal Dome Cave	0.60	0.60	2.09	0.60	71.51	0.63		
	Cushman Cave	0.89	0.89	2.63	0.75	1.00	0.99		
	Cyner Cave	0.79	0.79	2.90	0.83	13.43	0.93		
	Davis Creek Cave								
	Dear Buster Cave	0.89	0.89	3.02	0.86	6.49	0.97		
	Diamond Cave	0.90	0.90	2.85	0.81	10.34	0.95		
	Dickerson Cave	0.62	0.62	2.42	0.69	16.48	0.92		
	Eckel Cave	0.83	0.83	2.60	0.74	2.32	0.99		
	Elm Cave	0.93	0.93	2.70	0.77	2.70	0.99		
	Ennis Cave	0.89	0.89	2.50	0.71	9.56	0.95		
	Fancher Cave								
	Fish Pond Cave	0.71	0.71	2.55	0.73	4.25	0.98		
	Fitton Cave	0.85	0.85	3.17	0.90	62.96	0.68		
	Fitton Spring Cave	0.85	0.85	3.17	0.90	62.96	0.68		
	Foushee Cave	0.93	0.93	2.99	0.85	29.35	0.85		
	Friday the 13th Cave	0.85	0.85	3.17	0.90	62.96	0.68		
	Green River Cave	0.62	0.62	2.15	0.61	16.61	0.91		
	Gunner Cave	0.87	0.87	2.79	0.80	6.67	0.97		
	Gustafson Cave	1.00	1.00	2.53	0.72	0.21	1.00		
	Hammer Springs Cave	0.97	0.97	3.08	0.88	4.55	0.98		
	Hell Creek Cave	0.76	0.76	2.74	0.78	164.73	0.15		
	Herald Hollow Cave	1.00	1.00	2.79	0.80	0.00	1.00		
	Hickory Creek Cave								
	Hidden Spring Cave	1.00	1.00	1.98	0.56	0.00	1.00		
	Hog Head Cave	0.83	0.83	2.92	0.83	5.21	0.97		

Species Site	RWQS_04		RWQS_04		RWQS		RWQS		RWQN_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Huchingson's Waterfall Cave										
Hunter's Cave	0.99	0.99	3.04	0.87	0.31	1.00				
Hurricane River Cave	0.94	0.94	2.85	0.81	4.56	0.98				
Icebox Cave										
Indian Rockhouse Cave	0.89	0.89	2.84	0.81	16.37	0.92				
In-D-Pendants Cave	0.88	0.88	2.45	0.70	0.78	1.00				
Janus Pit	0.98	0.98	2.93	0.84	1.73	0.99				
Jelico Hollow Cave	0.99	0.99	2.71	0.77	1.81	0.99				
John Eddings Cave	0.84	0.84	2.81	0.80	3.85	0.98				
Lewis Spring Cave										
Little Den Cave	0.85	0.85	3.17	0.90	62.96	0.68				
Logan Cave	0.54	0.54	1.96	0.56	155.61	0.20				
Major's Cave	0.19	0.19	2.06	0.59	194.92	0.00				
Mammoth Spring	0.15	0.15	1.93	0.55	0.25	1.00				
Martin Hollow Cave	0.73	0.73	2.77	0.79	5.18	0.97				
Miner's Cave	0.82	0.82	2.80	0.80	14.97	0.92				
Mr. Clean Cave	0.91	0.91	2.74	0.78	2.77	0.99				
Mr. Griffin's Cave # 1	1.00	1.00	3.05	0.87	0.01	1.00				
Needles Cave	0.55	0.55	2.04	0.58	4.28	0.98				
Nesbitt Spring Cave	0.77	0.77	2.54	0.73	3.11	0.98				
Norfolk Bat Cave	0.55	0.55	2.08	0.59	13.47	0.93				
Old Joe Cave	0.69	0.69	2.35	0.67	27.53	0.86				
Omega Cave										
Panther Mountain Cave										
Pigeon Roost Cave	0.99	0.99	3.02	0.86	0.70	1.00				
Potato Cave										
Pregnant Nun Cave	0.94	0.94	2.82	0.80	4.72	0.98				

Species	Site	RWQS_04		RWQS_04		RWQS		RWQS		RWQN_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Pretty Clean Cave	0.97	0.97	2.64	0.75	0.14	1.00				
	Reed Cave	0.93	0.93	2.65	0.76	5.16	0.97				
	Richardson Cave	0.85	0.85	2.74	0.78	5.28	0.97				
	Riley's Springbox	0.88	0.88	2.32	0.66	4.76	0.98				
	Rootville Cave	0.74	0.74	2.55	0.73	7.19	0.96				
	Rory Cave	0.69	0.69	2.61	0.75	1.54	0.99				
	Salamander Cave	1.00	1.00	2.43	0.69	0.46	1.00				
	Salt peter Cave	1.00	1.00	3.01	0.86	1.57	0.99				
	Slick Rock Hollow Cave										
	Springhouse at Steel Creek Ranger Cabin	0.93	0.93	2.81	0.80	4.70	0.98				
	Steel Creek Campground Cave	0.91	0.91	2.77	0.79	3.60	0.98				
	Stillhouse Hollow Cave	0.64	0.64	2.29	0.65	1.62	0.99				
	Stovepipe Cave	0.56	0.56	2.11	0.60	1.07	0.99				
	Summer Cave	0.97	0.97	2.82	0.80	0.04	1.00				
	Tom Allen's Cave	0.72	0.72	2.42	0.69	4.62	0.98				
	Tom Barnes Cave	0.86	0.86	2.68	0.76	0.75	1.00				
	Toney Bend Mine # 2	0.91	0.91	2.96	0.85	3.29	0.98				
	Tweet's Cave	0.90	0.90	2.88	0.82	6.70	0.97				
	Unnamed cave	0.79	0.79	2.59	0.74	0.48	1.00				
	Unnamed caves at Devil's Knob Natural Area	0.99	0.99	3.02	0.86	0.32	1.00				
	Van Dyke Spring Cave	0.85	0.85	3.17	0.90	62.96	0.68				
	Von Wadding's Memorial Cave	0.96	0.96	2.93	0.84	0.00	1.00				
	War Eagle Cave	0.70	0.70	2.58	0.74	40.82	0.79				
	War Eagle Cavern	0.95	0.95	2.74	0.78	23.87	0.88				
	Whippoorwill Cave	0.99	0.99	2.71	0.77	1.81	0.99				
	Willis Cave	0.85	0.85	3.17	0.90	62.96	0.68				

Species Site	RWQS_04		RWQS_04		RWQS		RWQS		RWQN_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Wolf Creek Cave	0.97	0.97	2.96	0.85	1.85	0.99				
Wounded Knee Cave	0.95	0.95	2.93	0.84	0.78	1.00				
<i>Lirceus bicuspidatus</i>										
Diamond Cave	0.90	0.90	2.85	0.81	10.34	0.95				
Foushee Cave	0.93	0.93	2.99	0.85	29.35	0.85				
Hell Creek Cave	0.76	0.76	2.74	0.78	164.73	0.15				
Hurricane River Cave	0.94	0.94	2.85	0.81	4.56	0.98				
<i>Lirceus bidentatus</i>										
Unnamed seep 9 mi. SW of Harrison	0.75	0.75	2.76	0.79	15.04	0.92				
<i>Stygobromus ozarkensis</i>										
Bear Hollow Cave	0.88	0.88	2.13	0.61	0.00	1.00				
Blowing Springs Cave	0.70	0.70	2.61	0.75	20.64	0.89				
Cave on Pond Above Black Bass Lake	0.88	0.88	2.64	0.75	16.24	0.92				
Cave Springs Cave	0.08	0.08	1.65	0.47	74.04	0.62				
Civil War Cave	0.23	0.23	1.75	0.50	35.58	0.82				
Dickerson Cave	0.62	0.62	2.42	0.69	16.48	0.92				
Fitton Cave	0.85	0.85	3.17	0.90	62.96	0.68				
Fitton Spring Cave	0.85	0.85	3.17	0.90	62.96	0.68				
Hunter's Cave	0.99	0.99	3.04	0.87	0.31	1.00				
John Eddings Cave	0.84	0.84	2.81	0.80	3.85	0.98				
Logan Cave	0.54	0.54	1.96	0.56	155.61	0.20				
Needles Cave	0.55	0.55	2.04	0.58	4.28	0.98				
Old Pendergrass Cave	0.63	0.63	2.13	0.61	105.17	0.46				
Pretty Clean Cave	0.97	0.97	2.64	0.75	0.14	1.00				
Reed Cave	0.93	0.93	2.65	0.76	5.16	0.97				
Sherfield Cave	0.91	0.91	3.12	0.89	22.29	0.89				
Spavinaw Creek Cave										



Species	Site	RWQS_04		RWQS_04		RWQS		RWQS		RWQN_01		RWQN_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	War Eagle Cave	0.70	0.70	2.58	0.74	40.82	0.79						
	War Eagle Cavern	0.95	0.95	2.74	0.78	23.87	0.88						
	White River Below Beaver Dam	0.79	0.79	2.55	0.73	7.79	0.96						
	Withrow Springs Cave	0.70	0.70	2.58	0.74	40.82	0.79						
	<i>Typhlichthys subterraneus</i>												
	Richardson Cave	0.85	0.85	2.74	0.78	5.28	0.97						
	Unnamed well in Randolph County												

Table Appendix E-3. Index values and scaled scores for RWQN 02 Raw through RWQN 04 Scaled.

Species	Site	RWQN_02		RWQN_02		RWQN_03		RWQN_03		RWQN_04		RWQN_04	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	<i>Amblyopsis rosae</i>												
	AGFC Nursery Pond on Beaver Lake	0	1.00	0.00	1.00	1.00	1.00	8934.75	1.00	8934.75	1.00	1.00	1.00
	Cave Springs Cave	26	0.60	0.00	1.00	1.00	1.00	22110257.25	1.00	22110257.25	0.00	0.00	0.00
	Civil War Cave	11	0.83	0.00	1.00	1.00	1.00	4983153.75	1.00	4983153.75	0.77	0.77	0.77
	Hewlitt's Spring Hole	2	0.97	0.00	1.00	1.00	1.00	8144430.75	1.00	8144430.75	0.63	0.63	0.63
	James-Ditto Cave	0	1.00	0.00	1.00	1.00	1.00	583195.50	1.00	583195.50	0.97	0.97	0.97
	Logan Cave	65	0.00	0.01	1.00	1.00	1.00	12589875.00	1.00	12589875.00	0.43	0.43	0.43
	Monte Ne Sinkhole	0	1.00	0.00	1.00	1.00	1.00	242050.50	1.00	242050.50	0.99	0.99	0.99
	Mule Hole Sink	0	1.00	0.00	1.00	1.00	1.00	116964.00	1.00	116964.00	0.99	0.99	0.99
	Rootville Cave	2	0.97	0.00	1.00	1.00	1.00	365512.50	1.00	365512.50	0.98	0.98	0.98
	Tom Allen's Cave	0	1.00	0.00	1.00	1.00	1.00	470292.75	1.00	470292.75	0.98	0.98	0.98
	<i>Amnicola cora</i>												
	Foushee Cave	0	1.00	0.00	1.00	1.00	1.00	433741.50	1.00	433741.50	0.98	0.98	0.98
	<i>Bactrurus pseudomucronatus</i>												
	Deep cistern 5.5 mi. S of Imboden	0	1.00	0.00	1.00	1.00	1.00	406125.00	1.00	406125.00	0.98	0.98	0.98

Species	Site	RWQN_02		RWQN_03		RWQN_04	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Mansell Cave	0	1.00	0.00	1.00	536897.25	0.98
<i>Caecidotea ancyla</i>							
	Bear Hollow Cave	0	1.00	0.00	1.00	5685.75	1.00
	Brewer Cave						
	Denny Cave	10	0.85	0.00	1.00	3581210.25	0.84
	Fitton Spring Cave	0	1.00	0.00	1.00	3556842.75	0.84
	Foushee Cave	0	1.00	0.00	1.00	433741.50	0.98
	Greasy Valley Cave	13	0.80	0.03	0.99	936524.25	0.96
	Ivy Springs Cave	4	0.94	0.01	1.00	951144.75	0.96
	Major's Cave	0	1.00	0.00	1.00	2630877.75	0.88
	Marshall Caves	0	1.00	0.00	1.00	155139.75	0.99
	Nesbitt Spring Cave	3	0.95	0.00	1.00	571824.00	0.97
	Old Pendergrass Cave	43	0.34	0.00	1.00	6243765.75	0.72
	Pretty Clean Cave	0	1.00	0.00	1.00	30865.50	1.00
	Rootville Cave	2	0.97	0.00	1.00	365512.50	0.98
	Spavinaw Creek Cave						
	War Eagle Cave	5	0.92	0.00	1.00	1796697.00	0.92
	Withrow Springs Cave	5	0.92	0.00	1.00	1796697.00	0.92
<i>Caecidotea dimorpha</i>							
	Elm Cave	0	1.00	0.00	1.00	8122.50	1.00
	Martin Hollow Cave	0	1.00	0.00	1.00	624620.25	0.97
	Mr. Griffin's Cave # 1	0	1.00	0.00	1.00	0.00	1.00
	Nesbitt Spring Cave	3	0.95	0.00	1.00	571824.00	0.97
	Riley's Springbox	0	1.00	0.00	1.00	123462.00	0.99
	Stovepipe Cave	0	1.00	0.00	1.00	287536.50	0.99
	Summer Cave	0	1.00	0.00	1.00	43861.50	1.00
<i>Caecidotea macropropoda</i>							

Species Site	RWQN_02		RWQN_03		RWQN_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Fincher Cave	0	1.00	0.00	1.00	154327.50	0.99
Spring at Bradley Shelter	0	1.00	0.00	1.00	939773.25	0.96
Stormdrain Spring at University of Arkansas	0	1.00	0.00	1.00	30053.25	1.00
Watson Cave	0	1.00	0.00	1.00	1219999.50	0.94
<i>Caecidotea salemensis</i>						
Deep cistern 5.5 mi. S of Imboden	0	1.00	0.00	1.00	406125.00	0.98
<i>Caecidotea steevesi</i>						
AGFC Nursery Pond on Beaver Lake	0	1.00	0.00	1.00	8934.75	1.00
Cave on Pond Above Black Bass Lake	0	1.00	0.00	1.00	38988.00	1.00
Old Spanish Treasure Cave	0	1.00	0.00	1.00	114527.25	0.99
War Eagle Cave	5	0.92	0.00	1.00	1796697.00	0.92
Withrow Springs Cave	5	0.92	0.00	1.00	1796697.00	0.92
<i>Caecidotea stiladactyla</i>						
Arkansas Archaeological Survey Site #3BE352	0	1.00	0.00	1.00	420745.50	0.98
Bently Cave	0	1.00	0.00	1.00	22743.00	1.00
Big Mouth Cave						
Brock Spring	13	0.80	0.01	1.00	1575765.00	0.93
Bull Shoals Caverns	0	1.00	0.00	1.00	110466.00	1.00
Cal Cave	3	0.95	0.00	1.00	1185072.75	0.95
Cave Mountain Cave	0	1.00	0.00	1.00	275352.75	0.99
Cave on North Boundary Trail	0	1.00	0.00	1.00	13808.25	1.00
Cave Springs Cave	26	0.60	0.00	1.00	22110257.25	0.00
Cold Cave	0	1.00	0.00	1.00	107217.00	1.00
Covington's Cave						
Dickerson Cave	13	0.80	0.01	1.00	1841370.75	0.92
Eden Falls Cave	0	1.00	0.00	1.00	949520.25	0.96

Species	Site	RWQN_02		RWQN_03		RWQN_04	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Fish Pond Cave	0	1.00	0.00	1.00	169760.25	0.99
	Fitton Cave	0	1.00	0.00	1.00	3556842.75	0.84
	Granny Parker's Cave	0	1.00	0.00	1.00	95845.50	1.00
	John Eddings Cave	3	0.95	0.00	1.00	1185072.75	0.95
	Laningham's Cave	0	1.00	0.00	1.00	949520.25	0.96
	Middle Creek Spring Cave	0	1.00	0.00	1.00	353328.75	0.98
	Novack Spring Cave	0	1.00	0.00	1.00	1051863.75	0.95
	Old Joe Cave	7	0.89	0.00	1.00	3952408.50	0.82
	Sherfield Cave	0	1.00	0.00	1.00	363888.00	0.98
	Simpson's Cave	0	1.00	0.00	1.00	304593.75	0.99
	Spring at Hogscald	3	0.95	0.00	1.00	376071.75	0.98
	Spring at Sequoyah Woods	0	1.00	0.00	1.00	13808.25	1.00
	Spring on Butler Creek Road	0	1.00	0.00	1.00	77163.75	1.00
	Spring on North Boundary Trail	0	1.00	0.00	1.00	230679.00	0.99
	Stillhouse Hollow Cave	0	1.00	0.00	1.00	122649.75	0.99
	Tanyard Creek Nature Trail Cave	0	1.00	0.00	1.00	969014.25	0.96
	Unnamed seep 4 mi. S of Boxley	0	1.00	0.00	1.00	38175.75	1.00
	Unnamed seep 9 mi. SW of Harrison	0	1.00	0.00	1.00	29241.00	1.00
	Unnamed spring 3.5 mi. S of Jasper	0	1.00	0.00	1.00	149454.00	0.99
	War Eagle Cavern	0	1.00	0.00	1.00	5685.75	1.00
	White River Below Beaver Dam	0	1.00	0.00	1.00	6331488.75	0.71
<i>Cambarus aculabrum</i>							
	Bear Hollow Cave	17	0.74	0.01	1.00	12589875.00	0.43
	Brush Creek	65	0.00	0.01	1.00	6243765.75	0.72
	Logan Cave	43	0.34	0.00	1.00		
	Old Pendergrass Cave						
<i>Cambarus setosus</i>							

Species Site	RWQN_02		RWQN_03		RWQN_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Blowing Cave	0	1.00	0.00	1.00	3249.00	1.00
Poke Cave	0	1.00	0.00	1.00	3249.00	1.00
Tom Allen's Cave	0	1.00	0.00	1.00	470292.75	0.98
<i>Cambarus zophonastes</i>						
Hell Creek Cave	2	0.97	0.00	1.00	2838813.75	0.87
Nesbitt Spring Cave	3	0.95	0.00	1.00	571824.00	0.97
site in Yellville	1	0.98	0.09	0.96	1763394.75	0.92
<i>Dendrocoelopsis americana</i>						
Brock Spring	13	0.80	0.01	1.00	1575765.00	0.93
Granny Parker's Cave						
Steel Creek Campground Cave	0	1.00	0.00	1.00	139707.00	0.99
Watson Cave	0	1.00	0.00	1.00	1219999.50	0.94
<i>Eurycea spelaea</i>						
Alexander Cave	14	0.78	0.00	1.00	9510635.25	0.57
Allen Cave						
Back o' Beyond Cave	0	1.00	0.00	1.00	622995.75	0.97
Bald Scrappy Cave	0	1.00	0.00	1.00	129960.00	0.99
Bear Hollow Cave	0	1.00	0.00	1.00	5685.75	1.00
Bear Pit	0	1.00	0.00	1.00	264793.50	0.99
Bell Cave						
Bently Cave	0	1.00	0.00	1.00	22743.00	1.00
Big Mouth Cave						
Big Spring Cave	0	1.00	0.00	1.00	0.00	1.00
Biology Cave	0	1.00	0.00	1.00	1293914.25	0.94
Blanchard Springs Cavems	0	1.00	0.00	1.00	3249.00	1.00
Blowing Cave	0	1.00	0.00	1.00	0.00	1.00
Blowing Spring Cave	0	1.00	0.00	1.00	0.00	1.00

Species	Site	RWQN_02		RWQN_03		RWQN_04	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
Blowing Springs Cave		0	1.00	0.00	1.00	34926.75	1.00
Blowing Springs Cave		0	1.00	0.00	1.00	383382.00	0.98
Blue Heaven Cave		0	1.00	0.00	1.00	1128215.25	0.95
Bonanza Cave		0	1.00	0.00	1.00	317589.75	0.99
Bonanza Mine		0	1.00	0.00	1.00	0.00	1.00
Breakdown Cave		0	1.00	0.00	1.00	9747.00	1.00
Brewer Cave							
Bull Shoals Caverns		0	1.00	0.00	1.00	110466.00	1.00
Cave River Cave		0	1.00	0.00	1.00	205499.25	0.99
Cave Springs Cave		26	0.60	0.00	1.00	22110257.25	0.00
Chambers Hollow Cave		0	1.00	0.00	1.00	140519.25	0.99
Chilly Bowl Cave		0	1.00	0.00	1.00	90972.00	1.00
Chinn Springs Cave		0	1.00	0.00	1.00	2239373.25	0.90
Congo Crawl							
Coon Cave		0	1.00	0.00	1.00	8934.75	1.00
Copperhead Cave		0	1.00	0.00	1.00	345206.25	0.98
Corkscrew Cave		0	1.00	0.00	1.00	146205.00	0.99
Cosmic Caverns		1	0.98	0.00	1.00	1119280.50	0.95
Crystal Dome Cave		0	1.00	0.00	1.00	1265485.50	0.94
Cushman Cave		0	1.00	0.00	1.00	79600.50	1.00
Cyner Cave		0	1.00	0.00	1.00	1909599.75	0.91
Davis Creek Cave							
Dear Buster Cave		3	0.95	0.00	1.00	527150.25	0.98
Diamond Cave		0	1.00	0.00	1.00	291597.75	0.99
Dickerson Cave		13	0.80	0.01	1.00	1841370.75	0.92
Eckel Cave		0	1.00	0.00	1.00	178695.00	0.99
Elm Cave		0	1.00	0.00	1.00	8122.50	1.00

Species Site	RWQN_02		RWQN_03		RWQN_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Ennis Cave	0	1.00	0.00	1.00	637616.25	0.97
Fancher Cave						
Fish Pond Cave	0	1.00	0.00	1.00	169760.25	0.99
Fitton Cave	0	1.00	0.00	1.00	3556842.75	0.84
Fitton Spring Cave	0	1.00	0.00	1.00	3556842.75	0.84
Foushee Cave	0	1.00	0.00	1.00	433741.50	0.98
Friday the 13th Cave	0	1.00	0.00	1.00	3556842.75	0.84
Green River Cave	2	0.97	0.00	1.00	592942.50	0.97
Gunner Cave	5	0.92	0.00	1.00	909720.00	0.96
Gustafson Cave	0	1.00	0.00	1.00	812.25	1.00
Hammer Springs Cave	0	1.00	0.00	1.00	60106.50	1.00
Hell Creek Cave	2	0.97	0.00	1.00	2838813.75	0.87
Herald Hollow Cave	0	1.00	0.00	1.00	2436.75	1.00
Hickory Creek Cave						
Hidden Spring Cave	0	1.00	0.00	1.00	0.00	1.00
Hog Head Cave	0	1.00	0.00	1.00	500346.00	0.98
Huchingson's Waterfall Cave						
Hunter's Cave	0	1.00	0.00	1.00	30053.25	1.00
Hurricane River Cave	0	1.00	0.00	1.00	77163.75	1.00
Icebox Cave						
Indian Rockhouse Cave	0	1.00	0.00	1.00	325712.25	0.99
In-D-Pendants Cave	0	1.00	0.00	1.00	216870.75	0.99
Janus Pit	0	1.00	0.00	1.00	25179.75	1.00
Jelico Hollow Cave	0	1.00	0.00	1.00	8934.75	1.00
John Eddings Cave	0	1.00	0.00	1.00	95845.50	1.00
Lewis Spring Cave						
Little Den Cave	0	1.00	0.00	1.00	3556842.75	0.84

Species Site	RWQN_02		RWQN_03		RWQN_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Logan Cave	65	0.00	0.01	1.00	12589875.00	0.43
Major's Cave	0	1.00	0.00	1.00	2630877.75	0.88
Mammoth Spring	0	1.00	0.00	1.00	84474.00	1.00
Martin Hollow Cave	0	1.00	0.00	1.00	624620.25	0.97
Miner's Cave	0	1.00	0.00	1.00	168948.00	0.99
Mr. Clean Cave	0	1.00	0.00	1.00	237989.25	0.99
Mr. Griffin's Cave # 1	0	1.00	0.00	1.00	0.00	1.00
Needles Cave	0	1.00	0.00	1.00	160013.25	0.99
Nesbitt Spring Cave	3	0.95	0.00	1.00	571824.00	0.97
Norfolk Bat Cave	0	1.00	0.00	1.00	315965.25	0.99
Old Joe Cave	0	1.00	0.00	1.00	353328.75	0.98
Omega Cave						
Panther Mountain Cave						
Pigeon Roost Cave	0	1.00	0.00	1.00	0.00	1.00
Potato Cave						
Pregnant Nun Cave	3	0.95	0.00	1.00	376071.75	0.98
Pretty Clean Cave	0	1.00	0.00	1.00	30865.50	1.00
Reed Cave	0	1.00	0.00	1.00	43049.25	1.00
Richardson Cave	0	1.00	0.00	1.00	84474.00	1.00
Riley's Springbox	0	1.00	0.00	1.00	123462.00	0.99
Rootville Cave	2	0.97	0.00	1.00	365512.50	0.98
Rory Cave	0	1.00	0.00	1.00	293222.25	0.99
Salamander Cave	0	1.00	0.00	1.00	2436.75	1.00
Salt peter Cave	0	1.00	0.00	1.00	0.00	1.00
Slick Rock Hollow Cave						
Springhouse at Steel Creek Ranger Cabin	0	1.00	0.00	1.00	71478.00	1.00
Steel Creek Campground Cave	0	1.00	0.00	1.00	139707.00	0.99



Species	Site	RWQN_02		RWQN_03		RWQN_04	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Stillhouse Hollow Cave	0	1.00	0.00	1.00	77163.75	1.00
	Stovepipe Cave	0	1.00	0.00	1.00	287536.50	0.99
	Summer Cave	0	1.00	0.00	1.00	43861.50	1.00
	Tom Allen's Cave	0	1.00	0.00	1.00	470292.75	0.98
	Tom Barnes Cave	0	1.00	0.00	1.00	62543.25	1.00
	Toney Bend Mine # 2	0	1.00	0.00	1.00	342769.50	0.98
	Tweet's Cave	0	1.00	0.00	1.00	298908.00	0.99
	Unnamed cave	0	1.00	0.00	1.00	51984.00	1.00
	Unnamed caves at Devil's Knob Natural Area	0	1.00	0.00	1.00	7310.25	1.00
	Van Dyke Spring Cave	0	1.00	0.00	1.00	3556842.75	0.84
	Von Wadding's Memorial Cave	0	1.00	0.00	1.00	9747.00	1.00
	War Eagle Cave	5	0.92	0.00	1.00	1796697.00	0.92
	War Eagle Cavern	0	1.00	0.00	1.00	29241.00	1.00
	Whippoorwill Cave	0	1.00	0.00	1.00	8934.75	1.00
	Willis Cave	0	1.00	0.00	1.00	3556842.75	0.84
	Wolf Creek Cave	0	1.00	0.00	1.00	101531.25	1.00
	Wounded Knee Cave	0	1.00	0.00	1.00	65792.25	1.00
	<i>Lirceus bicuspidatus</i>						
	Diamond Cave	0	1.00	0.00	1.00	291597.75	0.99
	Foushee Cave	0	1.00	0.00	1.00	433741.50	0.98
	Hell Creek Cave	2	0.97	0.00	1.00	2838813.75	0.87
	Hurricane River Cave	0	1.00	0.00	1.00	77163.75	1.00
	<i>Lirceus bidentatus</i>						
	Unnamed seep 9 mi. SW of Harrison	0	1.00	0.00	1.00	969014.25	0.96
	<i>Stygobromus ozarkensis</i>						
	Bear Hollow Cave	0	1.00	0.00	1.00	5685.75	1.00

Species Site	RWQN_02		RWQN_03		RWQN_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Blowing Springs Cave	0	1.00	0.00	1.00	34926.75	1.00
Cave on Pond Above Black Bass Lake	0	1.00	0.00	1.00	38988.00	1.00
Cave Springs Cave	26	0.60	0.00	1.00	22110257.25	0.00
Civil War Cave	11	0.83	0.00	1.00	4983153.75	0.77
Dickerson Cave	13	0.80	0.01	1.00	1841370.75	0.92
Fitton Cave	0	1.00	0.00	1.00	3556842.75	0.84
Fitton Spring Cave	0	1.00	0.00	1.00	3556842.75	0.84
Hunter's Cave	0	1.00	0.00	1.00	30053.25	1.00
John Eddings Cave	0	1.00	0.00	1.00	95845.50	1.00
Logan Cave	65	0.00	0.01	1.00	12589875.00	0.43
Needles Cave	0	1.00	0.00	1.00	160013.25	0.99
Old Pendergrass Cave	43	0.34	0.00	1.00	6243765.75	0.72
Pretty Clean Cave	0	1.00	0.00	1.00	30865.50	1.00
Reed Cave	0	1.00	0.00	1.00	43049.25	1.00
Sherfield Cave	0	1.00	0.00	1.00	1051863.75	0.95
Spavinaw Creek Cave						
War Eagle Cave	5	0.92	0.00	1.00	1796697.00	0.92
War Eagle Cavern	0	1.00	0.00	1.00	29241.00	1.00
White River Below Beaver Dam	0	1.00	0.00	1.00	149454.00	0.99
Withrow Springs Cave	5	0.92	0.00	1.00	1796697.00	0.92
<i>Typhlichthys subterraneus</i>						
Richardson Cave	0	1.00	0.00	1.00	84474.00	1.00
Unnamed well in Randolph County						

Table Appendix E-4. Index values and scaled scores for RWQN 05 Raw through RWQP 01 Scaled.

Species	Site	RWQN_05 Raw	RWQN_05 Scaled	RWQN Raw	RWQN Scaled	RWQP_01 Raw	RWQP_01 Scaled
<i>Amblyopsis rosae</i>							
	AGFC Nursery Pond on Beaver Lake	0.03	0.96	4.96	0.99	0.00	1.00
	Cave Springs Cave	0.45	0.35	2.57	0.51	18364394.54	0.00
	Civil War Cave	0.42	0.39	3.81	0.76	106.94	1.00
	Hewlitt's Spring Hole	0.60	0.13	3.72	0.74	6957051.50	0.62
	James-Ditto Cave	0.40	0.42	4.36	0.87	12.82	1.00
	Logan Cave	0.41	0.40	2.03	0.41	63625.53	1.00
	Monte Ne Sinkhole	0.07	0.89	4.39	0.88	14.04	1.00
	Mule Hole Sink	0.28	0.60	4.59	0.92	4.20	1.00
	Rootville Cave	0.18	0.74	4.65	0.93	17.38	1.00
	Tom Allen's Cave	0.22	0.68	4.64	0.93	13.33	1.00
<i>Amnicola cora</i>							
	Foushee Cave	0.06	0.91	4.74	0.95	112382.79	0.99
<i>Batrachus pseudomucronatus</i>							
	Deep cistern 5.5 mi. S of Imboden	0.30	0.57	4.52	0.90	0.00	1.00
	Mansell Cave	0.28	0.60	4.56	0.91	0.00	1.00
<i>Caecidotea ancyla</i>							
	Bear Hollow Cave	0.00	1.00	5.00	1.00	389524.21	0.98
	Brewer Cave						
	Denny Cave	0.41	0.41	3.90	0.78	30.77	1.00
	Fitton Spring Cave	0.11	0.85	4.36	0.87	61.70	1.00
	Foushee Cave	0.06	0.91	4.74	0.95	112382.79	0.99
	Greasy Valley Cave	0.47	0.33	4.03	0.81	0.00	1.00
	Ivy Springs Cave	0.49	0.30	4.16	0.83	0.00	1.00
	Major's Cave	0.34	0.51	3.39	0.68	82.37	1.00
	Marshall Caves	0.20	0.71	4.70	0.94	2.92	1.00

Species	Site	RWQN_05		RWQN_05		RWQN		RWQP_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Nesbitt Spring Cave	0.21	0.70	4.61	0.92	0.00	1.00	0.00	1.00
	Old Pendergrass Cave	0.13	0.81	3.32	0.66	970705.95	0.95		
	Pretty Clean Cave	0.01	0.98	4.98	1.00	0.00	1.00	0.00	1.00
	Rootville Cave	0.18	0.74	4.65	0.93	17.38	1.00		
	Spavinaw Creek Cave								
	War Eagle Cave	0.21	0.70	4.33	0.87	106.21	1.00		
	Withrow Springs Cave	0.21	0.70	4.33	0.87	106.21	1.00		
	<i>Caecidotea dimorpha</i>								
	Elm Cave	0.01	0.99	4.98	1.00	10.05	1.00		
	Martin Hollow Cave	0.26	0.62	4.56	0.91	0.00	1.00	0.00	1.00
	Mr. Griffin's Cave # 1	0.00	1.00	5.00	1.00	0.00	1.00	0.00	1.00
	Nesbitt Spring Cave	0.21	0.70	4.61	0.92	0.00	1.00	0.00	1.00
	Riley's Springbox	0.06	0.92	4.89	0.98	0.00	1.00	0.00	1.00
	Stovepipe Cave	0.37	0.47	4.45	0.89	0.00	1.00	0.00	1.00
	Summer Cave	0.01	0.99	4.98	1.00	0.00	1.00	0.00	1.00
	<i>Caecidotea macropoda</i>								
	Fincher Cave	0.07	0.91	4.85	0.97	0.47	1.00		
	Spring at Bradley Shelter	0.56	0.20	4.13	0.83	0.00	1.00	0.00	1.00
	Stormdrain Spring at University of Arkansas	0.02	0.98	4.98	1.00	44.97	1.00		
	Watson Cave	0.55	0.21	4.04	0.81	0.00	1.00	0.00	1.00
	<i>Caecidotea salemensis</i>								
	Deep cistern 5.5 mi. S of Imboden	0.30	0.57	4.52	0.90	0.00	1.00	0.00	1.00
	<i>Caecidotea steevesi</i>								
	AGFC Nursery Pond on Beaver Lake	0.03	0.96	4.96	0.99	0.00	1.00	0.00	1.00
	Cave on Pond Above Black Bass Lake	0.01	0.99	4.90	0.98	20.80	1.00		
	Old Spanish Treasure Cave	0.04	0.95	4.86	0.97	30.82	1.00		

Species	Site	RWQN_05		RWQN_05		RWQN		RWQP_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	War Eagle Cave	0.21	0.70	4.33	0.87	106.21	1.00		
	Withrow Springs Cave	0.21	0.70	4.33	0.87	106.21	1.00		
<i>Caecidotea stilodactyla</i>									
	Arkansas Archaeological Survey Site #3BE352	0.34	0.51	4.44	0.89	15.95	1.00		
	Bently Cave	0.07	0.90	4.89	0.98	3.01	1.00		
	Big Mouth Cave								
	Brock Spring	0.36	0.48	3.65	0.73	43.16	1.00		
	Bull Shoals Caverns	0.04	0.94	4.94	0.99	29.24	1.00		
	Cal Cave	0.29	0.57	4.39	0.88	0.00	1.00		
	Cave Mountain Cave	0.09	0.87	4.85	0.97	20.33	1.00		
	Cave on North Boundary Trail	0.01	0.99	4.98	1.00	4.43	1.00		
	Cave Springs Cave	0.45	0.35	2.57	0.51	18364394.54	0.00		
	Cold Cave	0.28	0.60	4.51	0.90	6.89	1.00		
	Covington's Cave								
	Dickerson Cave	0.33	0.53	4.16	0.83	21.73	1.00		
	Eden Falls Cave	0.19	0.73	4.65	0.93	4.55	1.00		
	Fish Pond Cave	0.25	0.64	4.61	0.92	0.00	1.00		
	Fitton Cave	0.11	0.85	4.36	0.87	61.70	1.00		
	Granny Parker's Cave								
	John Eddings Cave	0.08	0.89	4.86	0.97	0.89	1.00		
	Laningham's Cave	0.29	0.57	4.39	0.88	0.00	1.00		
	Middle Creek Spring Cave								
	Novack Spring Cave	0.19	0.73	4.65	0.93	4.55	1.00		
	Old Joe Cave	0.06	0.91	4.75	0.95	33.37	1.00		
	Sherfield Cave	0.05	0.93	4.77	0.95	82.32	1.00		
	Simpson's Cave	0.40	0.42	3.92	0.78	19.85	1.00		

Species	Site	RWQN_05		RWQN_01		RWQP_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Spring at Hogscald	0.06	0.92	4.81	0.96	4.79	1.00
	Spring at Sequoyah Woods	0.07	0.90	4.89	0.98	47.93	1.00
	Spring on Butler Creek Road	0.04	0.95	4.86	0.97	0.65	1.00
	Spring on North Boundary Trail	0.01	0.99	4.98	1.00	4.43	1.00
	Stillhouse Hollow Cave	0.14	0.79	4.78	0.96	9.42	1.00
	Tanyard Creek Nature Trail Cave	0.22	0.68	4.65	0.93	6.17	1.00
	Unnamed seep 4 mi. S of Boxley	0.06	0.91	4.90	0.98	0.00	1.00
	Unnamed seep 9 mi. SW of Harrison	0.16	0.77	4.65	0.93	17.86	1.00
	Unnamed spring 3.5 mi. S of Jasper	0.02	0.98	4.94	0.99	22.36	1.00
	War Eagle Cavern	0.01	0.99	4.87	0.97	26.70	1.00
	White River Below Beaver Dam	0.06	0.91	4.87	0.97	27.02	1.00
<i>Cambarus aculabrum</i>							
	Bear Hollow Cave	0.00	1.00	5.00	1.00	389524.21	0.98
	Brush Creek	0.69	0.00	3.30	0.66	1142938.94	0.94
	Logan Cave	0.41	0.40	2.03	0.41	63625.53	1.00
	Old Pendergrass Cave	0.13	0.81	3.32	0.66	970705.95	0.95
<i>Cambarus setosus</i>							
	Blowing Cave	0.01	0.99	4.99	1.00	0.00	1.00
	Poke Cave	0.01	0.99	4.99	1.00	0.00	1.00
	Tom Allen's Cave	0.22	0.68	4.64	0.93	13.33	1.00
<i>Cambarus zophonastes</i>							
	Hell Creek Cave	0.14	0.79	3.79	0.76	377902.44	0.98
	Nesbitt Spring Cave	0.21	0.70	4.61	0.92	0.00	1.00
	site in Yellville	0.16	0.77	4.43	0.89	151.16	1.00
<i>Dendrocoelopsis americana</i>							
	Brock Spring	0.36	0.48	3.65	0.73	43.16	1.00
	Granny Parker's Cave						

Species	Site	RWQN_05		RWQN_05		RWQN		RWQP_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Steel Creek Campground Cave	0.04	0.95	4.92	0.98	22.07	1.00		
	Watson Cave	0.55	0.21	4.04	0.81	0.00	1.00		
<i>Eurycea spelaea</i>	Alexander Cave	0.33	0.52	3.45	0.69	651201.76	0.96		
	Allen Cave								
	Back o' Beyond Cave	0.24	0.66	4.61	0.92	0.00	1.00		
	Bald Scrappy Cave	0.06	0.92	4.90	0.98	9.03	1.00		
	Bear Hollow Cave	0.00	1.00	5.00	1.00	389524.21	0.98		
	Bear Pit	0.13	0.81	4.79	0.96	0.00	1.00		
	Bell Cave								
	Bently Cave	0.07	0.90	4.89	0.98	3.01	1.00		
	Big Mouth Cave								
	Big Spring Cave								
	Biology Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Blanchard Springs Caverns	0.03	0.95	4.74	0.95	1474952.81	0.92		
	Blowing Cave	0.01	0.99	4.99	1.00	0.00	1.00		
	Blowing Spring Cave	0.00	1.00	4.99	1.00	0.00	1.00		
	Blowing Springs Cave	0.01	0.98	4.87	0.97	18.11	1.00		
	Blowing Springs Cave	0.16	0.77	4.73	0.95	0.00	1.00		
	Blue Heaven Cave	0.19	0.72	4.59	0.92	16.61	1.00		
	Bonanza Cave	0.09	0.87	4.84	0.97	0.00	1.00		
	Bonanza Mine	0.00	1.00	4.99	1.00	0.00	1.00		
	Breakdown Cave	0.00	1.00	5.00	1.00	4.59	1.00		
	Brewer Cave								
	Bull Shoals Caverns	0.04	0.94	4.94	0.99	29.24	1.00		
	Cave River Cave	0.05	0.92	4.89	0.98	0.00	1.00		
	Cave Springs Cave	0.45	0.35	2.57	0.51	18364394.54	0.00		

Species Site	RWQN_05		RWQN_05		RWQN		RWQP_01		RWQP_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Chambers Hollow Cave	0.04	0.94	4.91	0.98	0.00	1.00	0.00	1.00	0.00	1.00
Chilly Bowl Cave	0.03	0.96	4.92	0.98	0.00	1.00	0.00	1.00	0.00	1.00
Chinn Springs Cave	0.13	0.81	4.38	0.88	11.06	1.00	11.06	1.00	11.06	1.00
Congo Crawl										
Coon Cave	0.01	0.99	4.98	1.00	7.71	1.00	7.71	1.00	7.71	1.00
Copperhead Cave	0.11	0.84	4.79	0.96	6.32	1.00	6.32	1.00	6.32	1.00
Corkscrew Cave	0.03	0.95	4.88	0.98	0.00	1.00	0.00	1.00	0.00	1.00
Cosmic Caverns	0.20	0.72	4.52	0.90	21.62	1.00	21.62	1.00	21.62	1.00
Crystal Dome Cave	0.23	0.67	4.24	0.85	40.57	1.00	40.57	1.00	40.57	1.00
Cushman Cave	0.03	0.95	4.94	0.99	1.06	1.00	1.06	1.00	1.06	1.00
Cyner Cave	0.14	0.79	4.64	0.93	27.61	1.00	27.61	1.00	27.61	1.00
Davis Creek Cave										
Dear Buster Cave	0.06	0.91	4.81	0.96	13.25	1.00	13.25	1.00	13.25	1.00
Diamond Cave	0.06	0.92	4.85	0.97	8.14	1.00	8.14	1.00	8.14	1.00
Dickerson Cave	0.33	0.53	4.16	0.83	21.73	1.00	21.73	1.00	21.73	1.00
Eckel Cave	0.15	0.79	4.77	0.95	0.00	1.00	0.00	1.00	0.00	1.00
Elm Cave	0.01	0.99	4.98	1.00	10.05	1.00	10.05	1.00	10.05	1.00
Ennis Cave	0.09	0.86	4.78	0.96	0.09	1.00	0.09	1.00	0.09	1.00
Fancher Cave										
Fish Pond Cave	0.25	0.64	4.61	0.92	0.00	1.00	0.00	1.00	0.00	1.00
Fitton Cave	0.11	0.85	4.36	0.87	61.70	1.00	61.70	1.00	61.70	1.00
Fitton Spring Cave	0.11	0.85	4.36	0.87	61.70	1.00	61.70	1.00	61.70	1.00
Foushee Cave	0.06	0.91	4.74	0.95	112382.79	0.99	112382.79	0.99	112382.79	0.99
Friday the 13th Cave	0.11	0.85	4.36	0.87	61.70	1.00	61.70	1.00	61.70	1.00
Green River Cave	0.22	0.68	4.53	0.91	0.00	1.00	0.00	1.00	0.00	1.00
Gunner Cave	0.09	0.86	4.71	0.94	33.76	1.00	33.76	1.00	33.76	1.00
Gustafson Cave	0.00	1.00	5.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00



Species	Site	RWQN_05		RWQN_05		RWQN		RWQP_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Hammer Springs Cave	0.01	0.98	4.96	0.99	17.66	1.00		
	Hell Creek Cave	0.14	0.79	3.79	0.76	377902.44	0.98		
	Herald Hollow Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Hickory Creek Cave								
	Hidden Spring Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Hog Head Cave	0.09	0.87	4.82	0.96	18.71	1.00		
	Huchingson's Waterfall Cave								
	Hunter's Cave	0.01	0.99	4.99	1.00	0.00	1.00		
	Hurricane River Cave	0.02	0.97	4.95	0.99	0.90	1.00		
	Icebox Cave								
	Indian Rockhouse Cave	0.04	0.95	4.85	0.97	38.48	1.00		
	In-D-Pendants Cave	0.06	0.91	4.90	0.98	0.00	1.00		
	Janus Pit	0.02	0.98	4.97	0.99	0.00	1.00		
	Jelico Hollow Cave	0.00	1.00	4.99	1.00	0.00	1.00		
	John Eddings Cave	0.08	0.89	4.86	0.97	0.89	1.00		
	Lewis Spring Cave								
	Little Den Cave	0.11	0.85	4.36	0.87	61.70	1.00		
	Logan Cave	0.41	0.40	2.03	0.41	63625.53	1.00		
	Major's Cave	0.34	0.51	3.39	0.68	82.37	1.00		
	Mammoth Spring	0.09	0.86	4.86	0.97	28.16	1.00		
	Martin Hollow Cave	0.26	0.62	4.56	0.91	0.00	1.00		
	Miner's Cave	0.05	0.93	4.85	0.97	28.65	1.00		
	Mr. Clean Cave	0.07	0.90	4.88	0.98	0.00	1.00		
	Mr. Griffin's Cave # 1	0.00	1.00	5.00	1.00	0.00	1.00		
	Needles Cave	0.08	0.88	4.85	0.97	12.75	1.00		
	Nesbitt Spring Cave	0.21	0.70	4.61	0.92	0.00	1.00		
	Norfolk Bat Cave	0.12	0.83	4.75	0.95	14.16	1.00		

Species Site	RWQN_05		RWQN_05		RWQN		RWQP_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Old Joe Cave	0.06	0.91	4.75	0.95	33.37	1.00		
Omega Cave								
Panther Mountain Cave								
Pigeon Roost Cave	0.00	1.00	5.00	1.00	7.68	1.00		
Potato Cave								
Pregnant Nun Cave	0.04	0.95	4.86	0.97	0.65	1.00		
Pretty Clean Cave	0.01	0.98	4.98	1.00	0.00	1.00		
Reed Cave	0.03	0.95	4.92	0.98	0.00	1.00		
Richardson Cave	0.05	0.92	4.89	0.98	29.43	1.00		
Riley's Springbox	0.06	0.92	4.89	0.98	0.00	1.00		
Rootville Cave	0.18	0.74	4.65	0.93	17.38	1.00		
Rory Cave	0.19	0.73	4.71	0.94	0.00	1.00		
Salamander Cave	0.00	1.00	5.00	1.00	0.00	1.00		
Saltpeter Cave	0.00	1.00	4.99	1.00	0.00	1.00		
Slick Rock Hollow Cave								
Springhouse at Steel Creek Ranger Cabin	0.03	0.96	4.93	0.99	12.57	1.00		
Steel Creek Campground Cave	0.04	0.95	4.92	0.98	22.07	1.00		
Stillhouse Hollow Cave	0.14	0.79	4.78	0.96	9.42	1.00		
Stovepipe Cave	0.37	0.47	4.45	0.89	0.00	1.00		
Summer Cave	0.01	0.99	4.98	1.00	0.00	1.00		
Tom Allen's Cave	0.22	0.68	4.64	0.93	13.33	1.00		
Tom Barnes Cave	0.06	0.91	4.90	0.98	2.03	1.00		
Toney Bend Mine # 2	0.04	0.94	4.90	0.98	0.00	1.00		
Tweet's Cave	0.08	0.89	4.84	0.97	0.00	1.00		
Unnamed cave	0.19	0.73	4.72	0.94	0.00	1.00		
Unnamed caves at Devil's Knob Natural Area	0.01	0.99	4.99	1.00	0.00	1.00		

Species	Site	RWQN_05		RWQN_05		RWQN		RWQP_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Van Dyke Spring Cave	0.11	0.85	4.36	0.87	61.70	1.00		
	Von Wadding's Memorial Cave	0.00	1.00	5.00	1.00	4.59	1.00		
	War Eagle Cave	0.21	0.70	4.33	0.87	106.21	1.00		
	War Eagle Cavern	0.01	0.99	4.87	0.97	26.70	1.00		
	Whippoorwill Cave	0.00	1.00	4.99	1.00	0.00	1.00		
	Willis Cave	0.11	0.85	4.36	0.87	61.70	1.00		
	Wolf Creek Cave	0.02	0.97	4.96	0.99	0.00	1.00		
	Wounded Knee Cave	0.02	0.97	4.96	0.99	0.00	1.00		
	<i>Lirceus bicuspidatus</i>								
	Diamond Cave	0.06	0.92	4.85	0.97	8.14	1.00		
	Foushee Cave	0.06	0.91	4.74	0.95	112382.79	0.99		
	Hell Creek Cave	0.14	0.79	3.79	0.76	377902.44	0.98		
	Hurricane River Cave	0.02	0.97	4.95	0.99	0.90	1.00		
	<i>Lirceus bidentatus</i>								
	Unnamed seep 9 mi. SW of Harrison	0.16	0.77	4.65	0.93	17.86	1.00		
	<i>Stygobromus ozarkensis</i>								
	Bear Hollow Cave	0.00	1.00	5.00	1.00	389524.21	0.98		
	Blowing Springs Cave	0.01	0.98	4.87	0.97	18.11	1.00		
	Cave on Pond Above Black Bass Lake	0.01	0.99	4.90	0.98	20.80	1.00		
	Cave Springs Cave	0.45	0.35	2.57	0.51	18364394.54	0.00		
	Civil War Cave	0.42	0.39	3.81	0.76	106.94	1.00		
	Dickerson Cave	0.33	0.53	4.16	0.83	21.73	1.00		
	Fitton Cave	0.11	0.85	4.36	0.87	61.70	1.00		
	Fitton Spring Cave	0.11	0.85	4.36	0.87	61.70	1.00		
	Hunter's Cave	0.01	0.99	4.99	1.00	0.00	1.00		
	John Eddings Cave	0.08	0.89	4.86	0.97	0.89	1.00		
	Logan Cave	0.41	0.40	2.03	0.41	63625.53	1.00		

Species	Site	RWQN_05 Raw	RWQN_05 Scaled	RWQN Raw	RWQN Scaled	RWQP_01 Raw	RWQP_01 Scaled
	Needles Cave	0.08	0.88	4.85	0.97	12.75	1.00
	Old Pendergrass Cave	0.13	0.81	3.32	0.66	970705.95	0.95
	Pretty Clean Cave	0.01	0.98	4.98	1.00	0.00	1.00
	Reed Cave	0.03	0.95	4.92	0.98	0.00	1.00
	Sherfield Cave	0.05	0.93	4.77	0.95	82.32	1.00
	Spavinaw Creek Cave						
	War Eagle Cave	0.21	0.70	4.33	0.87	106.21	1.00
	War Eagle Cavern	0.01	0.99	4.87	0.97	26.70	1.00
	White River Below Beaver Dam	0.06	0.91	4.87	0.97	27.02	1.00
	Withrow Springs Cave	0.21	0.70	4.33	0.87	106.21	1.00
<i>Typhlichthys subterraneus</i>							
	Richardson Cave	0.05	0.92	4.89	0.98	29.43	1.00
	Unnamed well in Randolph County						

Table Appendix E-5. Index values and scaled scores for RWQP 02 Raw through RWQP 04 Scaled.

Species	Site	RWQP_02 Raw	RWQP_02 Scaled	RWQP_03 Raw	RWQP_03 Scaled	RWQP_04 Raw	RWQP_04 Scaled
<i>Amblyopsis rosae</i>							
	AGFC Nursery Pond on Beaver Lake	0.00	1.00	1.35	1.00	0	1.00
	Cave Springs Cave	372568.23	0.28	10473.00	0.00	38	0.00
	Civil War Cave	9.02	1.00	1445.95	0.86	2	0.95
	Hewlitt's Spring Hole	516601.11	0.00	78.70	0.99	3	0.92
	James-Ditto Cave	8.73	1.00	46.63	1.00	0	1.00
	Logan Cave	2094.24	1.00	442.17	0.96	4	0.89
	Monte Ne Sinkhole	4.34	1.00	242.55	0.98	0	1.00

Species	Site	RWQP_02		RWQP_03		RWQP_04	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Mule Hole Sink	9.78	1.00	16.46	1.00	0	1.00
	Rootville Cave	8.58	1.00	21.22	1.00	0	1.00
	Tom Allen's Cave	5.99	1.00	7.94	1.00	0	1.00
<i>Amnicola cora</i>							
	Foushee Cave	16558.45	0.97	71.73	0.99	0	1.00
<i>Bactrurus pseudomucronatus</i>							
	Deep cistern 5.5 mi. S of Imboden	0.00	1.00	16.03	1.00	0	1.00
	Mansell Cave	0.00	1.00	5.13	1.00	0	1.00
<i>Caecidotea ancyla</i>							
	Bear Hollow Cave	43306.29	0.92	364.56	0.97	0	1.00
	Brewer Cave						
	Denny Cave	3.51	1.00	97.76	0.99	2	0.95
	Fitton Spring Cave	1.83	1.00	152.03	0.99	0	1.00
	Foushee Cave	16558.45	0.97	71.73	0.99	0	1.00
	Greasy Valley Cave	0.00	1.00	26.37	1.00	0	1.00
	Ivy Springs Cave	0.00	1.00	16.75	1.00	0	1.00
	Major's Cave	10.71	1.00	2589.85	0.75	0	1.00
	Marshall Caves	3.63	1.00	25.86	1.00	0	1.00
	Nesbitt Spring Cave	0.00	1.00	8.87	1.00	0	1.00
	Old Pendergrass Cave	19538.85	0.96	3639.24	0.65	2	0.95
	Pretty Clean Cave	0.00	1.00	0.41	1.00	0	1.00
	Rootville Cave	8.58	1.00	21.22	1.00	0	1.00
	Spavinaw Creek Cave						
	War Eagle Cave	12.30	1.00	107.23	0.99	0	1.00
	Withrow Springs Cave	12.30	1.00	107.23	0.99	0	1.00
<i>Caecidotea dimorpha</i>							
	Elm Cave	9.15	1.00	9.00	1.00	0	1.00

Species Site	RWQP_02		RWQP_02		RWQP_03		RWQP_03		RWQP_04		RWQP_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Martin Hollow Cave	0.00	1.00	13.43	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Mr. Griffin's Cave # 1	0.00	1.00	0.02	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Nesbitt Spring Cave	0.00	1.00	8.87	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Riley's Springbox	0.00	1.00	10.43	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Stovepipe Cave	0.00	1.00	2.45	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Summer Cave	0.00	1.00	0.08	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
<i>Caecidotea macropropoda</i>												
Fincher Cave	0.20	1.00	28.24	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Spring at Bradley Shelter	0.00	1.00	11.97	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Stormdrain Spring at University of Arkansas	23.96	1.00	2629.53	1.00	0.75	0.75	4	0.89	4	0.89	0	1.00
Watson Cave	0.00	1.00	62.64	1.00	0.99	0.99	0	1.00	0	1.00	0	1.00
<i>Caecidotea salemensis</i>												
Deep cistern 5.5 mi. S of Imboden	0.00	1.00	16.03	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
<i>Caecidotea steevesi</i>												
AGFC Nursery Pond on Beaver Lake	0.00	1.00	1.35	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Cave on Pond Above Black Bass Lake	5.52	1.00	115.09	1.00	0.99	0.99	1	0.97	1	0.97	0	1.00
Old Spanish Treasure Cave	10.13	1.00	327.23	1.00	0.97	0.97	0	1.00	0	1.00	0	1.00
War Eagle Cave	12.30	1.00	107.23	1.00	0.99	0.99	0	1.00	0	1.00	0	1.00
Withrow Springs Cave	12.30	1.00	107.23	1.00	0.99	0.99	0	1.00	0	1.00	0	1.00
<i>Caecidotea stiladactyla</i>												
Arkansas Archaeological Survey Site #3BE352	12.66	1.00	28.74	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Bently Cave	9.59	1.00	155.87	1.00	0.99	0.99	0	1.00	0	1.00	0	1.00
Big Mouth Cave												
Brock Spring	9.96	1.00	278.66	1.00	0.97	0.97	2	0.95	2	0.95	0	1.00
Bull Shoals Caverns	10.31	1.00	382.92	1.00	0.96	0.96	0	1.00	0	1.00	0	1.00
Cal Cave	0.00	1.00	41.12	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00

Species	Site	RWQP_02 Raw	RWQP_02 Scaled	RWQP_03 Raw	RWQP_03 Scaled	RWQP_04 Raw	RWQP_04 Scaled
	Cave Mountain Cave	6.63	1.00	4.42	1.00	0	1.00
	Cave on North Boundary Trail	2.85	1.00	5.43	1.00	0	1.00
	Cave Springs Cave	372568.23	0.28	10473.00	0.00	38	0.00
	Cold Cave	17.77	1.00	35.47	1.00	0	1.00
	Covington's Cave						
	Dickerson Cave	3.86	1.00	39.37	1.00	0	1.00
	Eden Falls Cave	0.89	1.00	17.30	1.00	0	1.00
	Fish Pond Cave	0.00	1.00	11.25	1.00	0	1.00
	Fitton Cave	1.83	1.00	152.03	0.99	0	1.00
	Granny Parker's Cave						
	John Eddings Cave	0.72	1.00	9.97	1.00	0	1.00
	Laningham's Cave	0.00	1.00	41.12	1.00	0	1.00
	Middle Creek Spring Cave						
	Novack Spring Cave	0.89	1.00	17.30	1.00	0	1.00
	Old Joe Cave	5.88	1.00	121.43	0.99	1	0.97
	Sherfield Cave	3.75	1.00	56.50	0.99	0	1.00
	Simpson's Cave	2.01	1.00	123.39	0.99	0	1.00
	Spring at Hogscald	0.77	1.00	38.73	1.00	0	1.00
	Spring at Sequoyah Woods	10.79	1.00	1579.62	0.85	0	1.00
	Spring on Butler Creek Road	0.07	1.00	15.71	1.00	0	1.00
	Spring on North Boundary Trail	2.85	1.00	5.43	1.00	0	1.00
	Stillhouse Hollow Cave	17.53	1.00	4.19	1.00	0	1.00
	Tanyard Creek Nature Trail Cave	6.03	1.00	8.78	1.00	0	1.00
	Unnamed seep 4 mi. S of Boxley	0.00	1.00	3.25	1.00	0	1.00
	Unnamed seep 9 mi. SW of Harrison	2.98	1.00	42.81	1.00	0	1.00
	Unnamed spring 3.5 mi. S of Jasper	9.64	1.00	15.41	1.00	0	1.00
	War Eagle Cavern	4.56	1.00	61.12	0.99	0	1.00

Species	Site	RWQP_02 Raw	RWQP_02 Scaled	RWQP_03 Raw	RWQP_03 Scaled	RWQP_04 Raw	RWQP_04 Scaled
	White River Below Beaver Dam	10.87	1.00	19.06	1.00	0	1.00
<i>Cambarus aculabrum</i>							
	Bear Hollow Cave	43306.29	0.92	364.56	0.97	0	1.00
	Brush Creek	124811.67	0.76	478.39	0.95	7	0.82
	Logan Cave	2094.24	1.00	442.17	0.96	4	0.89
	Old Pendergrass Cave	19538.85	0.96	3639.24	0.65	2	0.95
<i>Cambarus setosus</i>							
	Blowing Cave	0.00	1.00	0.24	1.00	0	1.00
	Poke Cave	0.00	1.00	0.24	1.00	0	1.00
	Tom Allen's Cave	5.99	1.00	7.94	1.00	0	1.00
<i>Cambarus zophonastes</i>							
	Hell Creek Cave	19138.08	0.96	475.42	0.95	2	0.95
	Nesbitt Spring Cave	0.00	1.00	8.87	1.00	0	1.00
	site in Yellville	13.49	1.00	1705.19	0.84	0	1.00
<i>Dendrocoelopsis americana</i>							
	Brock Spring	9.96	1.00	278.66	0.97	2	0.95
	Granny Parker's Cave						
	Steel Creek Campground Cave	5.72	1.00	11.67	1.00	0	1.00
	Watson Cave	0.00	1.00	62.64	0.99	0	1.00
<i>Eurycea spelaea</i>							
	Alexander Cave	22564.72	0.96	207.01	0.98	1	0.97
	Allen Cave						
	Back o' Beyond Cave	0.00	1.00	6.87	1.00	0	1.00
	Bald Scrapy Cave	3.95	1.00	3.18	1.00	0	1.00
	Bear Hollow Cave	43306.29	0.92	364.56	0.97	0	1.00
	Bear Pit	0.00	1.00	2.20	1.00	0	1.00
	Bell Cave						



Species Site	RWQP_02		RWQP_03		RWQP_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Bently Cave	9.59	1.00	155.87	0.99	0	1.00
Big Mouth Cave						
Big Spring Cave	0.00	1.00	0.00	1.00	0	1.00
Biology Cave	37772.42	0.93	190.27	0.98	2	0.95
Blanchard Springs Caverns	0.00	1.00	0.24	1.00	0	1.00
Blowing Cave	0.00	1.00	2.71	1.00	0	1.00
Blowing Spring Cave	7.41	1.00	408.79	0.96	0	1.00
Blowing Springs Cave	0.00	1.00	6.35	1.00	0	1.00
Blowing Springs Cave	2.87	1.00	36.36	1.00	0	1.00
Blue Heaven Cave	0.00	1.00	6.79	1.00	0	1.00
Bonanza Cave	0.00	1.00	3.10	1.00	0	1.00
Bonanza Mine	1.11	1.00	0.00	1.00	0	1.00
Breakdown Cave						
Brewer Cave						
Bull Shoals Caverns	10.31	1.00	382.92	0.96	0	1.00
Cave River Cave	0.00	1.00	8.71	1.00	0	1.00
Cave Springs Cave	372568.23	0.28	10473.00	0.00	38	0.00
Chambers Hollow Cave	0.00	1.00	14.06	1.00	0	1.00
Chilly Bowl Cave	0.00	1.00	21.19	1.00	0	1.00
Chinn Springs Cave	0.65	1.00	150.25	0.99	0	1.00
Congo Crawl						
Coon Cave	7.58	1.00	4.39	1.00	2	0.95
Copperhead Cave	2.03	1.00	14.20	1.00	0	1.00
Corkscrew Cave	0.00	1.00	33.53	1.00	0	1.00
Cosmic Caverns	3.79	1.00	63.57	0.99	0	1.00
Crystal Dome Cave	7.35	1.00	165.58	0.98	0	1.00
Cushman Cave	0.46	1.00	25.35	1.00	0	1.00

Species Site	RWQP_02		RWQP_02		RWQP_03		RWQP_03		RWQP_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Cyner Cave	2.06	1.00	30.57	1.00			0			1.00
Davis Creek Cave										
Dear Buster Cave	1.51	1.00	16.32	1.00			1			0.97
Diamond Cave	1.56	1.00	26.62	1.00			0			1.00
Dickerson Cave	3.86	1.00	39.37	1.00			0			1.00
Eckel Cave	0.00	1.00	4.52	1.00			0			1.00
Elm Cave	9.15	1.00	9.00	1.00			0			1.00
Ennis Cave	0.01	1.00	23.02	1.00			0			1.00
Fancher Cave										
Fish Pond Cave	0.00	1.00	11.25	1.00			0			1.00
Fitton Cave	1.83	1.00	152.03	0.99			0			1.00
Fitton Spring Cave	1.83	1.00	152.03	0.99			0			1.00
Foushee Cave	16558.45	0.97	71.73	0.99			0			1.00
Friday the 13th Cave	1.83	1.00	152.03	0.99			0			1.00
Green River Cave	0.00	1.00	42.16	1.00			0			1.00
Gunner Cave	3.52	1.00	12.91	1.00			0			1.00
Gustafson Cave	0.00	1.00	0.45	1.00			0			1.00
Hammer Springs Cave	3.08	1.00	11.42	1.00			0			1.00
Hell Creek Cave	19138.08	0.96	475.42	0.95			2			0.95
Herald Hollow Cave	0.00	1.00	0.00	1.00			0			1.00
Hickory Creek Cave										
Hidden Spring Cave	0.00	1.00	0.00	1.00			0			1.00
Hog Head Cave	3.39	1.00	13.10	1.00			0			1.00
Huchingson's Waterfall Cave										
Hunter's Cave	0.00	1.00	0.63	1.00			0			1.00
Hurricane River Cave	0.21	1.00	13.26	1.00			0			1.00
Icebox Cave										

Species Site	RWQP_02		RWQP_02		RWQP_03		RWQP_03		RWQP_04		RWQP_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Indian Rockhouse Cave	4.23	1.00	41.52	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
In-D-Pendants Cave	0.00	1.00	1.50	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Janus Pit	0.00	1.00	3.99	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Jelico Hollow Cave	0.00	1.00	5.00	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
John Eddings Cave	0.72	1.00	9.97	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Lewis Spring Cave												
Little Den Cave	1.83	1.00	152.03	1.00	0.99	0.99	0	1.00	0	1.00	0	1.00
Logan Cave	2094.24	1.00	442.17	1.00	0.96	0.96	4	0.89	4	0.89	4	0.89
Major's Cave	10.71	1.00	2589.85	1.00	0.75	0.75	0	1.00	0	1.00	0	1.00
Mammoth Spring	18.26	1.00	537.79	1.00	0.95	0.95	0	1.00	0	1.00	0	1.00
Martin Hollow Cave	0.00	1.00	13.43	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Miner's Cave	7.82	1.00	125.07	1.00	0.99	0.99	1	0.97	1	0.97	1	0.97
Mr. Clean Cave	0.00	1.00	7.93	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Mr. Griffin's Cave # 1	0.00	1.00	0.02	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Needles Cave	6.51	1.00	146.15	1.00	0.99	0.99	0	1.00	0	1.00	0	1.00
Nesbitt Spring Cave	0.00	1.00	8.87	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Norfolk Bat Cave	5.26	1.00	208.03	1.00	0.98	0.98	1	0.97	1	0.97	1	0.97
Old Joe Cave	5.88	1.00	121.43	1.00	0.99	0.99	1	0.97	1	0.97	1	0.97
Omega Cave												
Panther Mountain Cave												
Pigeon Roost Cave	5.29	1.00	1.43	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Potato Cave												
Pregnant Nun Cave	0.07	1.00	15.71	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Pretty Clean Cave	0.00	1.00	0.41	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Reed Cave	0.00	1.00	14.40	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Richardson Cave	18.26	1.00	10.93	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00
Riley's Springbox	0.00	1.00	10.43	1.00	1.00	1.00	0	1.00	0	1.00	0	1.00

Species Site	RWQP_02		RWQP_03		RWQP_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Rootville Cave	8.58	1.00	21.22	1.00	0	1.00
Rory Cave	0.00	1.00	5.01	1.00	0	1.00
Salamander Cave	0.00	1.00	0.83	1.00	0	1.00
Salt peter Cave	0.00	1.00	3.37	1.00	0	1.00
Slick Rock Hollow Cave						
Springhouse at Steel Creek Ranger Cabin	5.11	1.00	12.38	1.00	0	1.00
Steel Creek Campground Cave	5.72	1.00	11.67	1.00	0	1.00
Stillhouse Hollow Cave	17.53	1.00	4.19	1.00	0	1.00
Stovepipe Cave	0.00	1.00	2.45	1.00	0	1.00
Summer Cave	0.00	1.00	0.08	1.00	0	1.00
Tom Allen's Cave	5.99	1.00	7.94	1.00	0	1.00
Tom Barnes Cave	2.00	1.00	1.60	1.00	0	1.00
Toney Bend Mine # 2	0.00	1.00	8.25	1.00	0	1.00
Tweet's Cave	0.00	1.00	14.66	1.00	0	1.00
Unnamed cave	0.00	1.00	1.37	1.00	0	1.00
Unnamed caves at Devil's Knob Natural Area	0.00	1.00	0.63	1.00	0	1.00
Van Dyke Spring Cave	1.83	1.00	152.03	0.99	0	1.00
Von Wadding's Memorial Cave	1.11	1.00	0.00	1.00	0	1.00
War Eagle Cave	12.30	1.00	107.23	0.99	0	1.00
War Eagle Cavern	4.56	1.00	61.12	0.99	0	1.00
Whippoorwill Cave	0.00	1.00	5.00	1.00	0	1.00
Willis Cave	1.83	1.00	152.03	0.99	0	1.00
Wolf Creek Cave	0.00	1.00	5.83	1.00	0	1.00
Wounded Knee Cave	0.00	1.00	2.13	1.00	0	1.00
<i>Lirceus bicuspidatus</i>						
Diamond Cave	1.56	1.00	26.62	1.00	0	1.00

Species Site	RWQP_02		RWQP_03		RWQP_04	
	Raw	Scaled	Raw	Scaled	Raw	Scaled
Foushee Cave	16558.45	0.97	71.73	0.99	0	1.00
Hell Creek Cave	19138.08	0.96	475.42	0.95	2	0.95
Hurricane River Cave	0.21	1.00	13.26	1.00	0	1.00
<i>Lirceus bidentatus</i>						
Unnamed seep 9 mi. SW of Harrison	2.98	1.00	42.81	1.00	0	1.00
<i>Stygobromus ozarkensis</i>						
Bear Hollow Cave	43306.29	0.92	364.56	0.97	0	1.00
Blowing Springs Cave	7.41	1.00	408.79	0.96	0	1.00
Cave on Pond Above Black Bass Lake	5.52	1.00	115.09	0.99	1	0.97
Cave Springs Cave	372568.23	0.28	10473.00	0.00	38	0.00
Civil War Cave	9.02	1.00	1445.95	0.86	2	0.95
Dickerson Cave	3.86	1.00	39.37	1.00	0	1.00
Fitton Cave	1.83	1.00	152.03	0.99	0	1.00
Fitton Spring Cave	1.83	1.00	152.03	0.99	0	1.00
Hunter's Cave	0.00	1.00	0.63	1.00	0	1.00
John Eddings Cave	0.72	1.00	9.97	1.00	0	1.00
Logan Cave	2094.24	1.00	442.17	0.96	4	0.89
Needles Cave	6.51	1.00	146.15	0.99	0	1.00
Old Pendergrass Cave	19538.85	0.96	3639.24	0.65	2	0.95
Pretty Clean Cave	0.00	1.00	0.41	1.00	0	1.00
Reed Cave	0.00	1.00	14.40	1.00	0	1.00
Sherfield Cave	3.75	1.00	56.50	0.99	0	1.00
Spavinaw Creek Cave						
War Eagle Cave	12.30	1.00	107.23	0.99	0	1.00
War Eagle Cavern	4.56	1.00	61.12	0.99	0	1.00
White River Below Beaver Dam	10.87	1.00	19.06	1.00	0	1.00
Withrow Springs Cave	12.30	1.00	107.23	0.99	0	1.00

Species	Site	RWQP_02 Raw	RWQP_02 Scaled	RWQP_03 Raw	RWQP_03 Scaled	RWQP_04 Raw	RWQP_04 Scaled
<i>Typhlichthys subterraneus</i>							
	Richardson Cave	18.26	1.00	10.93	1.00	0	1.00
	Unnamed well in Randolph County						

Table Appendix E-6. Index values and scaled scores for RWQP 05 Raw through RWQH 01 Scaled.

Species	Site	RWQP_05 Raw	RWQP_05 Scaled	RWQP Raw	RWQP Scaled	RWQH_01 Raw	RWQH_01 Scaled
<i>Amblyopsis rosae</i>							
	AGFC Nursery Pond on Beaver Lake	0.00	1.00	5.00	1.00	9747.00	1.00
	Cave Springs Cave	0.77	0.64	0.92	0.18	20140551.00	0.00
	Civil War Cave	0.17	0.92	4.73	0.95	3623447.25	0.82
	Hewlitt's Spring Hole	0.22	0.90	3.43	0.69	2352276.00	0.88
	James-Ditto Cave	0.00	1.00	5.00	1.00	123462.00	0.99
	Logan Cave	0.13	0.94	4.78	0.96	444300.75	0.98
	Monte Ne Sinkhole	0.00	1.00	4.98	1.00	470292.75	0.98
	Mule Hole Sink	0.00	1.00	5.00	1.00	73914.75	1.00
	Rootville Cave	0.00	1.00	5.00	1.00	116964.00	0.99
	Tom Allen's Cave	0.00	1.00	5.00	1.00	67416.75	1.00
<i>Amnicola cora</i>							
	Foushee Cave	0.00	1.00	4.95	0.99	19494.00	1.00
<i>Batrachus pseudomucronatus</i>							
	Deep cistern 5.5 mi. S of Imboden	0.00	1.00	5.00	1.00	14620.50	1.00
	Mansell Cave	0.00	1.00	5.00	1.00	812.25	1.00
<i>Caecidotea ancyla</i>							
	Bear Hollow Cave	0.00	1.00	4.86	0.97	484101.00	0.98
	Brewer Cave						

Species	Site	RWQP_05		RWQP_05		RWQP_01		RWQH_01		
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	
	Denny Cave	0.23	0.89	4.83	0.97	280226.25	0.99			
	Fitton Spring Cave	0.00	1.00	4.99	1.00	293222.25	0.99			
	Foushee Cave	0.00	1.00	4.95	0.99	19494.00	1.00			
	Greasy Valley Cave	0.00	1.00	5.00	1.00	55233.00	1.00			
	Ivy Springs Cave	0.00	1.00	5.00	1.00	36551.25	1.00			
	Major's Cave	0.00	1.00	4.75	0.95	2786829.75	0.86			
	Marshall Caves	0.00	1.00	5.00	1.00	134833.50	0.99			
	Nesbitt Spring Cave	0.00	1.00	5.00	1.00	17057.25	1.00			
	Old Pendergrass Cave	0.04	0.98	4.49	0.90	10871966.25	0.46			
	Pretty Clean Cave	0.00	1.00	5.00	1.00	0.00	1.00			
	Rootville Cave	0.00	1.00	5.00	1.00	116964.00	0.99			
	Spavinaw Creek Cave									
	War Eagle Cave	0.00	1.00	4.99	1.00	508468.50	0.97			
	Withrow Springs Cave	0.00	1.00	4.99	1.00	508468.50	0.97			
<i>Caecidotea dimorpha</i>										
	Elm Cave	0.00	1.00	5.00	1.00	52796.25	1.00			
	Martin Hollow Cave	0.00	1.00	5.00	1.00	0.00	1.00			
	Mr. Griffin's Cave # 1	0.00	1.00	5.00	1.00	0.00	1.00			
	Nesbitt Spring Cave	0.00	1.00	5.00	1.00	17057.25	1.00			
	Riley's Springbox	0.00	1.00	5.00	1.00	12996.00	1.00			
	Stovepipe Cave	0.00	1.00	5.00	1.00	9747.00	1.00			
	Summer Cave	0.00	1.00	5.00	1.00	27616.50	1.00			
<i>Caecidotea macropropoda</i>										
	Fincher Cave	0.00	1.00	5.00	1.00	22743.00	1.00			
	Spring at Bradley Shelter	0.00	1.00	5.00	1.00	8934.75	1.00			
	Stormdrain Spring at University of Arkansas	2.13	0.00	3.64	0.73	1743088.50	0.91			

Species	Site	RWQP_05		RWQP_05		RWQP		RWQH_01		RWQH_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Watson Cave	0.00	1.00	4.99	1.00	1.00	1.00	62543.25		1.00	1.00
<i>Caecidotea salemensis</i>	Deep cistern 5.5 mi. S of Imboden	0.00	1.00	5.00	1.00	1.00	1.00	14620.50		1.00	1.00
<i>Caecidotea steevesi</i>	AGFC Nursery Pond on Beaver Lake	0.00	1.00	5.00	1.00	1.00	1.00	9747.00		1.00	1.00
	Cave on Pond Above Black Bass Lake	0.27	0.88	4.84	0.97	0.97	0.97	380133.00		0.98	0.98
	Old Spanish Treasure Cave	0.00	1.00	4.97	0.99	0.99	0.99	321651.00		0.98	0.98
	War Eagle Cave	0.00	1.00	4.99	1.00	1.00	1.00	508468.50		0.97	0.97
	Withrow Springs Cave	0.00	1.00	4.99	1.00	1.00	1.00	508468.50		0.97	0.97
<i>Caecidotea stiladactyla</i>	Arkansas Archaeological Survey Site #3BE352	0.00	1.00	5.00	1.00	1.00	1.00	130772.25		0.99	0.99
	Bently Cave	0.00	1.00	4.99	1.00	1.00	1.00	120213.00		0.99	0.99
	Big Mouth Cave										
	Brock Spring	0.46	0.78	4.70	0.94	0.94	0.94	579946.50		0.97	0.97
	Bull Shoals Caverns	0.00	1.00	4.96	0.99	0.99	0.99	597003.75		0.97	0.97
	Cal Cave	0.00	1.00	5.00	1.00	1.00	1.00	27616.50		1.00	1.00
	Cave Mountain Cave	0.00	1.00	5.00	1.00	1.00	1.00	92596.50		1.00	1.00
	Cave on North Boundary Trail	0.00	1.00	5.00	1.00	1.00	1.00	156764.25		0.99	0.99
	Cave Springs Cave	0.77	0.64	0.92	0.18	0.18	0.18	20140551.00		0.00	0.00
	Cold Cave	0.00	1.00	5.00	1.00	1.00	1.00	113715.00		0.99	0.99
	Covington's Cave										
	Dickerson Cave	0.00	1.00	5.00	1.00	1.00	1.00	160825.50		0.99	0.99
	Eden Falls Cave	0.00	1.00	5.00	1.00	1.00	1.00	28428.75		1.00	1.00
	Fish Pond Cave	0.00	1.00	5.00	1.00	1.00	1.00	1624.50		1.00	1.00
	Fitton Cave	0.00	1.00	4.99	1.00	1.00	1.00	293222.25		0.99	0.99
	Granny Parker's Cave										



Species	Site	RWQP_05		RWQP_05		RWQP_01		RWQH_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	John Eddings Cave	0.00	1.00	5.00	1.00	43861.50	1.00		
	Laningham's Cave	0.00	1.00	5.00	1.00	27616.50	1.00		
	Middle Creek Spring Cave								
	Novack Spring Cave	0.00	1.00	5.00	1.00	28428.75	1.00		
	Old Joe Cave	0.18	0.92	4.88	0.98	1129027.50	0.94		
	Sherfield Cave	0.00	1.00	4.99	1.00	330585.75	0.98		
	Simpson's Cave	0.00	1.00	4.99	1.00	90972.00	1.00		
	Spring at Hogscald	0.00	1.00	5.00	1.00	166511.25	0.99		
	Spring at Sequoyah Woods	0.00	1.00	4.85	0.97	1947775.50	0.90		
	Spring on Butler Creek Road	0.00	1.00	5.00	1.00	126711.00	0.99		
	Spring on North Boundary Trail	0.00	1.00	5.00	1.00	156764.25	0.99		
	Stillhouse Hollow Cave	0.00	1.00	5.00	1.00	60106.50	1.00		
	Tanyard Creek Nature Trail Cave	0.00	1.00	5.00	1.00	80412.75	1.00		
	Unnamed seep 4 mi. S of Boxley	0.00	1.00	5.00	1.00	0.00	1.00		
	Unnamed seep 9 mi. SW of Harrison	0.00	1.00	5.00	1.00	86098.50	1.00		
	Unnamed spring 3.5 mi. S of Jasper	0.00	1.00	5.00	1.00	84474.00	1.00		
	War Eagle Cavern	0.00	1.00	4.99	1.00	198189.00	0.99		
	White River Below Beaver Dam	0.00	1.00	5.00	1.00	313528.50	0.98		
	<i>Cambarus aculabrum</i>								
	Bear Hollow Cave	0.00	1.00	4.86	0.97	484101.00	0.98		
	Brush Creek	0.76	0.64	4.11	0.82	2131344.00	0.89		
	Logan Cave	0.13	0.94	4.78	0.96	444300.75	0.98		
	Old Pendergrass Cave	0.04	0.98	4.49	0.90	10871966.25	0.46		
	<i>Cambarus setosus</i>								
	Blowing Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Poke Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Tom Allen's Cave	0.00	1.00	5.00	1.00	67416.75	1.00		

Species	Site	RWQP_05		RWQP_05		RWQP		RWQH_01		RWQH_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Cambarus zophonastes</i>											
	Hell Creek Cave	0.10	0.95	4.80	0.96	1645618.50	0.92				
	Nesbitt Spring Cave	0.00	1.00	5.00	1.00	17057.25	1.00				
	site in Yellville	0.00	1.00	4.84	0.97	2925724.50	0.85				
<i>Dendrocoelopsis americana</i>											
	Brock Spring	0.46	0.78	4.70	0.94	579946.50	0.97				
	Granny Parker's Cave										
	Steel Creek Campground Cave	0.00	1.00	5.00	1.00	103155.75	0.99				
	Watson Cave	0.00	1.00	4.99	1.00	62543.25	1.00				
<i>Eurycea spelaea</i>											
	Alexander Cave	0.03	0.98	4.86	0.97	547456.50	0.97				
	Allen Cave										
	Back o' Beyond Cave	0.00	1.00	5.00	1.00	69853.50	1.00				
	Bald Scrappy Cave	0.00	1.00	5.00	1.00	43049.25	1.00				
	Bear Hollow Cave	0.00	1.00	4.86	0.97	484101.00	0.98				
	Bear Pit	0.00	1.00	5.00	1.00	0.00	1.00				
	Bell Cave										
	Bently Cave	0.00	1.00	4.99	1.00	120213.00	0.99				
	Big Mouth Cave										
	Big Spring Cave										
	Biology Cave	0.00	1.00	5.00	1.00	0.00	1.00				
	Blanchard Springs Cavems	0.05	0.98	4.75	0.95	1799946.00	0.91				
	Blowing Cave	0.00	1.00	5.00	1.00	0.00	1.00				
	Blowing Spring Cave	0.00	1.00	5.00	1.00	0.00	1.00				
	Blowing Springs Cave	0.00	1.00	4.96	0.99	752143.50	0.96				
	Blowing Springs Cave	0.00	1.00	5.00	1.00	0.00	1.00				
	Blue Heaven Cave	0.00	1.00	5.00	1.00	117776.25	0.99				

Species Site	RWQP_05		RWQP_05		RWQP		RWQH_01		RWQH_01	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Bonanza Cave	0.00	1.00	5.00	1.00	5.00	1.00	8934.75	1.00	8934.75	1.00
Bonanza Mine	0.00	1.00	5.00	1.00	5.00	1.00	0.00	1.00	0.00	1.00
Breakdown Cave	0.00	1.00	5.00	1.00	5.00	1.00	151890.75	0.99	151890.75	0.99
Brewer Cave										
Bull Shoals Caverns	0.00	1.00	4.96	1.00	4.96	0.99	597003.75	0.97	597003.75	0.97
Cave River Cave	0.00	1.00	5.00	1.00	5.00	1.00	8934.75	1.00	8934.75	1.00
Cave Springs Cave	0.77	0.64	0.92	0.18	0.92	0.18	20140551.00	0.00	20140551.00	0.00
Chambers Hollow Cave	0.00	1.00	5.00	1.00	5.00	1.00	4061.25	1.00	4061.25	1.00
Chilly Bowl Cave	0.00	1.00	5.00	1.00	5.00	1.00	4873.50	1.00	4873.50	1.00
Chinn Springs Cave	0.00	1.00	4.99	1.00	4.99	1.00	480039.75	0.98	480039.75	0.98
Congo Crawl										
Coon Cave	1.96	0.08	4.03	0.81	4.03	0.81	62543.25	1.00	62543.25	1.00
Copperhead Cave	0.00	1.00	5.00	1.00	5.00	1.00	37363.50	1.00	37363.50	1.00
Corkscrew Cave	0.00	1.00	5.00	1.00	5.00	1.00	1624.50	1.00	1624.50	1.00
Cosmic Caverns	0.00	1.00	4.99	1.00	4.99	1.00	129960.00	0.99	129960.00	0.99
Crystal Dome Cave	0.00	1.00	4.98	1.00	4.98	1.00	296471.25	0.99	296471.25	0.99
Cushman Cave	0.00	1.00	5.00	1.00	5.00	1.00	178695.00	0.99	178695.00	0.99
Cyner Cave	0.00	1.00	5.00	1.00	5.00	1.00	166511.25	0.99	166511.25	0.99
Davis Creek Cave										
Dear Buster Cave	0.11	0.95	4.92	0.98	4.92	0.98	61731.00	1.00	61731.00	1.00
Diamond Cave	0.00	1.00	5.00	1.00	5.00	1.00	105592.50	0.99	105592.50	0.99
Dickerson Cave	0.00	1.00	5.00	1.00	5.00	1.00	160825.50	0.99	160825.50	0.99
Eckel Cave	0.00	1.00	5.00	1.00	5.00	1.00	812.25	1.00	812.25	1.00
Elm Cave	0.00	1.00	5.00	1.00	5.00	1.00	52796.25	1.00	52796.25	1.00
Ennis Cave	0.00	1.00	5.00	1.00	5.00	1.00	9747.00	1.00	9747.00	1.00
Fancher Cave										
Fish Pond Cave	0.00	1.00	5.00	1.00	5.00	1.00	1624.50	1.00	1624.50	1.00

Species	Site	RWQP_05		RWQP_05		RWQP		RWQH_01		RWQH_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Fitton Cave	0.00	1.00	4.99	1.00	1.00	1.00	293222.25	0.99	293222.25	0.99
	Fitton Spring Cave	0.00	1.00	4.99	1.00	1.00	1.00	293222.25	0.99	293222.25	0.99
	Foushee Cave	0.00	1.00	4.95	1.00	0.99	0.99	19494.00	1.00	19494.00	1.00
	Friday the 13th Cave	0.00	1.00	4.99	1.00	1.00	1.00	293222.25	0.99	293222.25	0.99
	Green River Cave	0.00	1.00	5.00	1.00	1.00	1.00	23555.25	1.00	23555.25	1.00
	Gunner Cave	0.00	1.00	5.00	1.00	1.00	1.00	142956.00	0.99	142956.00	0.99
	Gustafson Cave	0.00	1.00	5.00	1.00	1.00	1.00	812.25	1.00	812.25	1.00
	Hammer Springs Cave	0.00	1.00	5.00	1.00	1.00	1.00	79600.50	1.00	79600.50	1.00
	Hell Creek Cave	0.10	0.95	4.80	0.96	0.96	0.96	1645618.50	0.92	1645618.50	0.92
	Herald Hollow Cave	0.00	1.00	5.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
	Hickory Creek Cave										
	Hidden Spring Cave	0.00	1.00	5.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
	Hog Head Cave	0.00	1.00	5.00	1.00	1.00	1.00	73914.75	1.00	73914.75	1.00
	Huchingson's Waterfall Cave										
	Hunter's Cave	0.00	1.00	5.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
	Hurricane River Cave	0.00	1.00	5.00	1.00	1.00	1.00	41424.75	1.00	41424.75	1.00
	Icebox Cave										
	Indian Rockhouse Cave	0.00	1.00	5.00	1.00	1.00	1.00	197376.75	0.99	197376.75	0.99
	In-D-Pendants Cave	0.00	1.00	5.00	1.00	1.00	1.00	46298.25	1.00	46298.25	1.00
	Janus Pit	0.00	1.00	5.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
	Jelico Hollow Cave	0.00	1.00	5.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
	John Eddings Cave	0.00	1.00	5.00	1.00	1.00	1.00	43861.50	1.00	43861.50	1.00
	Lewis Spring Cave										
	Little Den Cave	0.00	1.00	4.99	1.00	1.00	1.00	293222.25	0.99	293222.25	0.99
	Logan Cave	0.13	0.94	4.78	0.96	0.96	0.96	444300.75	0.98	444300.75	0.98
	Major's Cave	0.00	1.00	4.75	0.95	0.95	0.95	2786829.75	0.86	2786829.75	0.86
	Mammoth Spring	0.00	1.00	4.95	0.99	0.99	0.99	692037.00	0.97	692037.00	0.97

Species	Site	RWQP_05		RWQP_05		RWQP		RWQH_01		RWQH_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Martin Hollow Cave	0.00	1.00	5.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
	Miner's Cave	0.27	0.87	4.83	0.97	445925.25	0.98	445925.25	0.98	445925.25	0.98
	Mr. Clean Cave	0.00	1.00	5.00	1.00	5685.75	1.00	5685.75	1.00	5685.75	1.00
	Mr. Griffin's Cave # 1	0.00	1.00	5.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
	Needles Cave	0.00	1.00	4.99	1.00	469480.50	0.98	469480.50	0.98	469480.50	0.98
	Nesbitt Spring Cave	0.00	1.00	5.00	1.00	17057.25	1.00	17057.25	1.00	17057.25	1.00
	Norfolk Bat Cave	0.37	0.83	4.78	0.96	816311.25	0.96	816311.25	0.96	816311.25	0.96
	Old Joe Cave	0.18	0.92	4.88	0.98	1129027.50	0.94	1129027.50	0.94	1129027.50	0.94
	Omega Cave										
	Panther Mountain Cave										
	Pigeon Roost Cave	0.00	1.00	5.00	1.00	21930.75	1.00	21930.75	1.00	21930.75	1.00
	Potato Cave										
	Pregnant Nun Cave	0.00	1.00	5.00	1.00	126711.00	0.99	126711.00	0.99	126711.00	0.99
	Pretty Clean Cave	0.00	1.00	5.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
	Reed Cave	0.00	1.00	5.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
	Richardson Cave	0.00	1.00	5.00	1.00	141331.50	0.99	141331.50	0.99	141331.50	0.99
	Riley's Springbox	0.00	1.00	5.00	1.00	12996.00	1.00	12996.00	1.00	12996.00	1.00
	Rootville Cave	0.00	1.00	5.00	1.00	116964.00	0.99	116964.00	0.99	116964.00	0.99
	Rory Cave	0.00	1.00	5.00	1.00	30865.50	1.00	30865.50	1.00	30865.50	1.00
	Salamander Cave	0.00	1.00	5.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
	Salt peter Cave	0.00	1.00	5.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
	Slick Rock Hollow Cave										
	Springhouse at Steel Creek Ranger Cabin	0.00	1.00	5.00	1.00	50359.50	1.00	50359.50	1.00	50359.50	1.00
	Steel Creek Campground Cave	0.00	1.00	5.00	1.00	103155.75	0.99	103155.75	0.99	103155.75	0.99
	Stillhouse Hollow Cave	0.00	1.00	5.00	1.00	60106.50	1.00	60106.50	1.00	60106.50	1.00
	Stovepipe Cave	0.00	1.00	5.00	1.00	9747.00	1.00	9747.00	1.00	9747.00	1.00
	Summer Cave	0.00	1.00	5.00	1.00	27616.50	1.00	27616.50	1.00	27616.50	1.00

Species	Site	RWQP_05		RWQP_05		RWQP_01		RWQH_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Tom Allen's Cave	0.00	1.00	5.00	1.00	67416.75	1.00		
	Tom Barnes Cave	0.00	1.00	5.00	1.00	5685.75	1.00		
	Toney Bend Mine # 2	0.00	1.00	5.00	1.00	77163.75	1.00		
	Tweet's Cave	0.00	1.00	5.00	1.00	4061.25	1.00		
	Unnamed cave	0.00	1.00	5.00	1.00	812.25	1.00		
	Unnamed caves at Devil's Knob Natural Area	0.00	1.00	5.00	1.00	0.00	1.00		
	Van Dyke Spring Cave	0.00	1.00	4.99	1.00	293222.25	0.99		
	Von Wadding's Memorial Cave	0.00	1.00	5.00	1.00	151890.75	0.99		
	War Eagle Cave	0.00	1.00	4.99	1.00	508468.50	0.97		
	War Eagle Cavern	0.00	1.00	4.99	1.00	198189.00	0.99		
	Whippoorwill Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Willis Cave	0.00	1.00	4.99	1.00	293222.25	0.99		
	Wolf Creek Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Wounded Knee Cave	0.00	1.00	5.00	1.00	2436.75	1.00		
	<i>Liriceus bicuspidatus</i>								
	Diamond Cave	0.00	1.00	5.00	1.00	105592.50	0.99		
	Foushee Cave	0.00	1.00	4.95	0.99	19494.00	1.00		
	Hell Creek Cave	0.10	0.95	4.80	0.96	1645618.50	0.92		
	Hurricane River Cave	0.00	1.00	5.00	1.00	41424.75	1.00		
	<i>Liriceus bidentatus</i>								
	Unnamed seep 9 mi. SW of Harrison	0.00	1.00	5.00	1.00	86098.50	1.00		
	<i>Stygobromus ozarkensis</i>								
	Bear Hollow Cave	0.00	1.00	4.86	0.97	484101.00	0.98		
	Blowing Springs Cave	0.00	1.00	4.96	0.99	752143.50	0.96		
	Cave on Pond Above Black Bass Lake	0.27	0.88	4.84	0.97	380133.00	0.98		
	Cave Springs Cave	0.77	0.64	0.92	0.18	20140551.00	0.00		

Species	Site	RWQP_05		RWQP_05		RWQH_01		RWQH_01	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Civil War Cave	0.17	0.92	4.73	0.95	3623447.25	0.82		
	Dickerson Cave	0.00	1.00	5.00	1.00	160825.50	0.99		
	Fitton Cave	0.00	1.00	4.99	1.00	293222.25	0.99		
	Fitton Spring Cave	0.00	1.00	4.99	1.00	293222.25	0.99		
	Hunter's Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	John Eddings Cave	0.00	1.00	5.00	1.00	43861.50	1.00		
	Logan Cave	0.13	0.94	4.78	0.96	444300.75	0.98		
	Needles Cave	0.00	1.00	4.99	1.00	469480.50	0.98		
	Old Pendergrass Cave	0.04	0.98	4.49	0.90	10871966.25	0.46		
	Pretty Clean Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Reed Cave	0.00	1.00	5.00	1.00	0.00	1.00		
	Sherfield Cave	0.00	1.00	4.99	1.00	330585.75	0.98		
	Spavinaw Creek Cave								
	War Eagle Cave	0.00	1.00	4.99	1.00	508468.50	0.97		
	War Eagle Cavern	0.00	1.00	4.99	1.00	198189.00	0.99		
	White River Below Beaver Dam	0.00	1.00	5.00	1.00	313528.50	0.98		
	Withrow Springs Cave	0.00	1.00	4.99	1.00	508468.50	0.97		
<i>Typhlichthys subterraneus</i>									
	Richardson Cave	0.00	1.00	5.00	1.00	141331.50	0.99		
	Unnamed well in Randolph County								

Table Appendix E-7. Index values and scaled scores for RWQH 02 Raw through RWQ Scaled.

Species	Site	RWQH_02 Raw	RWQH_02 Scaled	RWQH Raw	RWQH Scaled	RWQ Raw	RWQ Scaled
<i>Amblyopsis rosae</i>							
	AGFC Nursery Pond on Beaver Lake	0.03	1.00	2.00	1.00	3.58	0.92
	Cave Springs Cave	20140551.00	0.00	0.00	0.00	1.17	0.30
	Civil War Cave	0.31	1.00	1.82	0.91	3.12	0.80
	Hewlett's Spring Hole	2352276.00	0.88	1.77	0.88	2.82	0.73
	James-Ditto Cave	0.08	1.00	1.99	1.00	3.41	0.88
	Logan Cave	444300.75	0.98	1.96	0.98	2.90	0.75
	Monte Ne Sinkhole	0.15	1.00	1.98	0.99	3.62	0.93
	Mule Hole Sink	0.18	1.00	2.00	1.00	3.55	0.91
	Rootville Cave	0.06	1.00	1.99	1.00	3.66	0.94
	Tom Allen's Cave	0.03	1.00	2.00	1.00	3.62	0.93
<i>Amnicola cora</i>							
	Foushee Cave	19494.00	1.00	2.00	1.00	3.79	0.98
<i>Batrachus pseudomucronatus</i>							
	Deep cistern 5.5 mi. S of Imboden	0.01	1.00	2.00	1.00	3.52	0.91
	Mansell Cave	0.00	1.00	2.00	1.00	3.60	0.93
<i>Caecidotea ancyla</i>							
	Bear Hollow Cave	484101.00	0.98	1.95	0.98	3.55	0.92
	Brewer Cave						
	Denny Cave	0.03	1.00	1.99	0.99	3.37	0.87
	Fitton Spring Cave	0.01	1.00	1.99	0.99	3.77	0.97
	Foushee Cave	19494.00	1.00	2.00	1.00	3.79	0.98
	Greasy Valley Cave	0.03	1.00	2.00	1.00	3.38	0.87
	Ivy Springs Cave	0.02	1.00	2.00	1.00	3.31	0.85
	Major's Cave	0.36	1.00	1.86	0.93	3.15	0.81
	Marshall Caves	0.18	1.00	1.99	1.00	3.52	0.91



Species	Site	RWQH_02		RWQH_02		RWQH		RWQH	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Nesbitt Spring Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.65	0.94
	Old Pendergrass Cave	10871966.25	0.46	0.92	0.46	2.63	0.68	2.63	0.68
	Pretty Clean Cave	0.00	1.00	2.00	1.00	3.75	0.97	3.75	0.97
	Rootville Cave	0.06	1.00	1.99	1.00	3.66	0.94	3.66	0.94
	Spavinaw Creek Cave								
	War Eagle Cave	0.06	1.00	1.97	0.99	3.59	0.92	3.59	0.92
	Withrow Springs Cave	0.06	1.00	1.97	0.99	3.59	0.92	3.59	0.92
	<i>Caecidotea dimorpha</i>								
	Elm Cave	0.05	1.00	2.00	1.00	3.76	0.97	3.76	0.97
	Martin Hollow Cave	0.00	1.00	2.00	1.00	3.70	0.95	3.70	0.95
	Mr. Griffin's Cave # 1	0.00	1.00	2.00	1.00	3.87	1.00	3.87	1.00
	Nesbitt Spring Cave	0.01	1.00	2.00	1.00	3.65	0.94	3.65	0.94
	Riley's Springbox	0.01	1.00	2.00	1.00	3.64	0.94	3.64	0.94
	Stovepipe Cave	0.01	1.00	2.00	1.00	3.49	0.90	3.49	0.90
	Summer Cave	0.01	1.00	2.00	1.00	3.80	0.98	3.80	0.98
	<i>Caecidotea macropoda</i>								
	Fincher Cave	0.01	1.00	2.00	1.00	3.68	0.95	3.68	0.95
	Spring at Bradley Shelter	0.01	1.00	2.00	1.00	3.48	0.90	3.48	0.90
	Stormdrain Spring at University of Arkansas	0.93	1.00	1.91	0.96	3.27	0.84	3.27	0.84
	Watson Cave	0.03	1.00	2.00	1.00	3.35	0.86	3.35	0.86
	<i>Caecidotea salemensis</i>								
	Deep cistern 5.5 mi. S of Imboden	0.01	1.00	2.00	1.00	3.52	0.91	3.52	0.91
	<i>Caecidotea steevesi</i>								
	AGFC Nursery Pond on Beaver Lake	0.03	1.00	2.00	1.00	3.58	0.92	3.58	0.92
	Cave on Pond Above Black Bass Lake	0.10	1.00	1.98	0.99	3.69	0.95	3.69	0.95
	Old Spanish Treasure Cave	0.11	1.00	1.98	0.99	3.73	0.96	3.73	0.96

Species	Site	RWQH_02		RWQH_02		RWQH		RWQ	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	War Eagle Cave	0.06	1.00	1.97	0.99	1.97	0.99	3.59	0.92
	Withrow Springs Cave	0.06	1.00	1.97	0.99	1.97	0.99	3.59	0.92
<i>Caecidotea stilandactyla</i>									
	Arkansas Archaeological Survey Site #3BE352	0.10	1.00	1.99	1.00	1.99	1.00	3.51	0.90
	Bently Cave	0.38	1.00	1.99	1.00	1.99	1.00	3.71	0.96
	Big Mouth Cave								
	Brock Spring	0.13	1.00	1.97	0.99	1.97	0.99	3.20	0.83
	Bull Shoals Caverns	0.21	1.00	1.97	0.99	1.97	0.99	3.70	0.95
	Cal Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.56	0.92
	Cave Mountain Cave	0.03	1.00	2.00	1.00	2.00	1.00	3.73	0.96
	Cave on North Boundary Trail	0.10	1.00	1.99	1.00	1.99	1.00	3.83	0.99
	Cave Springs Cave	20140551.00	0.00	0.00	0.00	0.00	0.00	1.17	0.30
	Cold Cave	0.29	1.00	1.99	1.00	1.99	1.00	3.51	0.90
	Covington's Cave								
	Dickerson Cave	0.03	1.00	1.99	1.00	1.99	1.00	3.52	0.91
	Eden Falls Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.71	0.96
	Fish Pond Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.65	0.94
	Fitton Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97
	Granny Parker's Cave								
	John Eddings Cave	0.04	1.00	2.00	1.00	2.00	1.00	3.77	0.97
	Laningham's Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.56	0.92
	Middle Creek Spring Cave								
	Novack Spring Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.71	0.96
	Old Joe Cave	0.20	1.00	1.94	0.97	1.94	0.97	3.57	0.92
	Sherfield Cave	0.02	1.00	1.98	0.99	1.98	0.99	3.84	0.99
	Simpson's Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.43	0.88

Species	Site	RWQH_02		RWQH_02		RWQH		RWQH		
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	
	Spring at Hogscald	0.03	1.00	1.99	1.00	1.99	1.00	3.73	0.96	
	Spring at Sequoyah Woods	0.44	1.00	1.90	0.95	1.90	0.95	3.57	0.92	
	Spring on Butler Creek Road	0.01	1.00	1.99	1.00	1.99	1.00	3.77	0.97	
	Spring on North Boundary Trail	0.10	1.00	1.99	1.00	1.99	1.00	3.83	0.99	
	Stillhouse Hollow Cave	0.11	1.00	2.00	1.00	2.00	1.00	3.61	0.93	
	Tanyard Creek Nature Trail Cave	0.08	1.00	2.00	1.00	2.00	1.00	3.49	0.90	
	Unnamed seep 4 mi. S of Boxley	0.00	1.00	2.00	1.00	2.00	1.00	3.78	0.97	
	Unnamed seep 9 mi. SW of Harrison	0.01	1.00	2.00	1.00	2.00	1.00	3.71	0.96	
	Unnamed spring 3.5 mi. S of Jasper	0.04	1.00	2.00	1.00	2.00	1.00	3.71	0.96	
	War Eagle Cavern	0.03	1.00	1.99	1.00	1.99	1.00	3.75	0.97	
	White River Below Beaver Dam	0.13	1.00	1.98	0.99	1.98	0.99	3.69	0.95	
<i>Cambarus aculabrum</i>										
	Bear Hollow Cave	484101.00	0.98	1.95	0.98	1.95	0.98	3.55	0.92	
	Brush Creek	2131344.00	0.89	1.79	0.89	1.79	0.89	2.86	0.74	
	Logan Cave	444300.75	0.98	1.96	0.98	1.96	0.98	2.90	0.75	
	Old Pendergrass Cave	10871966.25	0.46	0.92	0.46	0.92	0.46	2.63	0.68	
<i>Cambarus setosus</i>										
	Blowing Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.86	0.99	
	Poke Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.86	0.99	
	Tom Allen's Cave	0.03	1.00	2.00	1.00	2.00	1.00	3.62	0.93	
<i>Cambarus zophonastes</i>										
	Hell Creek Cave	1645618.50	0.92	1.84	0.92	1.84	0.92	3.42	0.88	
	Nesbitt Spring Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.65	0.94	
	site in Yellville	0.26	1.00	1.85	0.93	1.85	0.93	3.30	0.85	
<i>Dendrocoelopsis americana</i>										
	Brock Spring	0.13	1.00	1.97	0.99	1.97	0.99	3.20	0.83	
	Granny Parker's Cave									

Species	Site	RWQH_02		RWQH_02		RWQH		RWQ	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Steel Creek Campground Cave	0.03	1.00	1.99	1.00	1.00	1.00	3.77	0.97
	Watson Cave	0.03	1.00	2.00	1.00	1.00	1.00	3.35	0.86
<i>Eurycea spelaea</i>									
	Alexander Cave	547456.50	0.97	1.95	0.97	0.97	0.97	3.26	0.84
	Allen Cave								
	Back o' Beyond Cave	0.03	1.00	2.00	1.00	1.00	1.00	3.64	0.94
	Bald Scrappy Cave	0.02	1.00	2.00	1.00	1.00	1.00	3.73	0.96
	Bear Hollow Cave	484101.00	0.98	1.95	0.98	0.98	0.98	3.55	0.92
	Bear Pit	0.00	1.00	2.00	1.00	1.00	1.00	3.77	0.97
	Bell Cave								
	Bently Cave	0.38	1.00	1.99	1.00	1.00	1.00	3.71	0.96
	Big Mouth Cave								
	Big Spring Cave								
	Biology Cave	0.00	1.00	2.00	1.00	1.00	1.00	3.75	0.97
	Blanchard Springs Caverns	1799946.00	0.91	1.82	0.91	0.91	0.91	3.81	0.98
	Blowing Cave	0.00	1.00	2.00	1.00	1.00	1.00	3.86	0.99
	Blowing Spring Cave	0.00	1.00	2.00	1.00	1.00	1.00	3.88	1.00
	Blowing Springs Cave	0.31	1.00	1.96	1.00	0.98	0.98	3.69	0.95
	Blowing Springs Cave	0.00	1.00	2.00	1.00	1.00	1.00	3.67	0.95
	Blue Heaven Cave	0.02	1.00	1.99	1.00	1.00	1.00	3.63	0.94
	Bonanza Cave	0.00	1.00	2.00	1.00	1.00	1.00	3.78	0.97
	Bonanza Mine	0.00	1.00	2.00	1.00	1.00	1.00	3.79	0.98
	Breakdown Cave	0.04	1.00	1.99	1.00	1.00	1.00	3.83	0.99
	Brewer Cave								
	Bull Shoals Caverns	0.21	1.00	1.97	1.00	0.99	0.99	3.70	0.95
	Cave River Cave	0.00	1.00	2.00	1.00	1.00	1.00	3.76	0.97
	Cave Springs Cave	20140551.00	0.00	0.00	0.00	0.00	0.00	1.17	0.30

Species	Site	RWQH_02		RWQH_02		RWQH		RWQ	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Chambers Hollow Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.76	0.97
	Chilly Bowl Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.66	0.94
	Chinn Springs Cave	0.03	1.00	1.98	0.99	1.98	0.99	3.70	0.95
	Congo Crawl								
	Coon Cave	0.06	1.00	2.00	1.00	2.00	1.00	3.62	0.93
	Copperhead Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.64	0.94
	Corkscrew Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.77	0.97
	Cosmic Caverns	0.02	1.00	1.99	1.00	1.99	1.00	3.62	0.93
	Crystal Dome Cave	0.05	1.00	1.99	0.99	1.99	0.99	3.44	0.89
	Cushman Cave	0.08	1.00	1.99	1.00	1.99	1.00	3.73	0.96
	Cyner Cave	0.01	1.00	1.99	1.00	1.99	1.00	3.75	0.97
	Davis Creek Cave								
	Dear Buster Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.81	0.98
	Diamond Cave	0.02	1.00	1.99	1.00	1.99	1.00	3.78	0.97
	Dickerson Cave	0.03	1.00	1.99	1.00	1.99	1.00	3.52	0.91
	Eckel Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.70	0.95
	Elm Cave	0.05	1.00	2.00	1.00	2.00	1.00	3.76	0.97
	Ennis Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.67	0.95
	Fancher Cave								
	Fish Pond Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.65	0.94
	Fitton Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97
	Fitton Spring Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97
	Foushee Cave	19494.00	1.00	2.00	1.00	2.00	1.00	3.79	0.98
	Friday the 13th Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97
	Green River Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.52	0.91
	Gunner Cave	0.01	1.00	1.99	1.00	1.99	1.00	3.73	0.96
	Gustafson Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.72	0.96

Species	Site	RWQH_02		RWQH_02		RWQH		RWQH	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Hammer Springs Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.87	1.00
	Hell Creek Cave	1645618.50	0.92	1.84	0.92	1.84	0.92	3.42	0.88
	Herald Hollow Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.80	0.98
	Hickory Creek Cave								
	Hidden Spring Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.56	0.92
	Hog Head Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.80	0.98
	Huchingson's Waterfall Cave								
	Hunter's Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.87	1.00
	Hurricane River Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.80	0.98
	Icebox Cave								
	Indian Rockhouse Cave	0.02	1.00	1.99	1.00	1.99	1.00	3.78	0.97
	In-D-Pendants Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.68	0.95
	Janus Pit	0.00	1.00	2.00	1.00	2.00	1.00	3.83	0.99
	Jelico Hollow Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.77	0.97
	John Eddings Cave	0.04	1.00	2.00	1.00	2.00	1.00	3.77	0.97
	Lewis Spring Cave								
	Little Den Cave	0.01	1.00	1.99	1.00	1.99	0.99	3.77	0.97
	Logan Cave	444300.75	0.98	1.96	0.98	1.96	0.98	2.90	0.75
	Major's Cave	0.36	1.00	1.86	1.00	1.86	0.93	3.15	0.81
	Mammoth Spring	0.75	1.00	1.97	1.00	1.97	0.98	3.50	0.90
	Martin Hollow Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.70	0.95
	Miner's Cave	0.12	1.00	1.98	1.00	1.98	0.99	3.73	0.96
	Mr. Clean Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.76	0.97
	Mr. Griffin's Cave # 1	0.00	1.00	2.00	1.00	2.00	1.00	3.87	1.00
	Needles Cave	0.24	1.00	1.98	1.00	1.98	0.99	3.54	0.91
	Nesbitt Spring Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.65	0.94
	Norfolk Bat Cave	0.30	1.00	1.96	1.00	1.96	0.98	3.48	0.90

Species Site	RWQH_02		RWQH_02		RWQH		RWQH	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Old Joe Cave	0.20	1.00	1.94	0.97	3.57	0.92		
Omega Cave								
Panther Mountain Cave								
Pigeon Roost Cave	0.02	1.00	2.00	1.00	3.86	1.00		
Potato Cave								
Pregnant Nun Cave	0.01	1.00	1.99	1.00	3.77	0.97		
Pretty Clean Cave	0.00	1.00	2.00	1.00	3.75	0.97		
Reed Cave	0.00	1.00	2.00	1.00	3.74	0.96		
Richardson Cave	0.09	1.00	1.99	1.00	3.76	0.97		
Riley's Springbox	0.01	1.00	2.00	1.00	3.64	0.94		
Rootville Cave	0.06	1.00	1.99	1.00	3.66	0.94		
Rory Cave	0.02	1.00	2.00	1.00	3.69	0.95		
Salamander Cave	0.00	1.00	2.00	1.00	3.69	0.95		
Saltpeter Cave	0.00	1.00	2.00	1.00	3.86	0.99		
Slick Rock Hollow Cave								
Springhouse at Steel Creek Ranger Cabin	0.02	1.00	2.00	1.00	3.79	0.98		
Steel Creek Campground Cave	0.03	1.00	1.99	1.00	3.77	0.97		
Stillhouse Hollow Cave	0.11	1.00	2.00	1.00	3.61	0.93		
Stovepipe Cave	0.01	1.00	2.00	1.00	3.49	0.90		
Summer Cave	0.01	1.00	2.00	1.00	3.80	0.98		
Tom Allen's Cave	0.03	1.00	2.00	1.00	3.62	0.93		
Tom Barnes Cave	0.01	1.00	2.00	1.00	3.74	0.96		
Toney Bend Mine # 2	0.01	1.00	2.00	1.00	3.83	0.99		
Tweet's Cave	0.00	1.00	2.00	1.00	3.79	0.98		
Unnamed cave	0.00	1.00	2.00	1.00	3.69	0.95		
Unnamed caves at Devil's Knob Natural Area	0.00	1.00	2.00	1.00	3.86	0.99		

Species	Site	RWQH_02		RWQH_02		RWQH		RWQH		
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	
	Van Dyke Spring Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97	
	Von Wadding's Memorial Cave	0.04	1.00	1.99	1.00	1.99	1.00	3.83	0.99	
	War Eagle Cave	0.06	1.00	1.97	0.99	1.97	0.99	3.59	0.92	
	War Eagle Cavern	0.03	1.00	1.99	1.00	1.99	1.00	3.75	0.97	
	Whippoorwill Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.77	0.97	
	Willis Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97	
	Wolf Creek Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.84	0.99	
	Wounded Knee Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.83	0.99	
<i>Lirceus bicuspidatus</i>										
	Diamond Cave	0.02	1.00	1.99	1.00	1.99	1.00	3.78	0.97	
	Foushee Cave	19494.00	1.00	2.00	1.00	2.00	1.00	3.79	0.98	
	Hell Creek Cave	1645618.50	0.92	1.84	0.92	1.84	0.92	3.42	0.88	
	Hurricane River Cave	0.01	1.00	2.00	1.00	2.00	1.00	3.80	0.98	
<i>Lirceus bidentatus</i>										
	Unnamed seep 9 mi. SW of Harrison	0.01	1.00	2.00	1.00	2.00	1.00	3.71	0.96	
<i>Stygobromus ozarkensis</i>										
	Bear Hollow Cave	484101.00	0.98	1.95	0.98	1.95	0.98	3.55	0.92	
	Blowing Springs Cave	0.31	1.00	1.96	0.98	1.96	0.98	3.69	0.95	
	Cave on Pond Above Black Bass Lake	0.10	1.00	1.98	0.99	1.98	0.99	3.69	0.95	
	Cave Springs Cave	20140551.00	0.00	0.00	0.00	0.00	0.00	1.17	0.30	
	Civil War Cave	0.31	1.00	1.82	0.91	1.82	0.91	3.12	0.80	
	Dickerson Cave	0.03	1.00	1.99	1.00	1.99	1.00	3.52	0.91	
	Fitton Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97	
	Fitton Spring Cave	0.01	1.00	1.99	0.99	1.99	0.99	3.77	0.97	
	Hunter's Cave	0.00	1.00	2.00	1.00	2.00	1.00	3.87	1.00	
	John Eddings Cave	0.04	1.00	2.00	1.00	2.00	1.00	3.77	0.97	
	Logan Cave	444300.75	0.98	1.96	0.98	1.96	0.98	2.90	0.75	



Species	Site	RWQH_02		RWQH_02		RWQH		RWQH	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Needles Cave	0.24	1.00	1.98	0.99	3.54	0.91		
	Old Pendergrass Cave	10871966.25	0.46	0.92	0.46	2.63	0.68		
	Pretty Clean Cave	0.00	1.00	2.00	1.00	3.75	0.97		
	Reed Cave	0.00	1.00	2.00	1.00	3.74	0.96		
	Sherfield Cave	0.02	1.00	1.98	0.99	3.84	0.99		
	Spavinaw Creek Cave								
	War Eagle Cave	0.06	1.00	1.97	0.99	3.59	0.92		
	War Eagle Cavern	0.03	1.00	1.99	1.00	3.75	0.97		
	White River Below Beaver Dam	0.13	1.00	1.98	0.99	3.69	0.95		
	Withrow Springs Cave	0.06	1.00	1.97	0.99	3.59	0.92		
<i>Typhlichthys subterraneus</i>									
	Richardson Cave	0.09	1.00	1.99	1.00	3.76	0.97		
Unnamed well in Randolph County									

Table Appendix E-8. Index values and scaled scores for VULN Raw through RVIA Scaled.

Species	Site	VULN		SENS		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Amblyopsis rosae</i>									
	AGFC Nursery Pond on Beaver Lake	88.33	0.33	1.26	0.86	79926	0.41	0.10	0.18
	Cave Springs Cave	110.49	0.16	0.47	0.32	134411	0.01	0.11	0.08
	Civil War Cave	104.25	0.21	1.02	0.70	91159	0.33	0.12	0.00
	Hewlitt's Spring Hole	100.72	0.24	0.97	0.66	99615	0.27	0.10	0.18
	James-Ditto Cave	113.04	0.15	1.03	0.71	28413	0.79	0.07	0.42
	Logan Cave	108.38	0.18	0.93	0.64	31431	0.77	0.07	0.43
	Monte Ne Sinkhole	71.25	0.46	1.39	0.96	117558	0.13	0.11	0.09
	Mule Hole Sink	120.70	0.09	1.00	0.69	127847	0.06	0.11	0.08

Species	Site	VULN		SENS		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Rootville Cave	105.07	0.21	1.15	0.79	17093	0.87	0.06	0.49
	Tom Allen's Cave	107.06	0.19	1.12	0.77	17539	0.87	0.06	0.48
<i>Amnicola cora</i>	Foushee Cave	73.32	0.45	1.42	0.98	17478	0.87	0.05	0.59
<i>Batrachus pseudomucronatus</i>	Deep cistern 5.5 mi. S of Imboden	132.25	0.00	0.91	0.62	7098	0.95	0.04	0.64
	Mansell Cave	112.28	0.15	1.08	0.74	12955	0.90	0.05	0.58
<i>Caecidotea ancyla</i>	Bear Hollow Cave	86.95	0.34	1.26	0.87	49097	0.64	0.09	0.26
	Brewer Cave								
	Denny Cave	103.48	0.22	1.09	0.75	7480	0.94	0.05	0.60
	Fitton Spring Cave	83.52	0.37	1.34	0.92	6924	0.95	0.04	0.64
	Foushee Cave	73.32	0.45	1.42	0.98	17478	0.87	0.05	0.59
	Greasy Valley Cave	103.09	0.22	1.09	0.75	16014	0.88	0.05	0.58
	Ivy Springs Cave	79.47	0.40	1.25	0.86	7742	0.94	0.05	0.57
	Major's Cave	85.71	0.35	1.16	0.80	26637	0.80	0.06	0.49
	Marshall Caves	97.97	0.26	1.17	0.80	38521	0.72	0.09	0.29
	Nesbitt Spring Cave	96.42	0.27	1.21	0.83	7626	0.94	0.04	0.63
	Old Pendergrass Cave	82.05	0.38	1.06	0.73	40435	0.70	0.09	0.28
	Pretty Clean Cave	73.31	0.45	1.41	0.97	4515	0.97	0.04	0.67
	Rootville Cave	105.07	0.21	1.15	0.79	17093	0.87	0.06	0.49
	Spavinaw Creek Cave								
	War Eagle Cave	89.93	0.32	1.24	0.86	7899	0.94	0.05	0.60
	Withrow Springs Cave	89.93	0.32	1.24	0.86	8192	0.94	0.05	0.60
<i>Caecidotea dimorpha</i>	Elm Cave	81.17	0.39	1.36	0.93	6371	0.95	0.04	0.62
	Martin Hollow Cave	91.58	0.31	1.26	0.87	7785	0.94	0.04	0.64

Species	Site	VULN		SENS		SENS		RVIP		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Mr. Griffin's Cave # 1	81.17	0.39	1.38	0.95	5166	0.96	0.05	0.60				
	Nesbitt Spring Cave	96.42	0.27	1.21	0.83	7626	0.94	0.04	0.63				
	Riley's Springbox	84.73	0.36	1.30	0.89	6583	0.95	0.05	0.58				
	Stovepipe Cave	119.89	0.09	0.99	0.68	5592	0.96	0.05	0.62				
	Summer Cave	80.24	0.39	1.37	0.95	3083	0.98	0.04	0.66				
<i>Caecidotea macropodopa</i>													
	Fincher Cave	75.07	0.43	1.38	0.95	75017	0.45	0.08	0.36				
	Spring at Bradley Shelter	91.06	0.31	1.21	0.83	24509	0.82	0.06	0.51				
	Stormdrain Spring at University of Arkansas	108.26	0.18	1.02	0.70	123096	0.09	0.10	0.18				
	Watson Cave	119.74	0.09	0.96	0.66	26767	0.80	0.06	0.51				
<i>Caecidotea salemensis</i>													
	Deep cistern 5.5 mi. S of Imboden	132.25	0.00	0.91	0.62	7098	0.95	0.04	0.64				
<i>Caecidotea steevesi</i>													
	AGFC Nursery Pond on Beaver Lake	88.33	0.33	1.26	0.86	79926	0.41	0.10	0.18				
	Cave on Pond Above Black Bass Lake	70.98	0.46	1.41	0.97	12186	0.91	0.07	0.45				
	Old Spanish Treasure Cave	78.03	0.41	1.37	0.94	21998	0.84	0.07	0.42				
	War Eagle Cave	89.93	0.32	1.24	0.86	7899	0.94	0.05	0.60				
	Withrow Springs Cave	89.93	0.32	1.24	0.86	8192	0.94	0.05	0.60				
<i>Caecidotea stilodactyla</i>													
	Arkansas Archaeological Survey Site #3BE352	108.29	0.18	1.08	0.75	29800	0.78	0.06	0.46				
	Bently Cave	87.26	0.34	1.30	0.89	59738	0.56	0.10	0.17				
	Big Mouth Cave												
	Brock Spring	83.44	0.37	1.19	0.82	121801	0.10	0.10	0.17				
	Bull Shoals Caverns	68.48	0.48	1.44	0.99	17354	0.87	0.06	0.51				

Species	Site	VULN		SENS		SENS		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Cal Cave	82.00	0.38	1.30	0.89	11423	0.92	0.05	0.57		
	Cave Mountain Cave	85.47	0.35	1.31	0.90	2347	0.98	0.03	0.74		
	Cave on North Boundary Trail	88.64	0.33	1.32	0.91	12100	0.91	0.06	0.48		
	Cave Springs Cave	110.49	0.16	0.47	0.32	134411	0.01	0.11	0.08		
	Cold Cave	98.17	0.26	1.16	0.80	89160	0.34	0.12	0.04		
	Covington's Cave										
	Dickerson Cave	109.18	0.17	1.08	0.74	16791	0.88	0.06	0.49		
	Eden Falls Cave	79.42	0.40	1.36	0.93	2886	0.98	0.03	0.71		
	Fish Pond Cave	87.40	0.34	1.28	0.88	27909	0.79	0.07	0.43		
	Fitton Cave	83.52	0.37	1.34	0.92	6073	0.96	0.04	0.65		
	Granny Parker's Cave										
	John Eddings Cave	77.84	0.41	1.38	0.95	5692	0.96	0.04	0.64		
	Laningham's Cave	82.00	0.38	1.30	0.89	12271	0.91	0.05	0.58		
	Middle Creek Spring Cave										
	Novack Spring Cave	79.42	0.40	1.36	0.93	3121	0.98	0.03	0.71		
	Old Joe Cave	86.79	0.34	1.26	0.87	8412	0.94	0.06	0.53		
	Sherfield Cave	82.25	0.38	1.37	0.94	2556	0.98	0.03	0.75		
	Simpson's Cave	106.12	0.20	1.08	0.74	14219	0.90	0.05	0.56		
	Spring at Hogscald	79.32	0.40	1.36	0.94	8843	0.93	0.06	0.49		
	Spring at Sequoyah Woods	89.77	0.32	1.24	0.85	121524	0.10	0.10	0.18		
	Spring on Butler Creek Road	76.29	0.42	1.40	0.96	26987	0.80	0.07	0.40		
	Spring on North Boundary Trail	88.64	0.33	1.32	0.91	12037	0.91	0.06	0.48		
	Stillhouse Hollow Cave	75.48	0.43	1.36	0.94	5838	0.96	0.04	0.64		
	Tanyard Creek Nature Trail Cave	87.45	0.34	1.24	0.85	59837	0.56	0.10	0.17		
	Unnamed seep 4 mi. S of Boxley	73.29	0.45	1.42	0.98	2296	0.98	0.03	0.76		
	Unnamed seep 9 mi. SW of Harrison	70.30	0.47	1.43	0.98	22761	0.83	0.05	0.54		
	Unnamed spring 3.5 mi. S of Jasper	68.72	0.48	1.44	0.99	5161	0.96	0.04	0.66		

Species	Site	VULN		SENS		SENS		RVIP		RVIP		RVIA		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	War Eagle Cavern	77.94	0.41	1.38	0.95	16349	0.88	0.07	0.41						
	White River Below Beaver Dam	69.89	0.47	1.42	0.98	14396	0.89	0.07	0.43						
<i>Cambarus aculabrum</i>															
	Bear Hollow Cave	86.95	0.34	1.26	0.87	49097	0.64	0.09	0.26						
	Brush Creek	109.45	0.17	0.91	0.63	131559	0.03	0.10	0.15						
	Logan Cave	108.38	0.18	0.93	0.64	31431	0.77	0.07	0.43						
	Old Pendergrass Cave	82.05	0.38	1.06	0.73	40435	0.70	0.09	0.28						
<i>Cambarus setosus</i>															
	Blowing Cave	98.82	0.25	1.25	0.86	24693	0.82	0.06	0.50						
	Poke Cave	98.82	0.25	1.25	0.86	24002	0.82	0.06	0.51						
	Tom Allen's Cave	107.06	0.19	1.12	0.77	17539	0.87	0.06	0.48						
<i>Cambarus zophonastes</i>															
	Hell Creek Cave	81.87	0.38	1.26	0.87	7658	0.94	0.05	0.62						
	Nesbitt Spring Cave	96.42	0.27	1.21	0.83	7626	0.94	0.04	0.63						
	site in Yellville	83.41	0.37	1.22	0.84	11630	0.91	0.05	0.55						
<i>Dendrocoelopsis americana</i>															
	Brock Spring	83.44	0.37	1.19	0.82	121801	0.10	0.10	0.17						
	Granny Parker's Cave														
	Steel Creek Campground Cave	81.35	0.38	1.36	0.93	3644	0.97	0.04	0.69						
	Watson Cave	119.74	0.09	0.96	0.66	26767	0.80	0.06	0.51						
<i>Eurycea spelaea</i>															
	Alexander Cave	89.67	0.32	1.16	0.80	3793	0.97	0.04	0.68						
	Allen Cave														
	Back o' Beyond Cave	92.87	0.30	1.24	0.85	4848	0.96	0.04	0.65						
	Bald Scrappy Cave	93.52	0.29	1.25	0.86	6921	0.95	0.05	0.61						
	Bear Hollow Cave	86.95	0.34	1.26	0.87	49097	0.64	0.09	0.26						
	Bear Pit	78.12	0.41	1.38	0.95	5002	0.96	0.04	0.65						

Species	Site	VULN	VULN	SENS	SENS	SENS	RVIP	RVIP	RVIA	RVIA
		Raw	Scaled	Raw	Scaled	Raw	Raw	Scaled	Raw	Scaled
	Bell Cave									
	Bently Cave	87.26	0.34	1.30	0.89	59738	0.56	0.10	0.17	
	Big Mouth Cave									
	Big Spring Cave									
	Biology Cave	92.66	0.30	1.27	0.87	5075	0.96	0.05	0.60	
	Blanchard Springs Caverns	81.38	0.38	1.37	0.94	7286	0.95	0.05	0.62	
	Blowing Cave	98.82	0.25	1.25	0.86	24693	0.82	0.06	0.50	
	Blowing Spring Cave	78.82	0.40	1.40	0.97	2375	0.98	0.04	0.70	
	Blowing Springs Cave	98.00	0.26	1.21	0.83	81295	0.40	0.11	0.11	
	Blowing Springs Cave	77.52	0.41	1.36	0.94	12841	0.91	0.06	0.51	
	Blue Heaven Cave	87.49	0.34	1.27	0.88	7821	0.94	0.05	0.59	
	Bonanza Cave	96.19	0.27	1.25	0.86	10630	0.92	0.05	0.57	
	Bonanza Mine	78.66	0.41	1.38	0.95	3697	0.97	0.04	0.66	
	Breakdown Cave	86.65	0.34	1.33	0.92	7124	0.95	0.05	0.61	
	Brewer Cave									
	Bull Shoals Caverns	68.48	0.48	1.44	0.99	17354	0.87	0.06	0.51	
	Cave River Cave	75.39	0.43	1.40	0.96	6744	0.95	0.05	0.61	
	Cave Springs Cave	110.49	0.16	0.47	0.32	134411	0.01	0.11	0.08	
	Chambers Hollow Cave	94.36	0.29	1.25	0.86	28268	0.79	0.07	0.45	
	Chilly Bowl Cave	66.97	0.49	1.44	0.99	15737	0.88	0.05	0.57	
	Chinn Springs Cave	91.88	0.31	1.26	0.87	25020	0.82	0.06	0.50	
	Congo Crawl									
	Coon Cave	71.97	0.46	1.39	0.96	3917	0.97	0.04	0.65	
	Copperhead Cave	78.23	0.41	1.35	0.93	5359	0.96	0.04	0.65	
	Corkscrew Cave	75.63	0.43	1.40	0.96	5539	0.96	0.04	0.65	
	Cosmic Caverns	63.59	0.52	1.45	1.00	17695	0.87	0.05	0.56	
	Crystal Dome Cave	84.35	0.36	1.25	0.86	22998	0.83	0.06	0.52	

Species Site	VULN		SENS		SENS		RVIP		RVIP		RVIA	
	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
Cushman Cave	90.97	0.31	1.27	0.88	9247	0.93	0.05	0.60				
Cyner Cave	93.66	0.29	1.26	0.87	5181	0.96	0.04	0.68				
Davis Creek Cave												
Dear Buster Cave	84.82	0.36	1.34	0.92	3532	0.97	0.03	0.74				
Diamond Cave	91.23	0.31	1.28	0.88	4922	0.96	0.04	0.68				
Dickerson Cave	109.18	0.17	1.08	0.74	16791	0.88	0.06	0.49				
Eckel Cave	82.53	0.38	1.33	0.91	9824	0.93	0.07	0.42				
Elm Cave	81.17	0.39	1.36	0.93	6371	0.95	0.04	0.62				
Ennis Cave	85.81	0.35	1.30	0.89	5431	0.96	0.04	0.65				
Fancher Cave												
Fish Pond Cave	87.40	0.34	1.28	0.88	27909	0.79	0.07	0.43				
Fitton Cave	83.52	0.37	1.34	0.92	6073	0.96	0.04	0.65				
Fitton Spring Cave	83.52	0.37	1.34	0.92	6924	0.95	0.04	0.64				
Foushee Cave	73.32	0.45	1.42	0.98	17478	0.87	0.05	0.59				
Friday the 13th Cave	83.52	0.37	1.34	0.92	5858	0.96	0.04	0.65				
Green River Cave	84.08	0.36	1.27	0.88	22375	0.84	0.06	0.52				
Gunner Cave	82.25	0.38	1.34	0.92	3462	0.97	0.04	0.65				
Gustafson Cave	82.28	0.38	1.34	0.92	4229	0.97	0.05	0.60				
Hammer Springs Cave	86.42	0.35	1.34	0.92	3506	0.97	0.04	0.68				
Hell Creek Cave	81.87	0.38	1.26	0.87	7658	0.94	0.05	0.62				
Herald Hollow Cave	74.98	0.43	1.41	0.97	7345	0.95	0.05	0.59				
Hickory Creek Cave												
Hidden Spring Cave	80.30	0.39	1.31	0.90	4566	0.97	0.05	0.61				
Hog Head Cave	84.12	0.36	1.34	0.92	3819	0.97	0.03	0.74				
Huchingson's Waterfall Cave												
Hunter's Cave	75.54	0.43	1.42	0.98	11586	0.91	0.06	0.53				
Hurricane River Cave	95.01	0.28	1.26	0.87	5913	0.96	0.04	0.66				

Species	Site	VULN		SENS		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Icebox Cave								
	Indian Rockhouse Cave	82.12	0.38	1.35	0.93	4059	0.97	0.04	0.64
	In-D-Pendants Cave	82.28	0.38	1.33	0.91	5030	0.96	0.04	0.64
	Janus Pit	86.96	0.34	1.33	0.92	7093	0.95	0.05	0.62
	Jelico Hollow Cave	77.97	0.41	1.38	0.95	6074	0.96	0.05	0.59
	John Eddings Cave	77.84	0.41	1.38	0.95	5692	0.96	0.04	0.64
	Lewis Spring Cave								
	Little Den Cave	83.52	0.37	1.34	0.92	6168	0.95	0.04	0.65
	Logan Cave	108.38	0.18	0.93	0.64	31431	0.77	0.07	0.43
	Major's Cave	85.71	0.35	1.16	0.80	26637	0.80	0.06	0.49
	Mammoth Spring	87.18	0.34	1.24	0.85	7894	0.94	0.04	0.65
	Martin Hollow Cave	91.58	0.31	1.26	0.87	7785	0.94	0.04	0.64
	Miner's Cave	77.70	0.41	1.37	0.95	12711	0.91	0.06	0.49
	Mr. Clean Cave	95.03	0.28	1.25	0.86	7491	0.94	0.05	0.61
	Mr. Griffin's Cave # 1	81.17	0.39	1.38	0.95	5166	0.96	0.05	0.60
	Needles Cave	100.96	0.24	1.15	0.79	5581	0.96	0.05	0.57
	Nesbitt Spring Cave	96.42	0.27	1.21	0.83	7626	0.94	0.04	0.63
	Norfolk Bat Cave	85.67	0.35	1.25	0.86	11297	0.92	0.06	0.52
	Old Joe Cave	86.79	0.34	1.26	0.87	8412	0.94	0.06	0.53
	Omega Cave								
	Panther Mountain Cave								
	Pigeon Roost Cave	87.94	0.34	1.33	0.92	25901	0.81	0.08	0.36
	Potato Cave								
	Pregnant Nun Cave	76.29	0.42	1.40	0.96	27147	0.80	0.07	0.41
	Pretty Clean Cave	73.31	0.45	1.41	0.97	4515	0.97	0.04	0.67
	Reed Cave	81.19	0.39	1.35	0.93	10276	0.92	0.05	0.58
	Richardson Cave	74.88	0.43	1.40	0.97	10642	0.92	0.08	0.34



Species	Site	VULN		SENS		SENS		RVIP		RVIP		RVIA		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Riley's Springbox	84.73	0.36	1.30	0.89	6583	0.95	0.05	0.58						
	Rootville Cave	105.07	0.21	1.15	0.79	17093	0.87	0.06	0.49						
	Rory Cave	91.81	0.31	1.26	0.86	6795	0.95	0.04	0.64						
	Salamander Cave	71.17	0.46	1.41	0.97	9892	0.93	0.05	0.56						
	Salt peter Cave	81.89	0.38	1.37	0.95	4395	0.97	0.05	0.60						
	Slick Rock Hollow Cave														
	Springhouse at Steel Creek Ranger Cabin	79.92	0.40	1.37	0.94	4044	0.97	0.04	0.69						
	Steel Creek Campground Cave	81.35	0.38	1.36	0.93	3644	0.97	0.04	0.69						
	Stillhouse Hollow Cave	75.48	0.43	1.36	0.94	5838	0.96	0.04	0.64						
	Stovepipe Cave	119.89	0.09	0.99	0.68	5592	0.96	0.05	0.62						
	Summer Cave	80.24	0.39	1.37	0.95	3083	0.98	0.04	0.66						
	Tom Allen's Cave	107.06	0.19	1.12	0.77	17539	0.87	0.06	0.48						
	Tom Barnes Cave	85.02	0.36	1.32	0.91	4844	0.96	0.04	0.67						
	Toney Bend Mine # 2	82.73	0.37	1.36	0.94	3666	0.97	0.04	0.65						
	Tweet's Cave	93.22	0.30	1.27	0.88	3965	0.97	0.03	0.72						
	Unnamed cave	101.57	0.23	1.18	0.81	7560	0.94	0.05	0.62						
	Unnamed caves at Devil's Knob														
	Natural Area	87.55	0.34	1.33	0.92	7254	0.95	0.05	0.59						
	Van Dyke Spring Cave	83.52	0.37	1.34	0.92	6364	0.95	0.04	0.64						
	Von Wadding's Memorial Cave	86.65	0.34	1.33	0.92	7034	0.95	0.05	0.61						
	War Eagle Cave	89.93	0.32	1.24	0.86	7899	0.94	0.05	0.60						
	War Eagle Cavern	77.94	0.41	1.38	0.95	16349	0.88	0.07	0.41						
	Whippoorwill Cave	77.97	0.41	1.38	0.95	6932	0.95	0.05	0.59						
	Willis Cave	83.52	0.37	1.34	0.92	6230	0.95	0.04	0.65						
	Wolf Creek Cave	80.34	0.39	1.38	0.95	3458	0.97	0.03	0.74						
	Wounded Knee Cave	83.77	0.37	1.35	0.93	5072	0.96	0.05	0.59						

*Lirceus bicuspidatus*

Species	Site	VULN		SENS		SENS		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
	Diamond Cave	91.23	0.31	1.28	0.88	4922	0.96	0.04	0.68		
	Foushee Cave	73.32	0.45	1.42	0.98	17478	0.87	0.05	0.59		
	Hell Creek Cave	81.87	0.38	1.26	0.87	7658	0.94	0.05	0.62		
	Hurricane River Cave	95.01	0.28	1.26	0.87	5913	0.96	0.04	0.66		
	<i>Lirceus bidentatus</i>										
	Unnamed seep 9 mi. SW of Harrison	70.30	0.47	1.43	0.98	22761	0.83	0.05	0.54		
	<i>Stygobromus ozarkensis</i>										
	Bear Hollow Cave	86.95	0.34	1.26	0.87	49097	0.64	0.09	0.26		
	Blowing Springs Cave	98.00	0.26	1.21	0.83	81295	0.40	0.11	0.11		
	Cave on Pond Above Black Bass Lake	70.98	0.46	1.41	0.97	12186	0.91	0.07	0.45		
	Cave Springs Cave	110.49	0.16	0.47	0.32	134411	0.01	0.11	0.08		
	Civil War Cave	104.25	0.21	1.02	0.70	91159	0.33	0.12	0.00		
	Dickerson Cave	109.18	0.17	1.08	0.74	16791	0.88	0.06	0.49		
	Fitton Cave	83.52	0.37	1.34	0.92	6073	0.96	0.04	0.65		
	Fitton Spring Cave	83.52	0.37	1.34	0.92	6924	0.95	0.04	0.64		
	Hunter's Cave	75.54	0.43	1.42	0.98	11586	0.91	0.06	0.53		
	John Eddings Cave	77.84	0.41	1.38	0.95	5692	0.96	0.04	0.64		
	Logan Cave	108.38	0.18	0.93	0.64	31431	0.77	0.07	0.43		
	Needles Cave	100.96	0.24	1.15	0.79	5581	0.96	0.05	0.57		
	Old Pendergrass Cave	82.05	0.38	1.06	0.73	40435	0.70	0.09	0.28		
	Pretty Clean Cave	73.31	0.45	1.41	0.97	4515	0.97	0.04	0.67		
	Reed Cave	81.19	0.39	1.35	0.93	10276	0.92	0.05	0.58		
	Sherfield Cave	82.25	0.38	1.37	0.94	2556	0.98	0.03	0.75		
	Spavinaw Creek Cave										
	War Eagle Cave	89.93	0.32	1.24	0.86	7899	0.94	0.05	0.60		
	War Eagle Cavern	77.94	0.41	1.38	0.95	16349	0.88	0.07	0.41		

Species	Site	VULN		SENS		RVIP		RVIA	
		Raw	Scaled	Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Typhlichthys subterraneus</i>	White River Below Beaver Dam	69.89	0.47	1.42	0.98	14396	0.89	0.07	0.43
	Withrow Springs Cave	89.93	0.32	1.24	0.86	8192	0.94	0.05	0.60
-	Richardson Cave	74.88	0.43	1.40	0.97	10642	0.92	0.08	0.34
	Unnamed well in Randolph County								

Table Appendix E-9. Index values and scaled scores for RVIX Raw through THREAT Scaled.

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Amblyopsis rosae</i>	AGFC Nursery Pond on Beaver Lake	0.05	0.03	0.62	0.23	1.09	0.56
	Cave Springs Cave	0.13	0.08	0.17	0.06	0.38	0.20
	Civil War Cave	0.07	0.04	0.37	0.14	0.84	0.43
	Hewlitt's Spring Hole	0.09	0.05	0.50	0.18	0.85	0.43
	James-Ditto Cave	0.02	0.01	1.23	0.45	1.16	0.59
	Logan Cave	0.16	0.10	1.29	0.48	1.11	0.57
	Monte Ne Sinkhole	0.07	0.04	0.26	0.10	1.06	0.54
	Mule Hole Sink	0.08	0.05	0.18	0.07	0.76	0.39
	Rootville Cave	0.01	0.01	1.37	0.51	1.30	0.66
	Tom Allen's Cave	0.21	0.13	1.48	0.55	1.32	0.68
<i>Amnicola cora</i>	Foushee Cave	0.31	0.18	1.64	0.61	1.58	0.81
	<i>Batrurus pseudomucronatus</i>						
<i>Caecidotea ancyla</i>	Deep cistern 5.5 mi. S of Imboden	0.04	0.03	1.62	0.60	1.22	0.63
	Mansell Cave	0.38	0.23	1.72	0.63	1.37	0.70

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Bear Hollow Cave	0.11	0.07	0.96	0.35	1.22	0.63
	Brewer Cave						
	Denny Cave	0.32	0.19	1.73	0.64	1.39	0.71
	Fitton Spring Cave	0.30	0.18	1.77	0.65	1.57	0.81
	Foushee Cave	0.31	0.18	1.64	0.61	1.58	0.81
	Greasy Valley Cave	0.18	0.11	1.57	0.58	1.33	0.68
	Ivy Springs Cave	0.02	0.01	1.53	0.56	1.43	0.73
	Major's Cave	0.03	0.02	1.32	0.48	1.29	0.66
	Marshall Caves	0.14	0.08	1.08	0.40	1.20	0.62
	Nesbitt Spring Cave	0.27	0.16	1.73	0.64	1.47	0.75
	Old Pendergrass Cave	0.13	0.08	1.06	0.39	1.12	0.57
	Pretty Clean Cave	0.07	0.04	1.68	0.62	1.59	0.82
	Rootville Cave	0.01	0.01	1.37	0.51	1.30	0.66
	Spavinaw Creek Cave						
	War Eagle Cave	0.19	0.11	1.66	0.61	1.47	0.75
	Withrow Springs Cave	0.04	0.02	1.56	0.58	1.43	0.73
	<i>Caecidotea dimorpha</i>						
	Elm Cave	0.08	0.05	1.62	0.60	1.53	0.79
	Martin Hollow Cave	0.37	0.22	1.80	0.66	1.53	0.79
	Mr. Griffin's Cave # 1	0.06	0.04	1.60	0.59	1.54	0.79
	Nesbitt Spring Cave	0.27	0.16	1.73	0.64	1.47	0.75
	Riley's Springbox	0.12	0.07	1.60	0.59	1.48	0.76
	Stovepipe Cave	0.08	0.05	1.63	0.60	1.29	0.66
	Summer Cave	0.82	0.49	2.13	0.79	1.73	0.89
	<i>Caecidotea macropropoda</i>						
	Fincher Cave	0.05	0.03	0.83	0.31	1.26	0.65
	Spring at Bradley Shelter	0.32	0.19	1.52	0.56	1.39	0.71

Species	Site	RVI Raw	RVI Scaled	RVI Raw	RVI Scaled	THREAT Raw	THREAT Scaled
	Stormdrain Spring at University of Arkansas	0.01	0.01	0.28	0.10	0.81	0.41
	Watson Cave	0.04	0.02	1.33	0.49	1.15	0.59
<i>Caecidotea salemensis</i>	Deep cistern 5.5 mi. S of Imboden	0.04	0.03	1.62	0.60	1.22	0.63
<i>Caecidotea steevesi</i>	AGFC Nursery Pond on Beaver Lake Cave on Pond Above Black Bass Lake	0.05	0.03	0.62	0.23	1.09	0.56
	Old Spanish Treasure Cave	0.09	0.06	1.42	0.52	1.50	0.77
	War Eagle Cave	0.06	0.04	1.29	0.48	1.42	0.73
	Withrow Springs Cave	0.19	0.11	1.66	0.61	1.47	0.75
		0.04	0.02	1.56	0.58	1.43	0.73
<i>Caecidotea stiladactyla</i>	Arkansas Archaeological Survey Site #3BE352	0.09	0.05	1.29	0.48	1.22	0.63
	Bently Cave	0.03	0.02	0.74	0.27	1.17	0.60
	Big Mouth Cave						
	Brock Spring	0.05	0.03	0.31	0.11	0.94	0.48
	Bull Shoals Caverns	0.18	0.11	1.49	0.55	1.54	0.79
	Cal Cave	0.72	0.43	1.92	0.71	1.60	0.82
	Cave Mountain Cave	0.05	0.03	1.76	0.65	1.55	0.80
	Cave on North Boundary Trail	0.30	0.18	1.57	0.58	1.48	0.76
	Cave Springs Cave	0.13	0.08	0.17	0.06	0.38	0.20
	Cold Cave	0.02	0.01	0.39	0.15	0.95	0.48
	Covington's Cave						
	Dickerson Cave	0.12	0.07	1.44	0.53	1.28	0.65
	Eden Falls Cave	0.91	0.55	2.24	0.82	1.76	0.90
	Fish Pond Cave	0.08	0.05	1.28	0.47	1.35	0.69

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Fitton Cave	0.07	0.04	1.64	0.61	1.53	0.78
	Granny Parker's Cave						
	John Eddings Cave	0.69	0.41	2.01	0.74	1.69	0.87
	Laningham's Cave	0.76	0.45	1.94	0.72	1.61	0.82
	Middle Creek Spring Cave						
	Novack Spring Cave	0.71	0.43	2.12	0.78	1.71	0.88
	Old Joe Cave	0.23	0.14	1.61	0.59	1.46	0.75
	Sherfield Cave	0.13	0.08	1.81	0.67	1.61	0.82
	Simpson's Cave	0.01	0.01	1.46	0.54	1.28	0.66
	Spring at Hogscald	0.02	0.01	1.44	0.53	1.47	0.75
	Spring at Sequoyah Woods	0.26	0.16	0.44	0.16	1.02	0.52
	Spring on Butler Creek Road	0.29	0.18	1.37	0.51	1.47	0.75
	Spring on North Boundary Trail	0.22	0.13	1.52	0.56	1.47	0.75
	Stillhouse Hollow Cave	0.26	0.16	1.76	0.65	1.58	0.81
	Tanyard Creek Nature Trail Cave	0.08	0.05	0.77	0.28	1.14	0.58
	Unnamed seep 4 mi. S of Boxley	0.10	0.06	1.80	0.66	1.64	0.84
	Unnamed seep 9 mi. SW of Harrison	0.10	0.06	1.43	0.53	1.51	0.77
	Unnamed spring 3.5 mi. S of Jasper	0.06	0.04	1.66	0.61	1.60	0.82
	War Eagle Cavern	0.04	0.02	1.32	0.49	1.43	0.73
	White River Below Beaver Dam	0.07	0.04	1.37	0.50	1.48	0.76
<i>Cambarus aculabrum</i>							
	Bear Hollow Cave	0.11	0.07	0.96	0.35	1.22	0.63
	Brush Creek	0.01	0.01	0.18	0.07	0.69	0.36
	Logan Cave	0.16	0.10	1.29	0.48	1.11	0.57
	Old Pendergrass Cave	0.13	0.08	1.06	0.39	1.12	0.57
<i>Cambarus setosus</i>							
	Blowing Cave	0.87	0.52	1.85	0.68	1.54	0.79

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Poke Cave	0.73	0.44	1.77	0.65	1.51	0.77
	Tom Allen's Cave	0.21	0.13	1.48	0.55	1.32	0.68
<i>Cambarus zophonastes</i>							
	Hell Creek Cave	0.77	0.46	2.02	0.75	1.61	0.83
	Nesbitt Spring Cave	0.27	0.16	1.73	0.64	1.47	0.75
	site in Yellville	0.02	0.01	1.48	0.54	1.38	0.71
<i>Dendrocoelopsis americana</i>							
	Brock Spring	0.05	0.03	0.31	0.11	0.94	0.48
	Granny Parker's Cave						
	Steel Creek Campground Cave	0.22	0.13	1.80	0.66	1.60	0.82
	Watson Cave	0.04	0.02	1.33	0.49	1.15	0.59
<i>Eurycea spelaea</i>							
	Alexander Cave	0.09	0.06	1.71	0.63	1.43	0.73
	Allen Cave						
	Back o' Beyond Cave	0.44	0.27	1.88	0.69	1.54	0.79
	Bald Scrappy Cave	0.63	0.37	1.93	0.71	1.58	0.81
	Bear Hollow Cave	0.11	0.07	0.96	0.35	1.22	0.63
	Bear Pit	0.92	0.55	2.17	0.80	1.75	0.90
	Bell Cave						
	Bently Cave	0.03	0.02	0.74	0.27	1.17	0.60
	Big Mouth Cave						
	Big Spring Cave						
	Biology Cave	0.03	0.02	1.58	0.58	1.46	0.75
	Blanchard Springs Caverns	0.19	0.11	1.68	0.62	1.56	0.80
	Blowing Cave	0.87	0.52	1.85	0.68	1.54	0.79
	Blowing Spring Cave	0.87	0.52	2.21	0.81	1.78	0.91
	Blowing Springs Cave	0.08	0.05	0.56	0.21	1.04	0.53

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Blowing Springs Cave	0.56	0.33	1.75	0.65	1.58	0.81
	Blue Heaven Cave	0.10	0.06	1.59	0.59	1.46	0.75
	Bonanza Cave	1.38	0.82	2.31	0.85	1.71	0.88
	Bonanza Mine	0.03	0.02	1.65	0.61	1.56	0.80
	Breakdown Cave	0.23	0.14	1.69	0.62	1.54	0.79
	Brewer Cave						
	Bull Shoals Caverns	0.18	0.11	1.49	0.55	1.54	0.79
	Cave River Cave	0.79	0.48	2.04	0.75	1.71	0.88
	Cave Springs Cave	0.13	0.08	0.17	0.06	0.38	0.20
	Chambers Hollow Cave	0.25	0.15	1.39	0.51	1.38	0.71
	Chilly Bowl Cave	0.10	0.06	1.52	0.56	1.55	0.79
	Chinn Springs Cave	0.00	0.00	1.32	0.49	1.35	0.69
	Congo Crawl						
	Coon Cave	0.30	0.18	1.81	0.67	1.62	0.83
	Copperhead Cave	0.11	0.07	1.68	0.62	1.55	0.79
	Corkscrew Cave	0.41	0.24	1.85	0.68	1.65	0.84
	Cosmic Caverns	0.06	0.04	1.47	0.54	1.54	0.79
	Crystal Dome Cave	0.00	0.00	1.36	0.50	1.36	0.70
	Cushman Cave	0.26	0.16	1.70	0.62	1.50	0.77
	Cyner Cave	0.51	0.31	1.95	0.72	1.59	0.81
	Davis Creek Cave						
	Dear Buster Cave	1.47	0.88	2.59	0.96	1.88	0.96
	Diamond Cave	0.19	0.11	1.76	0.65	1.53	0.79
	Dickerson Cave	0.12	0.07	1.44	0.53	1.28	0.65
	Eckel Cave	0.27	0.16	1.51	0.56	1.47	0.75
	Elm Cave	0.08	0.05	1.62	0.60	1.53	0.79
	Ennis Cave	0.25	0.15	1.76	0.65	1.54	0.79



Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Fancher Cave						
	Fish Pond Cave	0.08	0.05	1.28	0.47	1.35	0.69
	Fitton Cave	0.07	0.04	1.64	0.61	1.53	0.78
	Fitton Spring Cave	0.30	0.18	1.77	0.65	1.57	0.81
	Foushee Cave	0.31	0.18	1.64	0.61	1.58	0.81
	Friday the 13th Cave	0.48	0.29	1.90	0.70	1.62	0.83
	Green River Cave	0.13	0.08	1.43	0.53	1.40	0.72
	Gunner Cave	0.24	0.15	1.77	0.65	1.57	0.81
	Gustafson Cave	0.23	0.14	1.70	0.63	1.55	0.79
	Hammer Springs Cave	0.21	0.13	1.78	0.66	1.58	0.81
	Hell Creek Cave	0.77	0.46	2.02	0.75	1.61	0.83
	Herald Hollow Cave	0.50	0.30	1.83	0.68	1.65	0.84
	Hickory Creek Cave						
	Hidden Spring Cave	0.07	0.04	1.61	0.59	1.50	0.77
	Hog Head Cave	1.18	0.71	2.42	0.89	1.81	0.93
	Huchingson's Waterfall Cave						
	Hunter's Cave	0.85	0.51	1.96	0.72	1.70	0.87
	Hurricane River Cave	0.06	0.03	1.65	0.61	1.48	0.76
	Icebox Cave						
	Indian Rockhouse Cave	0.99	0.59	2.20	0.81	1.74	0.89
	In-D-Pendants Cave	0.44	0.26	1.86	0.69	1.60	0.82
	Janus Pit	0.14	0.08	1.65	0.61	1.52	0.78
	Jelico Hollow Cave	0.51	0.30	1.85	0.68	1.63	0.84
	John Eddings Cave	0.69	0.41	2.01	0.74	1.69	0.87
	Lewis Spring Cave						
	Little Den Cave	0.34	0.20	1.80	0.67	1.59	0.81
	Logan Cave	0.16	0.10	1.29	0.48	1.11	0.57

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Major's Cave	0.03	0.02	1.32	0.48	1.29	0.66
	Mammoth Spring	0.03	0.02	1.61	0.59	1.45	0.74
	Martin Hollow Cave	0.37	0.22	1.80	0.66	1.53	0.79
	Miner's Cave	0.25	0.15	1.55	0.57	1.52	0.78
	Mr. Clean Cave	0.52	0.31	1.87	0.69	1.55	0.79
	Mr. Griffin's Cave # 1	0.06	0.04	1.60	0.59	1.54	0.79
	Needles Cave	0.11	0.06	1.60	0.59	1.38	0.71
	Nesbitt Spring Cave	0.27	0.16	1.73	0.64	1.47	0.75
	Norfolk Bat Cave	0.09	0.05	1.49	0.55	1.41	0.72
	Old Joe Cave	0.23	0.14	1.61	0.59	1.46	0.75
	Omega Cave						
	Panther Mountain Cave						
	Pigeon Roost Cave	0.92	0.55	1.72	0.63	1.55	0.79
	Potato Cave						
	Pregnant Nun Cave	0.08	0.05	1.25	0.46	1.42	0.73
	Pretty Clean Cave	0.07	0.04	1.68	0.62	1.59	0.82
	Reed Cave	0.26	0.16	1.66	0.61	1.54	0.79
	Richardson Cave	0.11	0.07	1.33	0.49	1.46	0.75
	Riley's Springbox	0.12	0.07	1.60	0.59	1.48	0.76
	Rootville Cave	0.01	0.01	1.37	0.51	1.30	0.66
	Rory Cave	0.18	0.11	1.70	0.63	1.49	0.76
	Salamander Cave	0.14	0.08	1.56	0.58	1.55	0.79
	Salt peter Cave	1.23	0.74	2.31	0.85	1.80	0.92
	Slick Rock Hollow Cave						
	Springhouse at Steel Creek Ranger Cabin	0.06	0.04	1.70	0.63	1.57	0.80
	Steel Creek Campground Cave	0.22	0.13	1.80	0.66	1.60	0.82

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
	Stillhouse Hollow Cave	0.26	0.16	1.76	0.65	1.58	0.81
	Stovepipe Cave	0.08	0.05	1.63	0.60	1.29	0.66
	Summer Cave	0.82	0.49	2.13	0.79	1.73	0.89
	Tom Allen's Cave	0.21	0.13	1.48	0.55	1.32	0.68
	Tom Barnes Cave	0.12	0.07	1.71	0.63	1.54	0.79
	Toney Bend Mine # 2	0.24	0.15	1.77	0.65	1.59	0.82
	Tweet's Cave	0.60	0.36	2.05	0.75	1.63	0.84
	Unnamed cave	0.05	0.03	1.60	0.59	1.40	0.72
	Unnamed caves at Devil's Knob						
	Natural Area	0.88	0.53	2.07	0.76	1.68	0.86
	Van Dyke Spring Cave	0.46	0.28	1.87	0.69	1.61	0.83
	Von Wadding's Memorial Cave	0.87	0.52	2.08	0.77	1.68	0.86
	War Eagle Cave	0.19	0.11	1.66	0.61	1.47	0.75
	War Eagle Cavern	0.04	0.02	1.32	0.49	1.43	0.73
	Whippoorwill Cave	0.00	0.00	1.54	0.57	1.52	0.78
	Willis Cave	0.40	0.24	1.85	0.68	1.60	0.82
	Wolf Creek Cave	1.67	1.00	2.71	1.00	1.95	1.00
	Wounded Knee Cave	0.55	0.33	1.88	0.69	1.62	0.83
	<i>Lirceus bicuspidatus</i>						
	Diamond Cave	0.19	0.11	1.76	0.65	1.53	0.79
	Foushee Cave	0.31	0.18	1.64	0.61	1.58	0.81
	Hell Creek Cave	0.77	0.46	2.02	0.75	1.61	0.83
	Hurricane River Cave	0.06	0.03	1.65	0.61	1.48	0.76
	<i>Lirceus bidentatus</i>						
	Unnamed seep 9 mi. SW of Harrison	0.10	0.06	1.43	0.53	1.51	0.77
	<i>Stygobromus ozarkensis</i>						
	Bear Hollow Cave	0.11	0.07	0.96	0.35	1.22	0.63

Species	Site	RVIX		RVI		THREAT	
		Raw	Scaled	Raw	Scaled	Raw	Scaled
<i>Typhlichthys subterraneus</i>	Blowing Springs Cave	0.08	0.05	0.56	0.21	1.04	0.53
	Cave on Pond Above Black Bass Lake	0.09	0.06	1.42	0.52	1.50	0.77
	Cave Springs Cave	0.13	0.08	0.17	0.06	0.38	0.20
	Civil War Cave	0.07	0.04	0.37	0.14	0.84	0.43
	Dickerson Cave	0.12	0.07	1.44	0.53	1.28	0.65
	Fitton Cave	0.07	0.04	1.64	0.61	1.53	0.78
	Fitton Spring Cave	0.30	0.18	1.77	0.65	1.57	0.81
	Hunter's Cave	0.85	0.51	1.96	0.72	1.70	0.87
	John Eddings Cave	0.69	0.41	2.01	0.74	1.69	0.87
	Logan Cave	0.16	0.10	1.29	0.48	1.11	0.57
	Needles Cave	0.11	0.06	1.60	0.59	1.38	0.71
	Old Pendergrass Cave	0.13	0.08	1.06	0.39	1.12	0.57
	Pretty Clean Cave	0.07	0.04	1.68	0.62	1.59	0.82
	Reed Cave	0.26	0.16	1.66	0.61	1.54	0.79
	Sherfield Cave	0.13	0.08	1.81	0.67	1.61	0.82
	Spavinaw Creek Cave						
	War Eagle Cave	0.19	0.11	1.66	0.61	1.47	0.75
	War Eagle Cavern	0.04	0.02	1.32	0.49	1.43	0.73
	White River Below Beaver Dam	0.07	0.04	1.37	0.50	1.48	0.76
	Withrow Springs Cave	0.04	0.02	1.56	0.58	1.43	0.73
Richardson Cave	0.11	0.07	1.33	0.49	1.46	0.75	
Unnamed well in Randolph County							