

Interim Indiana Bat Mitigation Guidance for the State of Tennessee

Introduction

This guidance is to be used when assessing minimization and mitigation needs for the endangered Indiana bat (*Myotis sodalis*) relative to development, forestry, and other land use or land management projects that have the potential to alter or otherwise affect Indiana bat habitat in Tennessee. The Fish and Wildlife Service (Service) will pursue similar minimization goals and options for Indiana bat conservation and recovery during informal and formal consultations with Federal action agencies pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (ESA), subject to the acceptability of the minimization measures to the Federal action agencies. Additionally, the Service will use this Guidance, to the extent appropriate, for its assessment of interstate projects within 20 miles of Tennessee where the Tennessee Field Office (TFO) is the lead Service office and use of the Guidance is acceptable to the adjacent state's field office.

The intent of this guidance is to (1) provide direction to project proponents whose actions have the potential to adversely affect the Indiana bat and (2) enhance conservation and recovery of Indiana bat populations in Tennessee by providing minimization and mitigation for adverse effects to Indiana bats that occur in Tennessee. The guidance is subject to modification as new information relative to the species, its conservation status, and its conservation and recovery becomes available.

Tennessee, like most states, is experiencing significant human-related growth. Projects associated with growth can cause the loss, degradation, and fragmentation of natural habitats as the alteration or development of these formerly natural to semi-natural habitats occur. These types of impacts have the potential to adversely affect the Indiana bat. So project proponents must often determine if potential adverse effects to Indiana bats are likely to occur and, if so, how they can avoid, minimize, and/or mitigate for those adverse effects. If avoidance of all likely adverse effects is not achievable, project proponents must follow these guidelines below to ensure compliance with the ESA and avoid an illegal “take” of Indiana bats, a federally listed species. “Take” of federally listed species is prohibited pursuant to section 9 of the ESA. As a result, the supporting rationale for this guidance is that future recovery, conservation, and mitigation efforts for the Indiana bat undertaken by the Service and others using this guidance will improve conservation and recovery of Indiana bat populations in Tennessee in spite of adverse effects that occur, as these adverse effects would require avoidance, minimization, and/or mitigation.

Background

Tennessee lies just south of the center of the Indiana bat's range and contains numerous caves and forestlands known to contain and provide habitat for the species. One of the 23 Priority 1 hibernacula identified in the draft, revised Indiana bat recovery plan¹ lies within Tennessee's borders. This hibernaculum occurs within the Great Smoky Mountains National Park (GSMNP) system, located in the eastern part of the state. The expansive karst within much of Tennessee's limestone geology results in numerous caves that historically and currently provide winter habitat for Indiana bats. Thirty-four hibernacula (one Priority 1 and six Priority 2 caves) within the state have historic Indiana bat records, and 21 of these caves have extant winter populations. Many of these caves occur within areas of existing conservation ownerships, both private and public. Of particular note are several caves within the GSMNP managed by the National Park Service, several caves within Fall Creek Falls State park that are managed by the Tennessee Department of Environment and Conservation, and several caves in various ownership in Fentress County. Like the hibernacula, known maternity colonies and evidence of these colonies are scattered through middle and eastern Tennessee with notable clusters of maternity colonies occurring in and near the GSMNP. Evidence of maternity colonies has been found during the last decade at the Fort Campbell Military Reservation, on the Arnold Air Force Base, and in the Pickett County area near Dale Hollow Reservoir.

Because Indiana bat records occur broadly across the State, nearly any project with suitable habitat has the potential to adversely affect the Indiana bat. The TFO reviews approximately 250 to 570 projects annually for impacts to Indiana bats. The majority of these projects involve the loss of suitable summer roosting and foraging habitat. Projects that impact known winter habitat are rare. Projects impacting known and potential summer and swarming habitats range from large block disturbances such as those associated with surface mining and development projects to linear impacts associated with transmission lines and pipelines. Additionally, the TFO annually reviews numerous impacts that vary in size. Although the small size of some of the disturbances makes direct adverse impacts to Indiana bats less likely, the cumulative and indirect effects of these projects as a whole are or can be detrimental to the species and limit the potential conservation and recovery of the species.

¹ U.S. Fish and Wildlife Service. 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. U.S. Fish and Wildlife Service, Fort Snelling, MN. 258 pp.

Explanation of Terms

Certain terms are used repeatedly throughout this document to describe Indiana bat habitat. For the purpose of this guidance, the Service provides the following definitions:

- “Known habitat” refers to suitable summer or winter habitat located within 10 miles of a documented priority 1 or 2 hibernaculum, within five (5) miles of a documented maternity capture record or documented priority 3 or 4 hibernaculum, or within 2.5 miles of a documented maternity roost tree or non-maternity capture record.
- “Maternity habitat” refers to suitable summer habitat used by juveniles and reproductive (pregnant, lactating, or post-lactating) females.
- “Non-maternity habitat” refers to suitable summer habitat used by non-reproductive females and/or males.
- “Occupied” refers to suitable habitat that is expected or assumed to be in use by Indiana bats at the time of impact. Felling of potential roosting habitat during the normal season of occupation is to be avoided to the greatest extent possible. Please see Appendix C for more information on when habitats are considered occupied.
- “Potential habitat” occurs statewide where suitable roosting, foraging and travel habitat for the Indiana bat exists. Known habitat also includes potential habitat for those currently undocumented uses.
- “Suitable habitat” refers to summer and/or winter habitat that is appropriate for use by Indiana bats.
 - Suitable winter habitat (hibernacula) is restricted to underground caves and cave-like structures (e.g. abandoned mines and railroad tunnels). These hibernacula typically have a wide range of vertical structures; cool, stable temperatures - preferably between 4° C and 8° C; and humidity levels above 74 percent but below saturation.
 - Suitable summer habitat for Indiana bats consists of the variety of forested/wooded habitats where they roost, forage and travel. This includes forested blocks as well as linear features such as fencerows, riparian forests and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree.
- “Suitable primary maternity roost tree” refers to a dead or partially dead tree that is nine inches or greater in DBH and has cracks, crevices, and/or loose or exfoliating bark. Trees in excess of 16 inches DBH are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat.

- “Suitable roost tree” refers to a tree (live or dead) with a DBH of five inches or greater that exhibits any of the following characteristics: exfoliating bark, crevices or cracks. Indiana bats typically roost under exfoliating bark, and in cavities of dead, dying, and live trees, and in snags (i.e., dead trees or dead portions of live trees).
- “Unoccupied” refers to suitable habitat not expected to be in use by Indiana bats at the time of impact. Please see Appendix C for more information on when habitats are considered unoccupied.

Conservation Strategy and General Minimization and Mitigation Goals for Indiana Bats in Tennessee

The Service’s Tennessee Field Office will generally rely on the draft, revised Indiana Bat recovery plan and other literature and data available on the Indiana bat to support its conservation and recovery activities for the species. For example, the draft, revised recovery plan’s primary recovery actions focus on protection and management of Priority 1 and Priority 2 hibernacula, which will also be the primary conservation focus in Tennessee. However, there are a number of other recovery actions that this guidance supports, including but not limited to: (a) Conserve and manage hibernacula and their winter populations (Recovery Action 1.1); (b) Reduce threats by purchasing from willing sellers or leasing at-risk privately owned P1 and P2 hibernacula to assure long-term protection (1.1.3); (c) Conserve and manage areas surrounding hibernacula (1.1.4); (d) Purchase from willing sellers or lease privately owned lands surrounding P1 and P2 hibernacula identified as having inadequate buffers (1.1.4.4); (e) Restoration and creation of hibernacula (1.2); (f) Conserve and manage summer habitat to maximize survival and fecundity (2.0); (g) Monitor and manage known maternity colonies (2.4); and (h) Minimize adverse impacts to the Indiana bat and its habitat during review of federal, state, county, municipal, and private activities under the ESA, National Environmental Policy Act, Fish and Wildlife Coordination Act, and Section 404 of the Clean Water Act (2.6). Collectively, these recovery actions address Indiana bat conservation and recovery needs in both winter and summer habitat. As a result, they provide the foundation that supports this guidance. The Service will use its existing authorities, especially those under the ESA, when implementing this guidance.

Based on the background information above and the available information on the species, its status, and conservation², the Service developed a list of general minimization and mitigation goals for Indiana bats in Tennessee. If achieved, these goals would (a) support the conservation strategy discussed above, (b) significantly contribute to Indiana bat conservation and recovery in Tennessee, and (c) act as a guide for determining the appropriateness of any proposed minimization and mitigation measures. Tier 1 goals would have priority over Tier 2 goals and are encouraged. The goals are listed below:

Tier 1

1. Protect and manage known Priority 1 (P1) and Priority 2 (P2) hibernacula.

² The TFO relied heavily on the draft revised Indiana Bat Recovery Plan, state heritage information, and the knowledge of experienced Indiana bat biologists to derive this list, but a number of other sources of information, which are on file in our office, were used.

2. Protect and manage existing forested habitat:
 - a. Swarming habitat within 10 miles of a known hibernaculum; and/or
 - b. Summer habitat within 2.5 miles of a documented maternity roost tree or within 5.0 miles of a maternity capture (mist-net) record.
3. Protect and manage additional conservation lands for Indiana bats, especially habitat that is contiguous with or within the proclamation/acquisition/preserve boundaries of existing public and private conservation lands occupied by Indiana bats.
4. Restore winter habitat conditions in degraded caves that exhibit the potential for successful restoration such as, but not limited to, those caves identified as having High Potential (HP) in the draft revised Indiana Bat Recovery Plan.

Tier 2

5. Protect and manage known Priority 3 (P3) and Priority (P4) hibernacula.
6. Protect and manage additional conservation lands that are currently suitable for, but unoccupied by Indiana bats.
7. Fund priority Indiana bat research, monitoring and surveys that support the six goals above and/or Tennessee's Indiana bat populations.

Indiana Bat Recovery and Mitigation Focus Areas

The Service's analyses also resulted in the delineation of Indiana Bat Recovery and Mitigation Focus Areas (RMFAs) within the State of Tennessee (Table 1). RMFAs were identified specifically to support the general minimization and mitigation priorities identified in the previous section and represent areas that:

1. Contain one or more public or protected private lands that are known to support Indiana bat populations;
2. Currently support populations of Indiana bats that are expected to support long-term recovery and conservation efforts of the species;
3. Contain adequate suitable habitat to support recovery and conservation efforts;
4. Provide opportunities for future protection, restoration, enhancement, and/or creation of additional summer and/or winter Indiana bat habitat; and/or

5. In the Service's estimation, contain conditions that generally are expected to contribute to the persistence of the Indiana bat population and habitat into the future.

The identified RMFAs can be categorized as Summer Habitat RMFAs, Winter Habitat RMFAs, or as both and are shown in Table 1. Collectively, these RMFAs are key landscapes for Indiana bat conservation and recovery in Tennessee. Therefore, RMFAs will be those areas where most Indiana bat minimization and/or mitigation efforts will be undertaken or attempted. The Service expects, however, that minimization and/or mitigation efforts may also be undertaken or attempted at locations outside of the Indiana bat RMFAs in circumstances where the conservation and/or recovery benefits to Indiana bats can be clearly identified and justified. The applicability of minimization and/or mitigation efforts outside of RMFAs will be determined on a case-by-case basis in coordination with the Service and will depend on a variety of factors including, but not necessarily limited to, (a) location of the site, (b) the type and quality of the conservation opportunities available, and (c) the existence of new information that would help justify the conservation effort. In addition, minimization and/or mitigation efforts will generally be directed to the RMFA closest to the impact site or to the RMFA that best minimizes and/or mitigates the specific impact(s).

Table 1: Table of Recovery and Mitigation Focus Areas (RMFAs) & Available Habitat Types

RMFA Name and Description	Summer Habitat RMFA	Winter Habitat RMFA
<p><i>Northwestern (Montgomery/Stewart Counties area)</i> – the assemblage of caves in the vicinity of Bellamy Cave, including caves and maternity colonies on private lands within 25 miles of Bellamy Cave, Coleman Cave, Cooper Creek Cave, Blue Spring Cave, and Tobaccoport Saltpeter Cave</p> <p>Primary Conservation Ownership – Tennessee Wildlife Resources Agency and Tennessee Department of Environment and Conservation</p>	yes	yes
<p><i>Southwestern (Perry/Maury Counties area)</i> - the assemblage of caves in the immediate vicinity of these counties, including caves on private lands</p> <p>Primary Conservation Ownership – private</p>	no	yes
<p><i>Southeastern (Moore/Franklin/Marion Counties area)</i> – the assemblage of caves in the immediate vicinity of these counties, including caves and maternity colonies on private lands</p> <p>Primary Conservation Ownership – Tennessee Wildlife Resources Agency and private</p>	yes	yes
<p><i>Central Eastern (VanBuren/Warren/White Counties area)</i> – the assemblage of caves in the immediate vicinity of these counties, including caves on private lands</p> <p>Primary Conservation Ownership – Tennessee Wildlife Resources Agency and Tennessee Department of Environment and Conservation</p>	no	yes
<p><i>Northeastern (Fentress and Putnam Counties area)</i> - the assemblage of caves in the immediate vicinity of these counties, including caves and maternity colonies on private lands</p> <p>Primary Conservation Ownership – Tennessee Division of Forestry and private</p>	yes	yes
<p><i>Northern Cumberland Plateau (Anderson/Campbell/Claiborne/Union Counties area)</i> – the assemblage of caves in the immediate vicinity of these counties, including caves on private lands</p> <p>Primary Conservation Ownership – private</p>	no	yes
<p><i>Great Smoky Mountains</i> – the assemblage of caves in the immediate vicinity of Blount County, including caves and maternity colonies on public and private lands</p> <p>Primary Conservation Ownership – National Park Service and private</p>	yes	yes

Types of Adverse Effects That Are Appropriate for Minimization and Mitigation

Based on the importance of hibernacula, the Service determined that development of minimization and mitigation measures would not be appropriate for projects resulting in adverse effects to hibernacula; avoidance of caves and other potential hibernacula is preferred. However, minimization and mitigation of certain adverse effects to hibernacula or potential hibernacula may be appropriate but must be coordinated with the Service. The reasons minimization and mitigation measures would be inappropriate at hibernacula include, but are not limited to:

1. P1 and P2 hibernacula are critical to Indiana bat recovery and conservation;
2. Adverse effects to P1 and P2 hibernacula have the potential to cause significant, (and likely irreversible) negative effects on Indiana bat populations range-wide;
3. Sufficient technology and funding does not currently exist to recreate the habitat conditions that exist in most hibernacula, especially P1 and P2 hibernacula; and
4. Current P3 and P4 hibernacula may have historically been P1 or P2 hibernacula, so allowing impacts to restorable P3 and P4 hibernacula could limit Indiana bat recovery.

Minimization and mitigation measures would be appropriate for most other adverse effects that typically occur in association with development projects in Tennessee. However, certain groups of impacts will require project-specific evaluation by the Service to assess the appropriateness of the minimization and mitigation measures. These groups include:

1. Projects resulting in the loss of more than 250 acres of Indiana bat habitat³
2. Projects occurring within 1 mile of a priority 1 or 2 hibernaculum⁴
3. Project occurring within ½ mile of a priority 3 or 4 hibernaculum⁹
4. Identified hibernacula with percent forest cover less than 60 percent in the swarming buffer surrounding the entrance⁸
5. Identified maternity areas with percent forest cover less than 45 percent⁸.
6. Projects resulting in impacts to known maternity habitat between June 1 and July 31. Limited clearing during this time may be approved only after a detailed survey to ensure that no primary maternity roosts would be adversely affected during this sensitive period.

³ Analyses by the Service and Kentucky Department of Fish and Wildlife Resources relating to the amount of forested habitat available to known Indiana bat maternity colonies within and adjacent to Kentucky has shown that percent forest cover ranges between 9 and 95 percent with no discernable break in records of occurrence(see Appendix A). Similar analysis of P1 and P2 hibernacula found the percent forested cover between 44 and 86 percent with no discernable breaks (see Appendix B). Based on the data (unpublished USFWS data, 2008), the Service determined that projects that (a) were greater than 250 acres, (b) occurred within the swarming area of a hibernaculum with less than 60 percent forest cover, or (c) occurred within known maternity habitat areas containing less than 45 percent forest cover warranted a separate analysis relative to these guidelines in order to further minimize potential adverse effects to Indiana bats.

⁴ Separate analyses for projects within ½ or 1 mile of hibernacula will (a) ensure that impacts to occupied swarming habitat are not underestimated (i.e., Most bat activity occurs close to a hibernaculum entrance, so adverse effects are most likely to occur there.), and (b) will help the Service better determine if direct impacts to known hibernacula are likely.

Determine Habitat Mitigation Need

The following mitigation needs have been identified in order of preference.

1. Protect known and previously unprotected Indiana bat hibernacula^{5,6,7}
 - a. Purchase or otherwise acquire fee title
 - b. Secure perpetual conservation easements and land management agreements
2. Protect known Indiana bat maternity or swarming habitat^{10,11,12}
 - a. Purchase or otherwise acquire fee title (typically at an acre for acre ratio)
 - b. Secure perpetual conservation easements and land management agreements (typically at a ratio of two acres protected for each acre impacted)
3. Contribute funding to the Indiana Bat Conservation Fund (IBCF) sufficient to achieve identified mitigation needs.
4. Other activities that will provide a tangible conservation benefit to the Indiana bat may be proposed to the Service for a case-by-case evaluation.

Acceptability of Mitigation and Minimization Measures

The Service defined the terms used in the following table in Explanation of Terms section. Table 2 provides guidance on whether a minimization and mitigation measure can be used for a specific type of action or impact. In some cases, minimizing and mitigating impacts to summer habitat with the protection of winter habitat may be appropriate, but this must be determined on a case-by-case basis. Impacts to known Indiana bat hibernacula will require a project specific analysis of suitable mitigation options and may not be appropriate or allowed under these Guidelines at the Service's sole discretion.

⁵ Property acquired or protected must adjoin or be within the preserve design or acquisition boundary of an existing conservation ownership.

⁶ Easement or fee simple lands shall include all surface and mineral rights to the property and clear an unencumbered ownership of these rights. The applicant shall pay for all fees and/or other costs associated with title work, recording, transferring, surveying, and/or acquiring of the easement or property.

⁷ Mitigation and minimization measures that involve land acquisition or easement require the donation of the property (or easement) to a conservation organization approved by the Service. Accompanying the donation must be a cash endowment sufficient to provide perpetual management of the preserved lands and any other funds identified by the receiving conservation organization that may be necessary for that entity to accept title or easement (e.g. contaminants surveys, fencing, trash removal, etc.).

Table 2. Table of Project Actions/Impact Types & Types of Appropriate Habitat Mitigation Measures.

ACTION / IMPACT TYPE	HABITAT MITIGATION MEASURE				
	Protect Hibernacula	Protect Maternity and/or Swarming Habitat	IBCF Contribution		
Summer Habitat Loss	Contact the Service for review of the appropriateness of these measures.	These are appropriate minimization and mitigation measures for the impacts listed and any overlapping habitats.			
Known maternity habitat					
Known other habitat					
Potential habitat					
Swarming Habitat Loss					
P1 or P2					
P3 or P4					

Determination of Minimization and Mitigation Amounts

Table 3 below assists project proponents in determining the amount of minimization and mitigation needed to offset the specific impacts of a given project. The project’s impact(s) should be divided into the actions or impact types and then quantified to yield the acreage of impact for each action. For impacts where suitable habitat is sparse, each suitable roost tree should be counted, and the number of suitable roost trees should be multiplied by 0.09 acres/tree to determine the acreage of suitable habitat loss (i.e., the single tree method). For impacts involving the loss or alteration of blocks of forested habitat, the acreage of the impact is determined by identifying the perimeter and area of the impact with Global Positioning System or Geographic Information System technology (i.e., the habitat block method). Once the acreage of habitat loss has been determined for each action using the single tree and/or habitat block method(s), the impact information should then be inserted into Table 3 and multiplied by the appropriate multiplier to yield the amount of mitigation required for each action or impact type. The Service will provide assistance to project proponents in determining how the single tree and habitat block methods for calculating impact acreages should be applied on their project(s) so that an accurate mitigation estimate can be determined.

The value of a particular hibernaculum or maternity or swarming habitat proposed for protection depends on the circumstances applicable to that particular site. As such, standard multipliers are not provided but must be determined on a case-by-case basis by the Service. Factors that influence the value of a particular protection site include, but are not limited to: the relative significance of the site to the conservation and recovery of the Indiana bat, the quality of the habitat, the level of protection afforded, the degree of risk to the site without the proposed mitigation and minimization measure, and the site’s position within the landscape and proximity to RMFAs.

Table 3. Table for Calculation of Impact Acres & Mitigation Acres.⁸

ACTION / IMPACT TYPE	IMPACT ACRES	MULTIPLIER	MITIGATION ACRES
Habitat Loss			
Select Action/Impact Type based on location and current map of Indiana bat Habitat in KY(see Appendix E)		Please see Appendix C to select appropriate multiplier based on location and timing of impact.	
Minimization & Mitigation Measures			
Purchase or protect hibernacula	Value determined on a case by case basis		
Purchase or protect maternity or swarming habitat			
Contribute to IBCF	\$3,650/mitigation acre ⁹ (please contact the TFO to confirm current cost per acre)		

Summary

This Guidance has been developed by the Service to provide direction to project proponents whose actions have the potential to adversely affect the Indiana bat and to enhance the conservation and recovery of Indiana bat populations in Tennessee. This will be accomplished by the implementation of the minimization and mitigation measures set forth in this guidance.

These measures were developed to support the recovery actions identified in the draft, revised recovery plan for the Indiana bat and address both summer and winter habitat. This document also establishes the conservation strategy that the TFO will employ, which is the foundation for the Guidance.

The TFO has identified those impacts to the Indiana bat where avoidance is more appropriate than minimization and mitigation as well as those projects that will need individual evaluations to determine if minimization and mitigation measures are appropriate. For any impacts that may be allowed, the level of minimization and mitigation that is established in the Guidance varies according to the relative importance of the habitat type that will be impacted to the conservation and recovery of the Indiana bat and likelihood of take. Recovery and Mitigation Focus Areas have been developed to support the identified minimization and mitigation measures as well as to

⁸ The Service determined that impacts to potential habitat during the occupied season require direct replacement of impacted acres. From that point, mitigation ratios were assigned based on the importance of the habitat type to the recovery of the Indiana bat and likelihood for direct versus indirect impacts. Direct impacts (occupied) should be avoided and, therefore require more mitigation than indirect impacts for each habitat type.

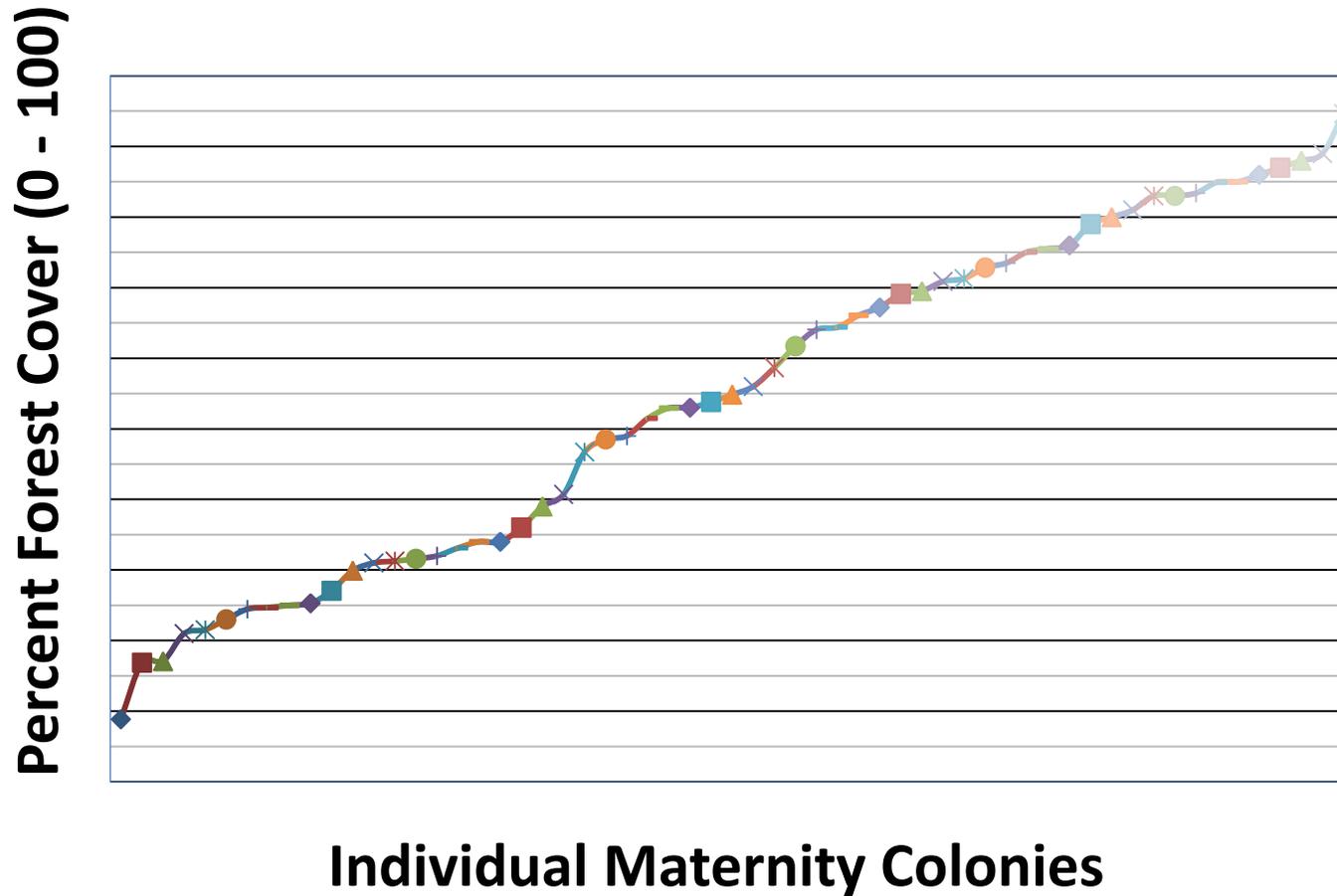
⁹ This dollar amount is subject to change based on Tennessee’s average value of farm real estate as published annually by the U.S. Department of Agriculture in the Land Values and Cash Rents document. The current value is based on the Land Values and Cash Rents, 2011 Summary released by the USDA in August 2011.

ensure appropriate distribution and implementation of these measures relative to the locations of the impacts.

The protection of hibernacula, swarming and maternity areas is critical to ensuring the conservation and recovery of the Indiana bat. These guidelines set forth a process by which impacts that may directly or indirectly result in adverse effects to the Indiana bat can also help ensure the long-term survival of the species. The Service believes the implementation of this guidance can help achieve that goal.

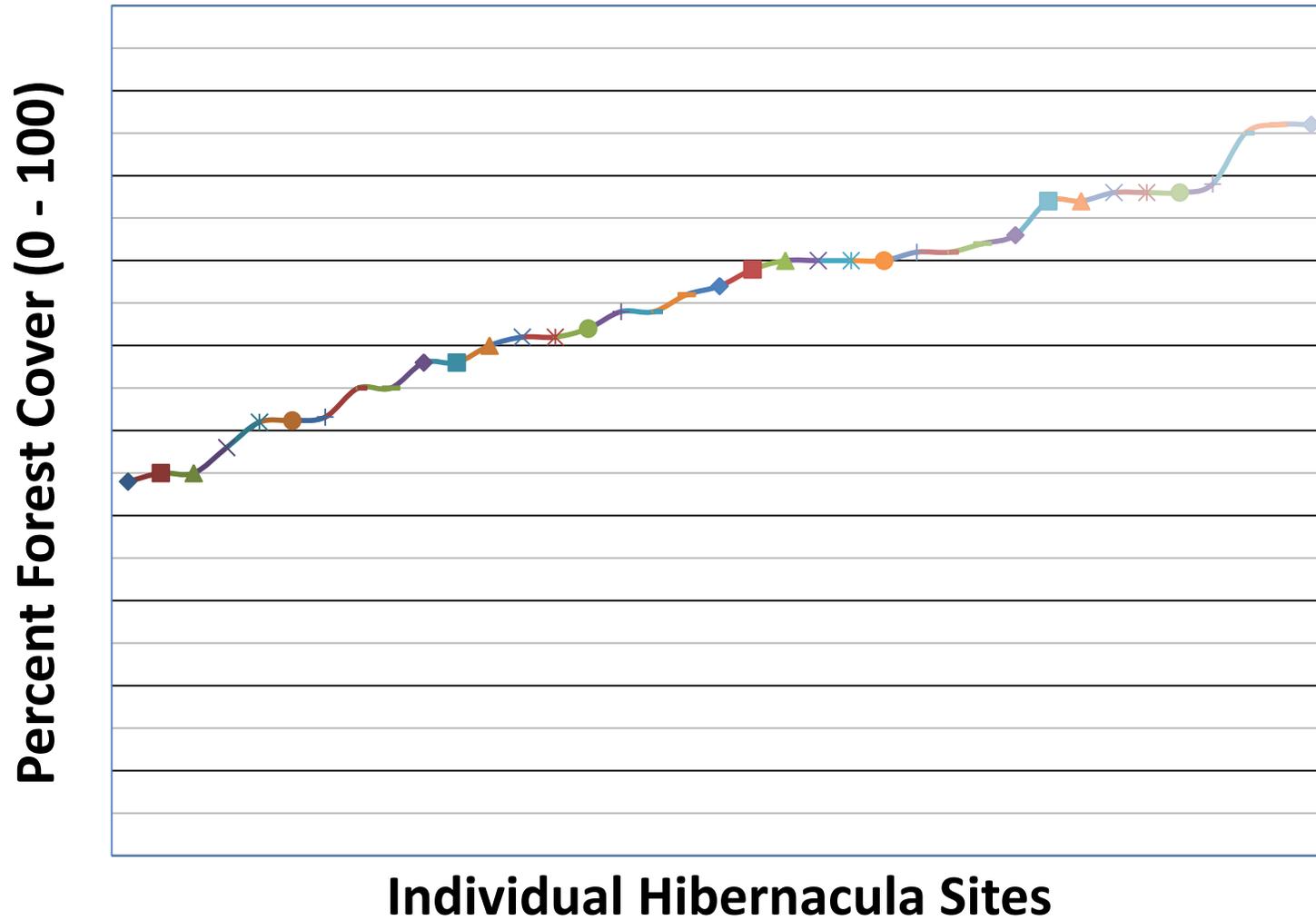
APPENDIX A

Habitat Availability in Known Maternity Areas



APPENDIX B

Habitat Availability at Priority 1 & 2 Hibernacula



APPENDIX C

Mitigation Multiplier by Habitat Type and Season

	November 15 – March 31 (all habitats unoccupied)	April 1 – August 15 (swarming unoccupied*; potential, maternity** & non-maternity occupied)	August 16 – October 14 (swarming & potential occupied; maternity & non- maternity unoccupied)	October 15 – November 14 (swarming occupied; potential, maternity & non-maternity unoccupied)
Known maternity + P1&2 swarming	2.5	Site-specific evaluation required	3.5	3.5
Known maternity + P3&4 swarming	2.0	Site-specific evaluation required	3.0	3.0
Known non-maternity + P1&2 swarming	2.0	Site-specific evaluation required	3.0	3.0
Known non-maternity + P3&4 swarming	1.5	Site-specific evaluation required	2.5	2.5
Swarming P1&2	1.5	Site-specific evaluation required	2.5	2.5
Swarming P3&4	1.0	Site-specific evaluation required	2.0	2.0
Known maternity	1.5	Site-specific evaluation required	1.5	1.5
Known non-maternity	1.0	Site-specific evaluation required	1.0	1.0
Potential	1.0	Site-specific evaluation required	1.0	1.0

*Spring emergence occurs close to the hibernacula entrances in the early spring with females emerging in early to mid-April and males emerging in late April – early May. Swarming habitat within 1 mile of P1 and P2 hibernacula entrances and within ½ mile of P3 and P4 hibernacula entrances will be considered occupied between April 1 and May 14. Projects within these areas require project-specific evaluation by the Service and may require additional mitigation, please see page 7 for more information.

** Projects within known maternity habitat that occur from June 1 through July 31 require project-specific evaluation by the Service, please see page 7 for more information