**USER’S GUIDE**

**PROGRAMMATIC BIOLOGICAL OPINION ON THE EFFECTS OF TRANSPORTATION PROJECTS IN KENTUCKY ON THE INDIANA BAT AND GRAY BAT**

**FWS-2019-F-1687**

1. **Introduction**

This document provides guidance for the implementation of the Programmatic Biological Opinion on the Effects of Transportation Projects in Kentucky on the Indiana bat and gray bat, dated April 17, 2020. The agreement is between Federal Highway Administration (FHWA) and Kentucky Transportation Cabinet (KYTC) and the United States Fish and Wildlife Service-Frankfort Field Office (USFWS-FFO). The KYTC and FHWA jointly developed this User’s Guide to instruct KYTC and consultants working on behalf of KYTC when working on projects that may affect Indiana bats and/or gray bats.

This User’s Guide provides:

* Scope of projects covered and not covered under the agreement
* Conservation and Minimization Measures
* Standard Operating Procedure(SOP) for project(s) submission, tracking and reporting
* Mitigation Cost Calculation and Methods
* Habitat Assessment Manual (HAM) provided decision key (Appendix A)
* **Bridge/ Structure Assessment Guidance and Form**: Guidelines to determine if any bat species are likely using bridges/structures, and a form for documenting and submitting a site-specific bridge/abandoned structure assessment (Appendix B )

**2.0 Key Project Factors (see attached summary)**

* Maximum take allowed under agreement
  + Indiana Bat
    - 5,000 acres of wooded habitat removal (1,000 acres/year)
  + Gray Bat
    - 130 suitable roosting structures (bridges) (26 structures/year)
* Projects not covered by the Programmatic Agreement (PA)
  + Indiana Bat
    - Projects that require forested habitat removal in the non-volant period (June 1 – July 31)
    - Projects that identify caves, mine adits, rock shelters, and/or karst features that are suitable as either winter habitat and/or summer roosting habitat for the covered species within a half mile of the project area.
    - Project effects on a bridge structure that is known or has been identified as reasonably likely to support a maternity colony of Indiana bats.
    - Project impacts on a known Indiana bat maternity roost tree.
    - Project impacts within 1/2-mile of a known Indiana bat hibernacula (i.e., spring staging area).
    - Project impacts on more than 250 acres of suitable, forested habitat per project.
  + Gray Bat
    - Projects that identify caves, mine adits, rock shelters, and/or karst features that are suitable as either winter habitat and/or summer roosting habitat for the covered species within a half mile of the project area.
    - Project effects on a bridge structure that is known or has been identified as reasonably likely to support a maternity and/or bachelor colony of gray bats.

**3.0 Conservation and Minimization Measures**

* Indiana Bat
  + The KYTC will utilize best management practices (BMP) and sediment and erosion control measures to prevent non-point source pollution, control storm water runoff, and minimize sediment damage in order to avoid and reduce overall water quality degradation. The required BMPs are presented in Appendix D.
  + The KYTC will restrict forested habitat removal during the time frame when non-volant Indiana bat pups could be present (June 1-July 31), minimizing the risk of potential direct effects on non-volant Indiana bats. If forested habitat removal during this timeframe is unavoidable, KYTC will consult with the KFO on a project specific basis in order to determine if use of the programmatic process is acceptable.
  + KYTC will review projects using a tiered programmatic approach to determine if suitable habitat for the Indiana bat is present within the affected area of a proposed project. See the Standard Operating Procedures section for an outline of the two-tiered methodology, and discussion of the programmatic project review process
  + The KYTC will contribute to the Imperiled Bat Conservation Fund (IBCF) to offset unavoidable adverse effects on Indiana bats and their summer roosting and fall swarming habitat(s). The approved methodology for calculation of impacts to forested habitat is presented in the Standard Operating Procedures section.
* Gray Bat
  + The KYTC will utilize best management practices (BMP) and sediment and erosion control measures to prevent non-point source pollution, control storm water runoff, and minimize sediment damage to avoid and reduce overall water quality degradation. The required BMPs are presented in Appendix D
  + The KYTC will limit tree clearing along streams, to the extent possible.
  + The KYTC will avoid and minimize impacts to streams during construction.
  + The KYTC is committed to funding the protection of a known gray bat maternity site and surrounding habitat.

**4.0 Standard Operating Procedures**

* Tiered Approach for Project Review:

TIER 1

KYTC personnel trained in the implementation of the HAM (Appendix A) will conduct project reviews to determine if potential bat habitat is present and would be affected directly and/or indirectly by a specific project.

1) A “No Effect” determination is appropriate when the HAM review of a project results in a finding that NO suitable habitat for the specific covered species would be impacted by the project. No further consultation with KFO is required when this type of effects determination is reached.

2) If known or potential bat habitat (summer, winter, or foraging habitat) is identified for a proposed project, then a KYTC Subject Matter Expert (SME) will be contacted to provide assistance on the types of potential impacts, and how to address potential impacts via the Tier 2 project review process. (See Tier 2)

TIER 2

If the KYTC SME determines that a specific project does not meet the criteria for a “no effect” finding, further analysis of the project will be pursued to determine the appropriate ESA compliance option pursuant to the Tier 2 project review process.

Habitat assessments will be performed for proposed projects to determine if suitable habitat is present, or may be affected, for the covered species following the methods included in the KYTC

HAM. The HAM includes office and field assessment methods for the covered species based on their known habitat preferences, as discussed in the Status of the Species sections. Due to the similarities in habitat preferences of the covered species, the assessment methods for these species are similar. Summaries of the office and field assessment methods for the covered species are included below.

**Office Assessment**

The office assessment for the covered species includes a review of available resources to identify caves and other karst features, cave-bearing geologic strata (e.g., Ordovician and Mississippian age limestone), abandoned mine portals/adits, underground quarries, rockshelters, and cliff lines within three miles of the project that could provide potential hibernacula for the covered species or year-round roosting habitat for the gray bat. Resources include U.S. Geological Survey topographic and geologic quadrangle maps, karst potential maps, and available mine maps from the Energy and Environment Cabinet Division of Mines. Coordination with cave and karst groups, such as the Kentucky Speleological Survey, is also performed when applicable. Features identified as potential habitat located within one-half mile of the project are evaluated further during the field assessment.

A review of topographic maps, aerial photography, right-of-way strip maps, and project plan sheets is also preformed to identify forested habitats that may provide summer roosting, foraging, and commuting habitat for the Indiana bat, as well as foraging and commuting habitat for the gray bat. Suitable summer habitat for the Indiana bat is considered to be forested areas comprised of trees that have a diameter at breast height (dbh) of five inches or greater. Isolated trees are considered suitable roosting habitat if they exhibit the characteristics of a suitable roost tree and are located within 1,000 feet of other suitable habitat. Streams, lakes, and other water bodies are also located that could provide foraging and commuting habitat for the gray bat.

**Field Assessment**

During the field assessment, features identified as potential hibernacula and roosting habitat for the covered species located within one-half mile of the project are evaluated. A pedestrian survey of the project area is also conducted to evaluate features identified during the office assessment and locate any additional features that could provide potential habitat for the covered species. Identified features are assessed following the protocols provided in the most current version of the

Range-wide Indiana Bat Survey Guidelines (2019)

https://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/2019\_Rangewide\_IBat\_S

urvey\_Guidelines.pdf. Bridges and culverts located in the project area are also examined to document bat use, evidence of use, and structure characteristics to determine their potential as roosting habitat following the guidelines included in Bridge/Structure Assessment Guidance of the Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana

Bat and Northern Long-Eared Bat.

Forested habitat, streams, lakes, and other waterbodies identified as potential bat habitat are also evaluated during the field assessment. Areas of suitable habitat located in the project area are documented and marked on field maps.

* 4-step Process for Determination of Bridge Use by Bats
  1. Identify the type of bridge(s) or culvert(s) located in the project area (is the bridge concrete box beam, steel truss, wood truss, size of culvert opening and length, etc.)
  2. Identify the construction activity that is proposed to occur on the bridge or culvert (deck rehab, full replacement, superstructure rehab, pier armoring, etc).
  3. Examine bridges and culverts located in the project area to document bat use, evidence of use, and structure characteristics to determine their potential as roosting habitat following the guidelines included in Bridge/Structure Assessment Guidance of the Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat (2018). Inspection should take place during active season (April 1- October 14)
  4. Fill out a Bats in Bridges Datasheet (Appendix B) to keep record of the inspection. Spot checks for bat usage on a bridge is valid for two years.
* Bridge Take Calculation Methodology

Based on data collected the last several years by KYTC the Programmatic Agreement proposes to use **0.10 acre per bridge** ratio to calculate the amount of suitable bat habitat loss for projects involving impacts to bridges. The median land cost will be the most recently published median agricultural land cost on a per acre basis. This number will be updated each time the United States Department of Agriculture publishes a new cost (typically the beginning of August). At the time of the execution of the agreement the median land cost per acre is $3,820.

* Indiana Bat Habitat Impact Calculation Methodology
  1. Forested Habitat
     + The acreage of impact (Acreage) will be the number of acres of Indiana bat habitat that a proposed project will directly or indirectly impact (remove).
       - Continuous, unbroken habitat areas: The Acreagewill be the number of acres to the nearest hundredth acre.
       - Areas containing widely spaced or less than 20 trees: The Acreagewill be the number of trees that have been determined to exhibit those characteristics suitable for Indiana bat summer habitat (any tree over 5" diameter at breast height) present within the impacted area multiplied by 0.09 (the area occupied by a tree with a 35-foot crown radius)
       - Projects containing both continuous, unbroken habitat and widely spaced, fragmented or less than 20 trees: Acreage will be determined using a combination of both calculation methods described above.
     + Contributions to the IBCF will be determined and computed on a project-by-project basis and will be based on the following formula: (acreage of impact) X (median land cost) X (mitigation multiplier) = amount of contribution.
     + The mitigation multiplierfactor is derived from the habitat type that will be impacted and season the project impacts occur. The current Indiana bat habitat map (attached as Appendix C) displays the habitat types that are based on the known records of Indiana bat captures and hibernacula locations. Table 1 below shows each mitigation multiplier, based on habitat type, and the seasonal dates of each habitat type depicting when that habitat is expected to be active or inactive by Indiana bats.
     + The median land cost will be the most recently published median agricultural land cost on a per acre basis. This cost is intended to provide an index of the estimated replacement cost of Indiana bat habitat in Kentucky. This number will be updated each time the United States Department of Agriculture publishes a new cost (typically the beginning of August).

Table 1. Proposed Indiana Bat Mitigation Multiplier Matrix

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Habitat Type | Active Season (\*\*) | Active Dates | Inactive Season | Inactive Dates |
| Known Swarming | 2.25 (2.75) | April 1 to Nov 14 | 1.75 | Nov 15 – March 31 |
| Known Summer | 1.75 (2.25) | April 1 to Oct 14 | 1.25 | Oct 15 – March 31 |
| Unsurveyed | 1.0 (1.5) | April 1 to Oct 14 | 0.5 | Oct 15 – March 31 |

1. \*\* Ratio for tree removal in June and July. Use requires KYTC coordination with the KFO for project specific evaluation.
2. NOTE: For the purposes of the mitigation multiplier, swarming active season dates also consider the active dates of known summer and unsurveyed habitat types because Indiana bats likely use known swarming areas during these active timeframes of their life cycle as well.

* Reporting
  1. No Effect Forms—No Effect Finding forms are based on an agreement between KYTC and FHWA and are not reviewed by USFWS-FFO. These forms should only be signed by a KYTC Biologist or Environmental Coordinator.
  2. Monthly Ledger--A monthly accounting ledger will be built by KYTC approximately 2 weeks after the letting date each month that a letting takes place. All projects let by KYTC are to be included regardless of funding source. The Ledger will be created by the KYTC-DEA Ecology Branch Manager and filled out by the KYTC biologists. Then after an internal review by KYTC the Ledger will be sent to FHWA for review. After FHWA completes their review the ledger and a cover letter will be routed to USFWS-FFO so that they can review the projects and send the list of projects paying mitigation fees that month to the Kentucky Native Lands Trust who oversees the IBCF account so they can send an invoice to KYTC to pay the appropriate fees for each project. Information that is required to be reported on the monthly ledger includes the following:
     + KYTC Item Number, Call Number and Federal ID Number (provide all that are available)
     + Location (District, County, road name, and Latitude, Longitude coordinates)
     + Description of the proposed work
     + ESA Section 7 compliance method for each species (Indiana bat, gray bat and northern long eared bat--although not a part of this BO KYTC will continue to report usage of the NLEB Threatened 4(d) rule or other compliance methods for this species on the monthly ledger).
     + Acres of impact for Indiana bat habitat
     + Number of potential roost bridges and locations (Latitude, Longitude coordinates of each bridge being impacted) if utilizing the BO to account for take associated with impacts to the structure.

Appendices

* Appendix A – Habitat Assessment Manual for Indiana bat and gray bat
* Appendix B – Bats in Bridges Datasheet
* Appendix C – Indiana Bat Habitat Map (2019)
* Appendix D—Best Management Practices