



**TABLE OF CONTENTS**

5.17 Bald Eagles, Federal and State Threatened and Endangered Species.....5.17-1

    5.17.1 Introduction .....5.17-1

    5.17.2 Methodology.....5.17-8

    5.17.3 Analysis.....5.17-11

    5.17.4 Mitigation.....5.17-25

    5.17.5 Summary.....5.17-36

**LIST OF FIGURES**

Figure 5.17-1: Indiana Bat (*Myotis sodalis*) .....5.17-15

Figure 5.17-2: Northern long-eared bat (*Myotis septentrionalis*) .....5.17-17

Figure 5.17-3: Rusty Patched Bumble Bee (*Bombus affinis*). Photo from Caroline Hlohowskyj.....5.17-18

Figure 5.17-4: Eastern Fanshell Mussel (*Cyprogenia stegaria*) .....5.17-19

Figure 5.17-5: Bald Eagle (*Haliaeetus leucocephalus*).....5.17-20



## 5.17 ***Bald Eagles, Federal and State Threatened and Endangered Species***

Since the publication of the Draft Environmental Impact Statement (DEIS), the following substantive changes have been made to this section:

- Potential impacts of the Refined Preferred Alternative (RPA) have been added to pertinent sections of the chapter.
- **Section 5.17.1.2** has been modified to reflect adjustments to the Biological Assessment (BA) based on impacts of the RPA and listing of the rusty patched bumble bee (*Bombus affinis*).
- **Section 5.17.1.2** has been modified to reflect issuance of the Biological Opinion (BO) by USFWS for I-69 Section 6.
- Additional description of the rusty patched bumble bee has been added to **Section 5.17.1.2**.

### 5.17.1 Introduction

Threatened and endangered species are recognized by federal and state agencies as being in danger of extinction (endangered) or being sufficiently compromised that they are at risk of becoming endangered (threatened) either nationally or in a state. The assessment of endangered and threatened species is concerned with preservation and conservation of such species and the sustainability of their populations. This chapter discusses both federally-listed and state-listed species. The field survey study area for I-69 Section 6 (see **Section 4.1**) is used throughout this section unless otherwise noted.

The Endangered Species Act (ESA) makes it unlawful for a person to take a federally threatened or endangered animal without a permit. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to engage in any such conduct.”<sup>1</sup> Federally-listed species are protected under Section 7 of the ESA, which requires all federal agencies, in consultation with the United States Fish and Wildlife Service (USFWS), to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat (16 U.S.C. § 1536(a)(2)). Section 7 of the ESA also directs federal agencies to use their existing authorities to conserve threatened and endangered species (16 U.S.C. § 1536(a)(1)). Section 10 of the ESA allows landowners, including private citizens, corporations, or other public entities, to develop property inhabited by listed species if they develop an approved habitat conservation plan.

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<sup>1</sup>16 U.S.C. § 1532(19).



For the I-69 project, Section 7 consultation with USFWS has occurred in parallel with the two tiers of the NEPA process: Tier 1 for the entire I-69 project from Evansville to Indianapolis and Tier 2 for each of the six I-69 sections. During consultation for both Tier 1 and Tier 2 studies, USFWS required INDOT and FHWA to submit a Biological Assessment (BA) of potential impacts of the I-69 project on federally threatened and endangered species. The process concluded with the issuance of a Biological Opinion (BO) by USFWS, which generally made determinations of effect on the federally listed species potentially affected by the project. Re-initiation of Section 7 consultation may occur if the project changes or there are changes in existing conditions (for example, the listing of a new threatened or endangered species). A summary of the Tier 1 and Tier 2 consultation is presented below.

**5.17.1.1 Tier 1 Consultation**

FHWA and INDOT began consulting with USFWS prior to initiation of Tier 1 for the I-69 project. Informal consultation began May 18, 1999, prior to the issuance of the Notice of Intent (NOI) for the Tier 1 project on January 5, 2000, when the resource agency meeting on the tiered approach was conducted.

On July 1, 2002, USFWS provided FHWA and INDOT a list of species for consideration for the 26-county study area of southwest Indiana (see Appendix Y of the Tier 1 Final Environmental Impact Statement [FEIS]). The federally-listed endangered and threatened species that may be present within the proposed project counties and were considered in the environmental evaluation for the I-69 Tier 1 FEIS included:

- |  |            |
|--|------------|
| 1. Indiana bat ( <i>Myotis sodalis</i> )                     | Endangered |
| 2. Bald eagle ( <i>Haliaeetus leucocephalus</i> )            | Threatened |
| 3. American burying beetle ( <i>Nicrophorus americanus</i> ) | Endangered |
| 4. Eastern fanshell mussel ( <i>Cyprogenia stegaria</i> )    | Endangered |
| 5. Fat pocketbook mussel ( <i>Potamilus capax</i> )          | Endangered |
| 6. Rough pigtoe mussel ( <i>Pleurobema plenum</i> )          | Endangered |

After identification of the Tier 1 Preferred Alternative 3C on January 9, 2003, by then-Governor Frank O’Bannon, USFWS narrowed the number of federal species for consideration from six to three based upon their geographic distribution. The three federal species that may be present in the Preferred Alternative 3C project area include:



- |   |                         |
|---|-------------------------|
| 1. Indiana bat ( <i>Myotis sodalis</i> )                  | Endangered              |
| 2. Bald eagle ( <i>Haliaeetus leucocephalus</i> )         | Threatened <sup>2</sup> |
| 3. Eastern fanshell mussel ( <i>Cyprogenia stegaria</i> ) | Endangered              |

A Draft BA was submitted to USFWS March 26, 2003, for review. The BA described the Indiana bat, bald eagle, and eastern fanshell mussel and potential impacts to those species. The Draft BA was revised in response to USFWS comments, and a Final BA was submitted to USFWS on July 18, 2003.

On August 22, 2003, USFWS acknowledged receipt and completeness of the formal consultation and initiation package. In that letter, USFWS stated that, “we concur that the construction, operation, and maintenance of Alternative 3C of I-69 is not likely to adversely affect fanshell mussels. Therefore, this precludes the need for further consultation regarding the fanshell mussel and this project as required under Section 7 of the Endangered Species Act.”

A BO, which included an Incidental Take Statement,<sup>3</sup> was received by INDOT and FHWA on December 3, 2003. The BO concluded that “Alternative 3C of I-69 from Evansville to Indianapolis, as proposed, is not likely to jeopardize the continued existence of either the Indiana bat or the bald eagle,” and “no destruction or adverse modification of [Indiana bat] Critical Habitat is anticipated. No Critical Habitat has been designated for the bald eagle.” USFWS initially elected to use an appended programmatic approach to Section 7 consultation for I-69 and the subsequent Tier 2 BAs and BOs. Although the programmatic approach was ultimately abandoned, the Tier 1 BO (December 3, 2003) and subsequent Revised Tier 1 BO (August 24, 2006) are referred to as “programmatic.”

### **Re-initiation of Formal Tier 1 Consultation**

Tier 1 consultation with USFWS for the entire I-69 project was re-initiated on four separate occasions. Each is summarized below.

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<sup>2</sup> In a final rule issued on July 9, 2007, USFWS removed the bald eagle from the list of threatened and endangered species established under the ESA. The bald eagle continues to be protected under the Bald and Golden Eagle protection Act (16 U.S.C. §§ 668-668d) and the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712). In particular, the Bald and Golden Eagle Protection Act prohibits the incidental taking of a bald eagle except as allowed by a permit granted by USFWS. On June 25, 2009, USFWS issued INDOT and FHWA a permit under the Bald and Golden Eagle Protection Act for the I-69 Evansville to Indianapolis project based upon the incidental take permit under the ESA, 50 C.F.R. Part 22. FHWA and INDOT will comply with the Bald and Golden Eagle Protection Act permit requirements established by USFWS, which include Terms and Conditions associated with the Incidental Take Statement.

<sup>3</sup> Section 9 of the Endangered Species Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Incidental take” is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited provided that such taking is in compliance with the terms and conditions developed prior to the action and set forth in an Incidental Take Statement.

**Re-initiation No. 1 - Tier 1 Revised Programmatic BO (August 24, 2006)**

USFWS recommended re-initiating formal consultation for only the Indiana bat during a meeting with FHWA and INDOT, held on July 1, 2005. The request for re-initiation was based on new field information collected in 2004 and 2005 concerning the Indiana bat. Re-initiation of formal consultation for Tier 1 resulted in the preparation of a BA Addendum for Tier 1 and issuance of a revised Tier 1 BO on August 24, 2006.

The BA Addendum was provided to USFWS on March 7, 2006. The BA Addendum detailed information gathered on the Indiana bat during Tier 2 studies and after the original BO was issued. Such studies consisted of mist netting, radio-telemetry studies, emergence counts of roost trees, autumn and spring habitat surveys, and cave surveys.

In Tier 1, a Summer Action Area (SAA)<sup>4</sup> for the Indiana bat was identified. This SAA is 2.5 miles to either side of the centerline of the corridor approved in Tier 1. This distance corresponds to the average range around maternity colonies in which female adult bats will forage during the summer breeding season. During consultation with USFWS, 13 Indiana bat maternity colonies with roosting/foraging areas were identified within the I-69 SAA.<sup>5</sup> These colonies had not been identified and were not included in the original Tier 1 BA.

USFWS issued a revised BO for Tier 1, including an Incidental Take Statement on August 24, 2006. The revised Tier 1 BO, which replaces the original Tier 1 BO, confirmed the original USFWS opinion that the I-69 project is “not likely to adversely affect the eastern fanshell mussel” and “is still likely to adversely affect but not jeopardize the bald eagle.” Regarding the Indiana bat, USFWS concluded “the proposed extension of I-69 from Evansville to Indianapolis will have greater impacts to Indiana bats than were originally considered,” but the project “is not likely to jeopardize the continued existence of the Indiana bat and is not likely to adversely modify the bat’s designated Critical Habitat.”

**Re-initiation No. 2 – Amendment to the Tier 1 Revised Programmatic BO (May 25, 2011)**

On April 11, 2011, FHWA again reinitiated Tier 1 consultation based on new maternity colony information in I-69 Section 4, as well as documentation of white-nose syndrome (WNS) within the action area.

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<sup>4</sup> An “action area” is defined by regulation as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area is not limited to the footprint of the action nor is it limited by the federal agency’s authority. Rather, it is a biological determination of the reach of the proposed action on listed species. In Section 5 of the BA Addendum, FHWA, INDOT, and USFWS-BFO jointly developed two seasonally based action areas for the Indiana bat—a Summer Action Area (SAA) and a Winter Action Area (WAA)—and one for the bald eagle (Bald Eagle Action Area).

<sup>5</sup> During pre-construction mist netting for a portion of Section 4 in 2010, an additional Indiana bat maternity colony was identified. During the summer of 2012, two additional maternity colonies were identified in Section 5. One was identified during mist netting activities for Section 5 and the second was identified during mist netting activities in a private nature preserve. This brings the total number of maternity colonies to 16.



On May 25, 2011, USFWS issued an Amendment to the August 24, 2006 revised BO for Tier 1, including a revised Incidental Take Statement. The Amendment to the revised Tier 1 BO addressed only those sections of the revised Tier 1 BO that required new analysis for effects to the Indiana bat. Otherwise the revised Tier 1 BO remains in effect. The overall conclusions in the Amendment to the revised Tier 1 BO do not differ from those found in the revised Tier 1 BO. The Amendment to the revised Tier 1 BO states (p. 18):

After reviewing the current status of the Indiana bat, updated information regarding WNS and the environmental baseline for the action area, and new information regarding the preferred alignment of the road connecting the County Line Interchange to SR 45/54/445 in Greene County, USFWS has concluded that appreciable reductions in the likelihood of survival and recovery of Indiana bats due to the construction, operation, and maintenance of I-69 from Evansville to Indianapolis, Indiana are unlikely to occur, and hence, FHWA has ensured that their proposed action is not likely to jeopardize the continued existence of the Indiana bat or destroy or adversely modify its designated critical habitat.

#### **Re-initiation No. 3 - Amendment 2 to the Tier 1 Revised Programmatic BO (July 24, 2013)**

On May 20, 2013, FHWA re-initiated Tier 1 consultation for the Indiana bat based on new maternity colony information in I-69 Section 5, exempted levels of forest and wetland take, and documentation of private property tree clearing in I-69 Section 4.

On July 24, 2013, USFWS issued Amendment 2 to the August 24, 2006 revised BO for Tier 1, including a revised Incidental Take Statement. The overall conclusions in Amendment 2 to the revised BO for Tier 1 do not differ from those found in the first amendment to the revised BO for Tier 1. According to Amendment 2 to the revised BO for Tier 1 (p. 25):

After reviewing the current status of the Indiana bat, updated information regarding the environmental baseline for the action area, and new information regarding the two new colonies, additional forest and wetland impacts, and impacts from private landowner tree-clearing activities along the preferred alignment in Section 4, USFWS has concluded that appreciable reductions in the likelihood of survival and recovery of Indiana bats due to the construction, operation, and maintenance of I-69 from Evansville to Indianapolis, Indiana are unlikely to occur, and hence, FHWA has ensured that their proposed action is not likely to jeopardize the continued existence of the Indiana bat or destroy or adversely modify designated critical habitat.

#### **Re-initiation No. 4 – Amendment 3 to the Tier 1 Revised Programmatic BO – Conference Opinion (CO)/BO for the Northern Long-eared Bat (April 1, 2015)**

On October 2, 2013, USFWS proposed the northern long-eared bat for listing as threatened under the ESA 4(d) rule. A proposed species is any species where a proposed listing rule under Section 4 of the ESA has been published in the Federal Register. For species that have been proposed for listing, USFWS has determined that there is enough information to warrant listing them as either threatened or endangered. On April 2, 2015, USFWS published a final rule to list the species as



threatened and an interim 4(d) rule to provide measures for the conservation of the species. On January 16, 2016, USFWS published the final 4(d) rule for the species.

On October 10, 2014, FHWA requested the initiation of a formal Section 7 conference regarding the entire I-69 project's impacts on the northern long-eared bat through submission of the Addendum to the BA for Tier 1 – For the Northern Long-Eared Bat. On April 1, 2015, prior to official listing of the northern long-eared bat as threatened, USFWS finalized the conference opinion (CO) for the northern long-eared bat and appended it as Amendment 3 to the 2006 Revised Programmatic BO for Tier 1.

The overall conclusions regarding the Indiana bat and the eastern fanshell mussel in Amendment 3 to the revised BO for Tier 1 do not differ from those found in the revised BO for Tier 1. According to Amendment 3 to the revised BO for Tier 1 (p. 52):

Our non-jeopardy conclusions regarding impacts to the eastern fanshell mussel (*Cyprogenia stegaria*) and the Indiana bat (*Myotis sodalis*) still stand as stated in the original December 3, 2003 BO and the amended 2006 Revised Programmatic BO, respectively. In addition, all previous Tier 2 Biological Opinions for these species remain valid.

Addressing impacts to the Northern long-eared bat, the CO states:

After reviewing the current status of the NLEB,<sup>6</sup> the environmental baseline for the action areas, the aggregate effects of the proposed construction, operation, and maintenance of the interstate and associated development, and the cumulative effects, it is the Service's conference opinion that the I-69 interstate project, from Evansville to Indianapolis, as proposed, is not likely to jeopardize the continued existence of the northern long-eared bat (*Myotis septentrionalis*). No Critical Habitat has been designated for this species.

### **5.17.1.2 Tier 2 Consultation**

As discussed in **Section 5.17.1**, Section 7 consultation with USFWS will occur for I-69 Section 6 in two tiers. Section 7 consultation for Tier 1 of the I-69 project has already occurred. USFWS used reasonable worst-case assumptions when developing the Tier 1 BO. This evaluation will be refined through Tier 2 consultation specific to I-69 Section 6.

A Tier 2 BA for I-69 Section 6 was completed and submitted to USFWS on June 9, 2017. The BA documented potential impacts to the Indiana bat, northern long-eared bat, and the rusty patched bumble bee (*Bombus affinis*) as a result of I-69 Section 6. Based on the current known distribution of the rusty patched bumble bee within Indiana relative to the I-69 Section 6

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<sup>6</sup> Northern long-eared bat



alignment, and additional information presented in Chapter 5 of the I-69 Section 6 Tier 2 BA, FHWA and INDOT requested concurrence in the finding of “Not Likely to Adversely Affect” for the rusty patched bumble bee. No formal surveys were conducted for the rusty patched bumble bee. The USFWS has developed “high potential” zones around each current (2007-2016) rusty patched bumble bee record, and have concluded that the bee is only likely to be present within these specific areas. There are three such zones in Indiana. Although not of uniform size, they have discrete boundaries that are being used by USFWS field offices to help action agencies determine when consultation under the ESA section 7(a) (2) may be necessary. One zone is in northern Marion County although it is not near the I69 project area (<https://ecos.fws.gov/ipac/>). Based on the project location and action area, USFWS has determined that consultation for the rusty patched bumble bee under section 7 (a) (2) for the I69 Section 6 project is not required.

On September 15, 2016, USFWS published a proposed rule (81 FR 65324) to list the rusty patched bumble bee as endangered under the Endangered Species Act. On January 11, 2017, USFWS published a final rule (82 FR 3186) to list the rusty patched bumble bee as endangered under the Endangered Species Act effective February 10, 2017. On February 10, 2017, USFWS published a final rule delay of effective date (82 FR 10285) revising the effective date of listing the rusty patched bumble bee as endangered under the Endangered Species Act effective to March 21, 2017. Although USFWS acknowledges that designation of critical habitat for the rusty patched bumble bee may be prudent, sufficient information to conduct the required analysis is lacking, and as such, critical habitat has not been determined at this time.

The BA for I-69 Section 6 includes three separate chapters to address the species being considered (Indiana bat, northern long-eared bat, and the rusty patched bumble bee). Previous Tier 2 BAs for I-69 did not address either the northern long-eared bat or the rusty patched bumble bee because neither was listed at the time those BAs were completed. The northern long-eared bat did not become a federally threatened species until 2015 and the rusty patched bumble bee did not become a federally endangered species until March 2017. The Project Description, Mitigation and Literature Cited chapters in the Section 6 BA are applicable to all species.

Even though the two bat species are similar in habitat, feeding, roost tree selection, and their maternity colonies overlap, they differ in Summer Action Areas (SAAs), capture sites, roost tree locations, and impacts (e.g., direct, indirect, and cumulative). For these reasons, and in consultation with the USFWS Bloomington Field Office (BFO), the I-69 Section 6 Tier 2 BA addresses each of these bat species in separate chapters. In each species-specific chapter, the following information is provided: Action Areas, Tier 2 Surveys, and Impacts.

While the Indiana bat and northern long-eared bat chapters are similar and in some instances redundant due to the similarity of the species, habitat and survey efforts, there are distinct differences. These differences include more limited location information on northern long-eared bats from the mist net surveys prior to 2015. While northern long-eared bats were captured and documented during these survey efforts to produce substantial data, radio telemetry and roost survey data was not collected for northern long-eared bats until the species was listed in 2015.





USFWS prepared an individual BO for I-69 Section 6. This BO is a stand-alone document that incorporates provisions of the 2006 Revised Programmatic BO for Tier 1. From the Executive Summary of the BO from USFWS, it reads: “The effects associated with the proposed construction, operation, and maintenance of Section 6 of I-69 are within the scope of effects contemplated in the Tier 1 Revised Programmatic Biological Opinion (and its amendments) for the Indiana bat and the Conference Opinion/Biological Opinion (Amendment 3) for the northern long-eared bat. Upon evaluation of the proposed project by USFWS, they believe incidental take of the Indiana bats and northern long-eared bats in the Section 6 Action Area is likely, but the impact of such taking is not likely to jeopardize the continued existence of the Indiana bat or the northern long-eared bat. No critical habitat for either species is designated within the Section 6 action area. A Tier 2 Incidental Take Statement for Section 6 has been included at the end of this Biological Opinion with its non-discretionary Reasonable and Prudent Measures and associated Terms and Condition to further minimize the incidental take of Indiana and northern long-eared bats in Section 6.”

In addition, FHWA and INDOT agreed to commitments and mitigation documented in the revised BO for Tier 1. Proposed mitigation for the Indiana bat includes providing additional forest and wetland habitat for this species. Mitigation and commitments for the Indiana bat are also expected to be applicable to the northern long-eared bat because of their general habitat similarities. Since the rusty patched bumble bee is a generalist and one of the first bees to emerge in the spring and one of the last to enter into hibernation in the fall, INDOT and FHWA may want to use seed mixes on mitigation sites which are more beneficial to pollinators, specifically bumble bees.

### **5.17.2 Methodology**

Specific taxonomic group surveys in I-69 Section 6 were conducted along with more generalized pedestrian surveys to determine the presence/absence of federal and state endangered/threatened species within the I-69 Section 6 field survey study area. The survey methodologies are summarized below. The results of the surveys are described in **Section 5.17.3**.

#### **5.17.2.1 Indiana and Northern Long-eared Bat Mist Netting Survey**

The federally-endangered Indiana bat was identified as potentially present in the I-69 Section 6 project area through early coordination with USFWS in August 2004. In the summers of 2004 and 2005, mist netting was conducted at selected sites within the Summer Action Area (SAA). This survey was conducted to document captures of all bat species, including the federally endangered Indiana bat, the federally threatened northern long-eared bat, and the state endangered evening bat (*Nycticeius humeralis*). A detailed description of the survey methodologies and results for the Indiana bat can be found in *Summer Habitat for the Indiana bat (Myotis sodalis) within the Martinsville Hills from Martinsville to Indianapolis, Indiana* (JF New, 2004), provided in **Appendix N**.



In addition to the summer mist netting survey of 2004, follow-up mist netting was conducted in the summer of 2005. The purpose of the survey was to obtain additional information on roosts in areas where Indiana bats were captured in 2004, but no radio tracking was conducted. For I-69 Section 6 this included seven locations representing Clear Creek, White River tributary, Bluff Creek tributary, Goose Creek, Honey Creek, and Pleasant Run Creek. A detailed description of the methodologies and results can be found in *Identification of Indiana Bat Roost Trees Along the proposed I-69 Interstate Between Bloomington and Indianapolis, Indiana* (BHE, 2006), provided in **Appendix N**.

The period of time an Indiana bat presence/probable absence survey is considered valid is determined by USFWS and varies, typically between three and five years. Additionally, the northern long-eared bat had since become listed as threatened by USFWS effective April 2, 2015. As such, USFWS requested that I-69 Section 6 be resurveyed prior to the finalization of the FEIS. Therefore, additional mist netting for I-69 Section 6 was conducted in the summer of 2015 in accordance with the *Range-Wide Indiana Bat Summer Survey Guidelines* (April, 2015). The primary objective of this study was to mist net and radio-track Indiana bats and northern long-eared bats. Another objective was to note other bats, especially the presence of the state-endangered evening bat.

The 2015 USFWS guidelines require that for linear projects, a minimum of four net nights of survey be conducted for every 0.6 miles of available summer habitat. Through coordination with USFWS, it was determined that a minimum of 76 net sites would be required to provide adequate coverage for I-69 Section 6. As such, 19 locations with two nets per site were surveyed two nights each yielding a total of 76 net nights. Most these locations were sites that were previously surveyed in 2004 and 2005, with the addition of four new locations that offered good potential habitat for the Indiana bat or the northern long-eared bat.

In accordance with Phase 4 of the USFWS guidelines, radio-tracking was conducted on suitable Indiana bat and northern long-eared bat candidate individuals to document roost tree locations in I-69 Section 6. A detailed description of the methodology for the 2015 survey can be found in the *I-69 Presence/Absence Mist Netting Survey for Indiana Bat (*Myotis sodalis*) and Northern Long-eared Bat (*Myotis septentrionalis*) Section 6 (Morgan, Johnson, and Marion Counties) Upper White River Watershed* (Lochmueller Group, 2015), provided in **Appendix N**.

#### 5.17.2.2 Generalized Pedestrian Surveys

Generalized pedestrian surveys were conducted to determine the presence/absence of listed species potentially located within the I-69 Section 6 field survey study area. A pedestrian survey consists of walking a study area and documenting floral and faunal species observed. Pedestrian surveys were conducted in September of 2004 and June of 2005. Additional pedestrian survey observations for listed species were conducted during wetland, stream, and forest assessment work during 2015 and 2016.



Many of the floral species in I-69 Section 6 were identified during wetland, stream, and forest analysis, but several floral species are inconspicuous during certain times of the year and are only readily visible while in bloom or when fruit has matured. Additionally, certain species of wildlife are readily observed, but most species are inconspicuous and elusive. The mobile nature of many mammal and bird species can limit the effectiveness of field surveys. Although surveys for these species include actual sightings, more pertinent data is developed from identifying and characterizing habitat types. See **Section 5.18.2.1** for further discussion of habitat types and associated species.

### **5.17.2.3 Fish Survey**

Eleven streams (Indian Creek, West Fork of Clear Creek, Clear Creek, Stotts Creek, Crooked Creek, Bluff Creek, North Bluff Creek, Honey Creek, Pleasant Run Creek, Orme Ditch, and Little Buck Creek) were visited to sample for fish in September 2004 and May 2005 using a Coffelt Mark 10 backpack electrofishing unit following the Indiana Department of Environmental Management (IDEM) protocol for Fish Community Assessment. Orme Ditch was not surveyed for fish as the channel was dry at the time of the site visit. The results are presented in the *Fish, Unionid, and Crayfish Report* in **Appendix Z**.

Since the purpose of the survey was to characterize the fish community in terms of species composition and presence/absence of target species within the project corridor, survey reaches were approximately 15 times the stream width and ranged from 150 feet to 675 feet in length. Electrofishing began at the downstream point and continued to the upstream end. Effort expended at sites ranged from 2.4 to 17.8 minutes of electrofishing. Captured fish were placed in a live well until processed. Fish were identified, counted, measured for length (mm) to determine species length ranges and returned to the stream. Fish not readily identified to species in the field were preserved and returned to the laboratory for identification.

Metrics used to describe the fish community include abundance (total number of fish caught), species richness (number of species collected), catch-per-unit-effort (CPUE), evenness (diversity of species), and Shannon-Weiner diversity. The CPUE is the number of fish caught per unit of effort (meter or minute). Evenness represents the relative abundance of each species throughout the community in the study reach, and Shannon-Weiner diversity index measures the diversity of the study reach. Shannon-Weiner diversity index collectively evaluates abundance, richness, and evenness of a site.

### **5.17.2.4 Unionid (Mussel) Survey**

Eleven stream reaches (Indian Creek, West Fork of Clear Creek, Clear Creek, Stotts Creek, Crooked Creek, Bluff Creek, North Bluff Creek, Honey Creek, Pleasant Run Creek, Orme Ditch, and Little Buck Creek) were qualitatively surveyed for mussels using visual and tactile searching techniques for a 2,000-foot length of stream. The results are presented in the *Fish, Unionid, and Crayfish Report* in **Appendix Z**. Little Buck Creek and Crooked Creek were partially dry at the



time, and unsuitable habitat areas (very shallow, thick vegetation, or thick silt over substrate) were not sampled. Biologists concentrated their efforts in the highest quality habitats (clean substrates in flowing areas). Shells collected were identified as fresh dead (lustrous nacre, periostracum intact, animal probably dead less than 1 year), weathered dead (dull, chalky nacre, periostracum heavily eroded, animal likely dead more than 2-3 years), sub-fossil (chalky shells), or live.

### **5.17.2.5 Crayfish Survey**

Eleven streams (Indian Creek, West Fork of Clear Creek, Clear Creek, Stotts Creek, Crooked Creek, Bluff Creek, North Bluff Creek, Honey Creek, Pleasant Run Creek, Orme Ditch, and Little Buck Creek) were sampled for crayfish using a combination of collection methods (backpack electrofishing equipment, dip nets and handpicking) generally following the methodology described by Simon and Thoma (2003). See the *Fish, Unionid, and Crayfish Report* in **Appendix Z**. Crayfish sampling was conducted in September 2004 except for Indian Creek which was surveyed in May 2005. The same reach of stream surveyed for fish was surveyed for crayfish.

### **5.17.3 Analysis**

A summary of the results for each survey is provided below, followed by an evaluation of the likelihood of the occurrence of federal and state listed species in I-69 Section 6 and potential impacts to the species as a result of the project.

#### **5.17.3.1 Survey Results**

##### **Bat Mist Netting Results**

Mist-netting surveys were conducted at 29 sites in I-69 Section 6 in 2004 (See **Appendix N**). A total of 253 bats were captured, representing seven species: Indiana bat, northern long-eared bat, evening bat, big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), little brown bat (*Myotis lucifugus*), and tri-colored bat (*Perimyotis subflavus*). The gray bat (*Myotis grisescens*), hoary bat (*Lasiurus cinereus*) and silver-haired bat (*Lasionycteris noctivagans*) species were not captured.

Ten Indiana bats were captured in 2004 (four reproductive females, one non-reproductive female, and five juveniles). Five Indiana bats were fitted with transmitters, but only three resulted in the identification of four roost trees via radio-telemetry. Three of these were closely associated with the White River, while the fourth was along the banks of the West Fork Clear Creek, east of SR 37. Additionally, a total of 21 northern long-eared bats from 11 survey sites were captured, including two reproductive females, one non-reproductive female, six juveniles, and twelve adult males.



The 2005 survey was conducted at seven locations for a total of 24 net nights. It was focused around the locations of Indiana bat captures where no primary roost trees were identified in 2004. Three reproductive female (lactating or post-lactating) Indiana bats were captured and tracked to six different roost trees. Four of the roosts were located within the White River floodplain in the southern portion of the project area. The remaining two roosts were located in the White River floodplain in the northern portion. All the roosts were located more than 2,300 feet from SR 37.

A total of six northern long-eared bats (two reproductive adult females, one adult male and three juveniles) were captured from four of the seven sites in 2005. Because the northern long-eared bat was not listed as a federal threatened species at that time, no radio-tracking was conducted on these individuals and no roost data from these surveys is available. Additional species included big brown bat, eastern red bat, evening bat, tri-colored bat, and little brown bat.

At the direction of USFWS, a mist netting survey for I-69 Section 6 was completed at 19 locations during the summer of 2015. The survey yielded a total of 126 bats representing seven species including Indiana bat, eastern red bat, big brown bat, tri-colored bat, northern long-eared bat, little brown bat, and evening bat. Three juvenile female Indiana bats and three northern long-eared bats (one juvenile male, one juvenile female, and one post-lactating female) were captured. The three Indiana bats were fitted with transmitters, and one was tracked to two roost trees. The maximum single night roost emergence count for one of these trees was 35.

A total of three northern long-eared bats were captured in 2015. One of the two bats fitted with transmitters was tracked to a single secondary roost tree associated with the White River floodplain more than one mile from existing SR 37. Maximum emergence count for this roost was six. None of these roosts were located within the project survey area.

### **Bridge Inspections for the Presence of Roosting Bats**

In 2004, 18 bridge locations were inspected for signs of roosting bats (See **Appendix N**). No Indiana or northern long-eared bats were observed roosting at any of these bridges. In July 2004, a small group of big brown bats was observed under the SR 37 bridge over Little Buck Creek and a second small group of big brown bats was noted at the Banta Road bridge over Little Buck Creek.

### **Fish Survey Results**

A total of 1,423 fish representing 30 species from six families and one hybrid were collected from the 10 stream reaches surveyed. Families represented in decreasing order of abundance include: minnow, perch, sucker, sculpin (one species), sunfish, and livebearer (one species). The central stoneroller (*Campostoma anomalum*), orangethroat darter (*Etheostoma spectabile*), rainbow darter (*Etheostoma caeruleum*), mottled sculpin (*Cottus bairdi*), and creek chub (*Semotilus atromaculatus*) were the most abundant, although the orangethroat darter was only collected from three locations and the mottled sculpin was only collected from two. All the



species identified are relatively common in Indiana streams. No federal or state listed species were identified from this collection.

### **Unionid (Mussel) Survey Results**

For the 11 stream reaches surveyed for live, fresh dead, weathered dead and sub-fossil mussel shells, specimens were only collected at four streams: West Fork Clear Creek, Stotts Creek, Pleasant Run Creek, and Little Buck Creek. Only three species and a fragment of an unknown species were identified. Weathered shells of fat mucket (*Lampsilis siliquoidea*) and cylindrical papershell (*Anodontoidea ferussacianus*) were collected at West Fork Clear Creek, while weathered dead and sub-fossil shells of giant floater (*Pyganodon grandis*) were collected at Stotts Creek and Little Buck Creek. The fragments of unknown species were from Pleasant Run Creek. No federal or state listed species were identified from this collection.

### **Crayfish Survey Results**

For the 11 stream reaches surveyed for crayfish, at least one individual was collected from eight of the streams. (Bluff Creek, North Bluff Creek and Orme Ditch were dry at time of survey.) Only one species, northern crayfish (*Orconectes virilis*), was identified based on the presence of Form I males at five of the eight stream locations. The remaining immature males and females collected from the other three stream locations were presumed to be of this species as well. Simon (2001) considers its range to be statewide in Indiana and common in relative abundance. No federal listed species were identified from this collection.

### **Generalized Pedestrian Survey Results**

No federal or state endangered/threatened flora or fauna was observed in the I-69 Section 6 field survey area during general pedestrian surveys or wetland, stream, and forest habitat surveys.

#### **5.17.3.2 Federal Listed Species**

The formal and informal Section 7 consultation with USFWS during the Tier 1 EIS process identified the Indiana bat, bald eagle and eastern fanshell mussel as federal species for consideration during the Tier 2 process. FHWA and INDOT prepared a BA for Tier 1 for all three species and an Addendum to the BA for Tier 1 for the Indiana bat. Based on the original BA for Tier 1, USFWS issued a BO on December 3, 2003, which concluded that the construction, operation, and maintenance of I-69 is “not likely to adversely affect the eastern fanshell mussels”, and is “not likely to jeopardize the continued existence of either the Indiana bat or the bald eagle.”

On August 24, 2006, USFWS issued a revised BO for Tier 1. The revised BO concurred with the conclusions of the December 2003 BO for Tier 1 regarding the mussel, bald eagle, and Indiana bat, and additionally concluded the project would not be “likely to destroy or adversely modify [Indiana bat] designated critical habitat.” Regarding critical habitat for the bald eagle, the revised



BO noted, “because no critical habitat has been designated for the bald eagle none will be adversely modified by this project.” The revised BO included an incidental take statement for both species. The revised BO specifies the procedures to be followed for Section 7 consultation in Tier 2.

On May 25, 2011, USFWS issued Amendment 1 to the August 24, 2006 revised BO for Tier 1, including a revised Incidental Take Statement. The amendment was a result of reinitiating Tier 1 consultation for the Indiana bat due to new information on WNS, discovery of a new Indiana bat maternity colony in Section 4, and minor forest impacts within five miles of a cave designated as critical habitat. The amendment stated, “the Service determined that the aggregate level of anticipated take is not likely to result in jeopardy to Indiana bats or destruction or adverse modification of designated critical habitat.”

On July 24, 2013, USFWS issued Amendment 2 to the August 24, 2006 revised BO for Tier 1, including a revised Incidental Take Statement. This amendment was a result of reinitiating Tier 1 consultation for the Indiana bat based on new maternity colony information, exempted levels of forest and wetland take, and documentation on private property tree clearing in Section 4. This amendment stated that, “the Service determined that the aggregate level of anticipated take is not likely to result in jeopardy to Indiana bats or destruction or adverse modification of designated critical habitat.”

On April 2, 2015, as a result of reinitiating Tier 1 conferencing for the proposed listing of the northern long-eared bat, USFWS issued a Conference Opinion as Amendment 3 to the August 24, 2006 revised BO for Tier 1, including an Incidental Take Statement for the northern long-eared bat. This amendment stated, “it is the Service’s conference opinion that the I-69 interstate project, from Evansville to Indianapolis, as proposed is not likely to jeopardize the continued existence of the northern long-eared bat (*Myotis septentrionalis*). No critical habitat has been designated for this species.”

On June 9, 2017, INDOT and FHWA submitted a Tier 2 BA for I-69 Section 6 (Martinsville to Indianapolis) that included information on three federally listed species (Indiana bat, northern long-eared bat, and rusty patched bumble bee). USFWS is expected to return a formal BO during the latter part of October or early November 2017 for Section 6.

### **Federal Listed Flora**

Based on the Section 7 consultation initiated with USFWS as part of the Tier 1 FEIS, no federally-listed plant species were identified as species for consideration for this project. According to the Indiana Department of Natural Resources (IDNR) Division of Nature Preserves Natural Heritage Data Center database, there are no recorded occurrences of federal listed flora species within one-half mile of SR 37. See IDNR letter dated June 1, 2015, in **Appendix C**. No federal listed species of flora were observed during the Tier 2 field studies/surveys for I-69 Section 6. Therefore, no impacts to federal listed flora are anticipated.

## **Federal Listed Fauna**

### **Indiana Bat (*Myotis sodalis*), Federal Endangered, State Endangered**

During the summer months, Indiana bat habitat consists of wooded or semi-wooded areas, mainly along streams and riparian corridors. Solitary females or small maternity colonies bear their offspring in hollow trees or under loose bark of living or dead trees. Dead trees are preferred roost sites and trees standing in sunny openings are attractive since the air spaces and crevices under the bark provide warmth and cover. Typical roost tree species include red elm (*Ulmus rubra*), American elm (*Ulmus americana*), northern red oak (*Quercus rubra*), post oak (*Quercus stellata*), white oak (*Quercus alba*), shingle oak (*Quercus imbricaria*), shagbark hickory (*Carya ovata*), bitternut hickory (*Carya cordiformis*), red hickory (*Carya ovalis*), silver maple (*Acer saccharinum*), sugar maple (*Acer saccharum*), eastern cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*), sassafras (*Sassafras albidum*), shell bark hickory (*Carya laciniosa*), white ash (*Fraxinus americana*) and black locust (*Robinia pseudoacacia*).

Indiana bats have been known to use the same roost sites in successive summers, which suggests site fidelity. During the winter months, Indiana bats gather in large numbers in a few caves in Indiana and elsewhere (Mumford & Whitaker, 1982). See **Figure 5.17-1**. There are no caves or winter habitat in Section 6.

**Figure 5.17-1: Indiana Bat (*Myotis sodalis*)**



Indiana bats were captured near I-69 Section 6 and the species is considered to be present within the project area. An Indiana bat maternity colony consists of reproductively active females and their young. A maternity colony was determined to exist if there was evidence of reproduction in an area during the summer reproductive season (the capture of a reproductive female or juvenile, or high emergence counts at an identified roost tree).

Each Indiana bat maternity colony foraging area consists of a circle with a 2.5-mile radius. A total of 16 Indiana bat colonies were identified for all six sections of the I-69 project based on the 2004-2005 and 2015 survey efforts. Four of these areas were located in I-69 Section 6.<sup>7</sup>

- Lambs Creek Maternity Colony - This colony use area is in the vicinity of Lambs Creek, west of SR 37. Two primary roost trees were identified within this colony. These roosts

<sup>7</sup> Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wide total to 16 maternity colonies.





were not already within an existing maternity colony. No known roost trees will be removed during the construction of I-69.

- White River/Clear Creek Maternity Colony - This colony use area is centered on Clear Creek just west of SR 37, based on the general centroid for five roost trees discovered in 2004 and 2005. Two of these are considered to be primary roosts, one of which is in close proximity to SR 37.
- White River/Crooked Creek Maternity Colony - This colony use area is in the vicinity of the confluence between Crooked Creek and the White River, based on the centroid of two primary roost trees discovered in 2004, one of which is a transmission power pole. These roosts are not in close proximity to SR 37.
- White River/Pleasant Run Creek Maternity Colony - This colony use area is in the northern portion of I-69 Section 6 and is centered on the White River downstream of the Pleasant Run Creek confluence, based on the centroid of two Indiana bat capture locations in 2004 and 2005. Neither was a primary roost. However, the subsequent survey in 2015 identified three additional roosts within this colony, one of which is considered a primary roost. All the roosts are associated with White River floodplain and are not in close proximity to SR 37.

In Amendment 2 to the Tier 1 Revised Programmatic BO, USFWS states, “[a]fter reviewing the current status of the Indiana bat, updated information regarding the environmental baseline for the action area, and new information regarding the two new colonies, additional forest and wetland impacts, and impacts from private landowner tree-clearing activities along the preferred alignment in Section 4, USFWS has concluded that appreciable reductions in the likelihood of survival and recovery of Indiana bats due to the construction, operation, and maintenance of I-69 from Evansville to Indianapolis, Indiana are unlikely to occur, and hence, FHWA has ensured that their proposed action is not likely to jeopardize the continued existence of the Indiana bat or destroy or adversely modify designated critical habitat.” The basis for this conclusion can be found on pages 25-27 of the document (see **Appendix W**).

#### **Northern Long-Eared Bat (*Myotis septentrionalis*), Federal Threatened 4(d) Rule, State Endangered**

The northern long-eared bat species is widely but sparsely distributed across forested regions of the Eastern United States, across Southern Canada and extending down into Florida. Its habitat is similar to that of the Indiana bat, including roosts under loose bark, in tree cavities, and sometimes in buildings. Hibernation occurs in caves and mines where, unlike Indiana bats that are found roosting on exposed cave surfaces, northern long-eared bats typically prefer to roost in cracks and crevices in the cave walls.

Preferred summer habitat of the northern long-eared bat exists within and adjacent to existing SR 37, but there are no known winter hibernacula within the local region of I-69 Section 6. Alternatives for I-69 Section 6 have the potential to affect individuals of this species, but impacts to regional populations are not expected. See **Figure 5.17-2**.

A northern long-eared bat maternity colony consists of reproductively active females and their young. Because roost tree data for northern long-eared bats was lacking, a maternity colony was determined to exist if there was evidence of reproduction in an area during the summer reproductive season (the capture of a reproductive female or juvenile). A total of 38 northern long-eared bat colonies were identified by USFWS for all six sections of the I-69 project based on data from the 2004-2005 survey efforts. Four of these are located within I-69 Section 6 at locations described below. Each northern long-eared bat maternity colony foraging area consists of a circle with a 1.5-mile radius centered on a capture site or the centroid of multiple capture sites in proximity to each other.

**Figure 5.17-2: Northern long-eared bat (*Myotis septentrionalis*)**



- Clear Creek East Fork Maternity Colony - This colony use area is generally centered on Clear Creek East Fork east of SR 37 based on the centroid of two capture locations yielding reproductive females or juveniles in 2004 and 2005. Approximately 20 percent of this colony area overlaps with the White River colony limits.
- White River – This colony use area is centered on the Henderson Ford Bridge crossing of the White River based on the capture of juveniles in 2004. Approximately 20 percent of this colony area overlaps with the Clear Creek East Fork colony limits.
- White River-Goose Creek Maternity Colony - This colony use area is northeast of Waverly and is generally centered on the White River upstream of the Goose Creek confluence based on the centroid of two capture locations yielding reproductive females in 2004 and 2005.
- Pleasant Run Maternity Colony - This colony use area is northwest of Smith Valley and is generally centered on the White River upstream of the Pleasant Run confluence based on the centroid of two capture locations yielding reproductive females and juveniles in 2004 and 2005.

In Amendment 3 to the Tier 1 Revised Programmatic BO, USFWS states:

[a]fter reviewing the current status of the NLEB [northern long-eared bat], the environmental baseline for the action areas, the aggregate effects of the proposed construction, operation, and maintenance of the interstate and associated development, and the cumulative effects, it is the Service's conference opinion that the I-69 interstate project, from Evansville to Indianapolis, as proposed, is not likely to jeopardize the



continued existence of the northern long-eared bat (*Myotis septentrionalis*). No critical habitat has been designated for this species.

The basis for this conclusion can be found on pages 52-53 of the document (see **Appendix W**).

### Rusty Patched Bumble Bee (*Bombus affinis*) Federal Endangered

USFWS issued a proposed rule to list the rusty patched bumble bee (*Bombus affinis*) as endangered on September 22, 2016 (FR 81 65324) and received comments on the proposed listing through November 7, 2016. On January 11, 2017, USFWS published a final rule (FR 82 3186) to list the rusty patched bumble bee as endangered under the ESA effective on February 10, 2017. On February 10, 2017, in 82 FR 10285, USFWS indicated that the final rule listing of the species was to be delayed until March 21, 2017. See **Figure 5.17-3**.

**Figure 5.17-3: Rusty Patched Bumble Bee (*Bombus affinis*).**



Photo from Caroline Hlohowskyj

Rusty patched bumble bees have a complex life cycle comprising four components. They are: spring emergence and colony formation; colony growth and foraging by workers; production of gynes, reproduction, and dispersal; and winter diapause. The rusty patched bumble bee nests underground, often in abandoned rodent burrows, and occasionally in clumps of grass above ground. Like other bumble bees, it is dependent on nectar and pollen from flowers as food, therefore, its preferred habitat are areas with an abundance and variety of flowering trees and forbs. It uses many native and non-native plants as food sources. Because it is a generalist in terms of flowering species that suit its needs, it is found in a variety of habitats ranging from prairies, woodlands, marshes, parks, residential gardens, and agricultural settings.

The decline of the rusty patched bumble bee over the past few decades has been attributed to a reduction in resiliency, representation, and redundancy of the species.<sup>8</sup> The principal stressors identified thus far resulting in the decline of the species include pathogens, pesticide exposure, habitat loss/degradation, small population dynamics, and climatic factors. The fungus *Nosema bombi* and the protozoan *Crithidia bombi* are two suspected pathogenic agents believed to have resulted in considerable declines in rusty patched bumble bee populations, as well as populations of other native American bumble bee species since the mid 1990's.<sup>9</sup> These may have been

<sup>8</sup> Szymanski, J.A., T. Smith, A. Horton, M. Parkin, L. Ragan, G. Masson, E. Olson, K. Gifford, and L. Hill. 2016. Rusty patched bumble bee (*Bombus affinis*) Species Status Assessment, Final Report, Version 1. Unpublished. 93 pp.

<sup>9</sup> Goulson, D., G. C. Lye, and B. Darvill. 2008. Decline and conservation of bumble bees. *Annual Review of Entomology* 53:191-208.

introduced in captive colonies of bumble bees used in agriculture and greenhouses.<sup>10</sup> Imported bees also compete with native bees for limited food resources and may also harbor other diseases,<sup>11</sup> such as viruses, bacterial infections, and parasitic protozoans like *Apicystis bombi*.

Bees are also sensitive to insecticides, particularly neonicotinoid class insecticides, which have been shown to have lethal effects on bumble bees. The temporal decline in rusty patched bumble bees is generally coincident with the use of imidacloprid in the United States in the early 1990s and subsequent introduction of clothianidin, thiamethoxam and other pesticides in the early 2000s. These neurotoxins act on the insect central nervous system, but are not specific to the targeted pest species. They can be absorbed by plants and ingested by insects as they forage. Additionally, sub-lethal effects from exposure include reduced or no male production, reduced or no egg hatching, and reduced queen production.<sup>12</sup> Although the rusty patched bumble bee is regarded as a habitat generalist, not dependent on a specific plant community type, habitat loss or fragmentation in combination with a reduction in floristic diversity in available habitats can play a contributing role in reduced population numbers.

**Eastern Fanshell Mussel (*Cyprogenia stegaria*) Federal Endangered, State Endangered**

Unionids require burrowable substrate in water with sufficient flow to prevent sedimentation, but without enough flow to render the substrate unstable (Vaughn, 1997). The eastern fanshell mussel (**Figure 5.17-4**) inhabits medium to large rivers in gravel riffles. It has a rounded, solid, and moderately inflated shell, numerous pustules (typically concentrated in the center of the shell), elevated growth lines, and broken green rays.

**Figure 5.17-4: Eastern Fanshell Mussel (*Cyprogenia stegaria*)**



The eastern fanshell mussel has a length of up to three inches. Previous studies and coordination with IDNR indicate that no eastern fanshell mussels occur in the streams within I-69 Section 6. Mussel surveys conducted in 11 streams within I-69 Section 6 yielded no eastern fanshell mussels (see **Appendix Z**).

Mussel surveys conducted in 11 streams within I-69 Section 6 yielded no eastern fanshell mussels (see **Appendix Z**).

<sup>10</sup> Colla, S. R., M. C. Otterstatter, R. J. Gegear, and J. D. Thomson. 2006. Plight of the bumble bee: Pathogen spillover from commercial to wild populations. *Biological Conservation* 129:461-467.

<sup>11</sup> Williams, P. H. and J. L. Osborne. 2009. Bumblebee vulnerability and conservation world-wide. *Apidologie* 40:367-387.  
COSEWIC. 2010. COSEWIC assessment and status report on the rusty-patched bumble bee *Bombus affinis* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa, Canada. 40pp.

<sup>12</sup> Elston, C., H. Thompson, and K. Walters. 2013. Sub-lethal effects of thiamethoxam, a neonicotinoid pesticide, and proppiconazole, a DMI fungicide, on colony initiation in bumble bee (*Bombus terrestris*) micro-colonies. *Apidologia* DOI: 10.1007/s13592-013-0206-9.



### **Bald Eagle (*Haliaeetus leucocephalus*) Formerly Federal Threatened (delisted), State Special Concern**

The Tier 1 Section 7 consultation included the bald eagle (**Figure 5.17-5**), but it was delisted under the ESA effective August 8, 2007 by USFWS. It is still federally protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Bald eagles live near large bodies of open water such as lakes, marshes, seacoasts, and rivers where there are plenty of fish to eat and tall trees for nesting and roosting. Bald eagles use a specific territory for nesting, winter feeding, or a year-round residence. The bald eagle's natural range is from Alaska to Baja, California, and from Maine to Florida. Those that reside in the northern United States and Canada migrate to the warmer southern climates of the United States during winter to obtain easier access to food, especially fish. Some bald eagles that reside in the southern United States migrate slightly north during hot summer months. Bald eagles feed primarily on fish, but also eat small animals (ducks, coots, muskrats, turtles, rabbits, snakes, etc.) and occasional carrion (dead animals).

**Figure 5.17-5: Bald Eagle (*Haliaeetus leucocephalus*)**



They build large nests, called aeries, at the top of tall, sturdy trees. The nests become larger as the eagles return to breed and add new nesting materials year after year. Bald eagles make their new nests an average of two feet deep and five feet across. Eventually, some nests reach sizes of more than 10 feet wide and can weigh several tons. When a nest is destroyed by natural causes, it is often rebuilt nearby. Nests are lined with twigs, soft mosses, grasses, and feathers.

The IDNR Natural Heritage Database includes no bald eagle nest records within one-half mile of the mainline for any I-69 Section 6 alternative, although a nest site is recorded north of I-465 about 0.6 miles away. There is one active nest that produced two chicks in 2016 within the White River floodplain approximately 0.3 mile from proposed local access road improvements associated with each of the alternatives. This is outside of the recommended 660-foot radius for activities as described in the USFWS National Bald Eagle Management Guidelines. No impacts to this nest site are anticipated by the proposed action. No additional nests were identified during surveys conducted in 2015 and 2016.

The Bald and Golden Eagle Protection Act (Act) prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald eagles, including their parts, nests, or eggs. The



Act defines “take” as “pursue, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” “Disturb” means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle; 2) decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

#### 5.17.3.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) states that “it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof...”

There are many protected bird species listed in 50 CFR §10.13 that were either observed or of possible occurrence within the I-69 Section 6 field survey study area. Among these are barn and/or cliff swallows that can construct nests under existing bridges on SR 37 that may be replaced as part of construction for each of the proposed alternatives. Pub. L. 114-94, div. A, title I, §1439, Dec. 4, 2015, 129 Stat. 1433 provides authorization for the take of nesting swallows for at-risk bridges in compliance with the MBTA.

#### 5.17.3.4 State Listed Species

The Indiana Natural Heritage Data Center database, managed by the IDNR Division of Nature Preserves, was used to identify records of state-listed threatened, endangered, rare, or special concern species records within one-half mile of either side of the I-69 Section 6 corridor (see IDNR letter dated June 1, 2015, in **Appendix C**). Information from past and more recent field investigations was used to supplement the IDNR records for the purposes of determining species presence or probable absence.

The following briefly describes these species and preferred habitat, notes the potential for their occurrence in the project corridor, and assesses the potential for impacts to the species as a result of the project. The potential for occurrence of listed species is based on the habitat needs of the species, its documented occurrence within one-half mile of the proposed project, and the habitats encountered during the respective taxonomic surveys.

The scale for which potential for occurrence is documented is as follows: “none” (habitat not present within the project area), “low” (semi-suitable habitat present, but other factors such as disturbance, development pressures or other issues decrease the chances of locating and documenting this species), “moderate” (suitable habitat, but species has not been documented



within the project area), and “present” (species has been documented by a qualified biologist within the project area).

I-69 Section 6 entails upgrading an existing multi-lane, divided transportation facility to a full freeway design. Therefore, species are anticipated to have acclimated to the existing condition of the project area and a landscape change that would eliminate habitats usable by these species is generally not anticipated.

### **State Listed Flora**

The June 1, 2015 IDNR I-69 Section 6 review correspondence (**Appendix C**) did not include any state endangered or threatened flora species records within one-half mile of the I-69 Section 6 field survey study area. No state endangered or threatened species were documented during field surveys of the proposed alternatives in 2015 and 2016.

### **State Listed Fauna**

The June 1, 2015 IDNR I-69 Section 6 review correspondence (**Appendix C**) included records for the following state endangered, threatened, or special concern species within one-half mile of I-69 Section 6. The IDNR data only included species from the following taxonomic groups: mussels, reptiles, and mammals.

- Mussels
  - Northern riffleshell (*Epioblasma torulosa rangiana*) federal endangered, state endangered
  - Eastern fanshell (*Cyprogenia stegaria*) federal endangered, state endangered
  - Clubshell (*Pleurobema clava*) federal endangered, state endangered
  - Sheepnose (*Plethobasus cyphus*) federal endangered, state endangered
  - Rough pigtoe (*Pleurobema plenum*) federal endangered, state endangered
  - Snuffbox (*Epioblasma triquetra*) federal endangered, state endangered
  - Rabbitsfoot (*Quadrula cylindrica cylindrica*) federal threatened, state endangered
  - Longsolid (*Fusconaia subrotunda*) state endangered
  - Pyramid pigtoe (*Pleurobema pyramidatum*) state endangered
  - Round hickorynut (*Obovaria subrotunda*) state endangered
  - Kidneyshell (*Ptychobranthus fasciolaris*) state special concern
- Reptiles
  - Kirtland’s snake (*Clonophis kirtlandii*) state endangered
- Mammals
  - Indiana bat (*Myotis sodalis*) federal endangered, state endangered
  - Northern long-eared bat (*Myotis septentrionalis*) federal threatened, state special concern
  - Little brown bat (*Myotis lucifugus*) state special concern



- Tri-colored bat (*Perimyotis subflavus*) state special concern
- Red bat (*Lasiurus borealis*) state special concern

## Mussels

Collectively, the 11 species of state endangered or special concern mussel species (seven of which are also federal endangered or threatened species) were documented from a reach of the White River west of I-69 Section 6 in the vicinity of Bluffs. These species are more typical of medium to large river systems and therefore are not expected to occur in streams such as Indian Creek, Clear Creek, West Fork Clear Creek, Stotts Creek, Crooked Creek, Bluff Creek, North Bluff Creek, Honey Creek, Pleasant Run Creek, Orme Ditch, or Little Buck Creek.

*Potential for occurrence: Low.* The 2004-2005 survey for mussels in the 11 principal streams to be affected by the I-69 Section 6 alternatives did not result in the capture of any federal or state listed mussel species. Weathered dead and sub-fossil shells of the fat mucket (*Lampsilis siliquoidea*), cylindrical papershell (*Anodontooides ferussacianus*) and giant floater (*Pyganodon grandis*) were the only species documented from the survey.

*Potential impact: None anticipated.*

## Reptiles

### Kirtland's snake (*Clonophis kirtlandii*) State Endangered

Kirtland's snake is a small, slender snake that inhabits moist to wet grassy habitats in close proximity to water bodies, such as open and woodland ponds, streams, and marshes (Center for Reptile and Amphibian Conservation and Management, 2006).

*Potential for occurrence: Low.* IDNR has a single record of the species within one-half mile of the SR 37 corridor. This species was not observed in the I-69 Section 6 field survey study area during pedestrian field surveys.

*Potential impact: None anticipated.* Although some wet grassy habitat areas are anticipated to be encountered by the project, these are not considered optimal for Kirtland's snake.

## Mammals

### Indiana bat (*Myotis sodalis*) State endangered, Federal Endangered

Refer to the **Section 5.17.3.2** for Indiana bat discussions.

### Northern long-eared bat (*Myotis septentrionalis*) State Endangered, Federal Endangered

Refer to the **Section 5.17.3.2** for northern long-eared bat discussions.





Little brown bat (*Myotis lucifugus*) State Special Concern

The species is found throughout most of North America. Little brown bats feed near or over water, mainly on aquatic insects such as caddis flies, mayflies, and midges, and typically consume half their body weight in insects each night.

*Potential for occurrence: Present.* IDNR reported six previous locations for the species within one-half mile of the SR 37 corridor. From the I-69 Section 6 mist netting surveys 72 individuals of this species were captured in 2004, 25 were captured in 2005 and four were captured in 2015. Little brown bats are present in and near I-69 Section 6, but have possibly declined in numbers.

*Potential impact: Impacts are possible.* Preferred habitat of the little brown bat exists within and adjacent to existing SR 37. I-69 Section 6 alternatives have the potential to affect habitat and/or individuals of this species, but impacts to regional populations are not expected.

Tri-colored bat (*Perimyotis subflavus*) State Special Concern

This small bat occurs in forest habitats throughout most of eastern North and Central America and in parts of the Midwestern United States. Some migrate several hundred miles in late summer and early fall to caves where they hibernate.

*Potential for occurrence: Present.* IDNR reported three previous locations for the species within one-half mile of the SR 37 corridor. From the I-69 Section 6 mist netting surveys 30 individuals of this species were captured in 2004, two were captured in 2005 and one was captured in 2015. Tri-colored bats are present in and near I-69 Section 6, but have possibly declined in numbers.

*Potential impact: Impacts are possible.* Preferred habitat of the tri-colored bat exists within and adjacent to the existing SR 37. I-69 Section 6 alternatives have the potential to affect habitat and/or individuals of this species, but impacts to regional populations are not expected.

Eastern red bat (*Lasiurus borealis*) State Special Concern

This species is common to forested habitats with a range from far southern Canada throughout most of the United States and Mexico, and farther south through Central America and into South America. The eastern red bat requires trees and shrubs for roosting. Although the eastern red bat has solitary roosting habits, it migrates in groups.

*Potential for occurrence: Present.* IDNR reported one previous location for the species within one-half mile of the SR 37 corridor. From the I-69 Section 6 mist netting surveys 24 individuals of this species were captured in 2004, two were captured in 2005 and 17 were captured in 2015. Eastern red bats are present in and near the I-69 Section 6 corridor.

*Potential impact: Impacts are possible.* Preferred habitat of the eastern red bat exists within and adjacent to the existing SR 37. I-69 Section 6 alternatives have the potential to affect habitat and/or individuals of this species, but impacts to regional populations are not expected.



#### Evening bat (*Nycticeius humeralis*) State Endangered

This species is found from the eastern coast of the United States to the Midwest, and from southern Michigan south into eastern Mexico. Summer maternity colonies have been found in buildings and hollow trees, while in the winter they have been found roosting in palm fronds in Florida. Females and young appear to migrate fairly long distances. They roost in trees and man-made structures, but rarely enter caves or mines. The evening bat prefers to forage along edges of mature forests, in clearings, and over waterways.

*Potential for occurrence: Present.* IDNR did not provide any occurrence records for this species within one-half mile of the SR 37 corridor, but in the I-69 Section 6 mist netting surveys, 28 individuals of this species were captured in 2004, 15 were captured in 2005 and 24 were captured in 2015 from seven locations. Evening bats are present in and near I-69 Section 6, and their numbers appear to be increasing in Indiana.<sup>13</sup>

*Potential impact: Impacts are possible.* Preferred habitat of the evening bat exists within and adjacent to the existing SR 37. I-69 Section 6 alternatives have the potential to affect habitat and/or individuals of this species. Impacts to regional populations of this species are not expected.

#### **5.17.4 Mitigation**

The revised BO for Tier 1 and its amendments issued by USFWS listed conservation measures to minimize impacts and ensure that the construction of I-69 is not likely to jeopardize the continued existence of any federal listed, threatened, or endangered species, or result in the destruction or adverse modification of their critical habitat. The following conservation measures were jointly developed by FHWA, INDOT and USFWS during informal consultation and were subsequently incorporated into the BA for Tier 1 and the BA for Tier 1 Addendum as part of the official proposed action for the I-69 project. Since conservation measures are part of the proposed action, their implementation is required under the terms of the consultation. These measures were specifically designed to avoid and minimize impacts of the proposed action on Indiana bats and bald eagles and to further their recovery. In the event of any differences of wording between the conservation measures listed below and the revised BO for Tier 1, the latter takes precedence.

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<sup>13</sup> Martin, M. K., D. W. Sparks, and V. Brack, Jr. 2016. Evening bat population resurgence and expansion in Indiana and the Upper Midwest. *Bat Research News* 57(4):78.



#### 5.17.4.1 Indiana Bat (*Myotis sodalis*) and Northern Long-eared Bat (*Myotis septentrionalis*)

##### A. Context Sensitive Solutions

##### Summer Habitat

1. **Alignment Planning** – Efforts will be made to locate roadway alignments so they avoid transecting forested areas and fragmenting core forest where reasonable.

Status – Efforts have been made to avoid and minimize fragmenting forests in design.

2. **Tree Removal** – Tree and snag removal will be avoided or minimized as follows:

- a. **Tree Cutting** – To avoid any direct take of Indiana bats and northern long-eared bats, no trees with a diameter of 3 or more inches will be removed between April 1 and September 30. Tree clearing and snag removal will be kept to a minimum and limited to within the construction limits. In the median and outside the clear zone, tree clearing will be kept to a minimum with woods kept in as much a natural state as reasonable. Forested medians will be managed following the IDNR State Forest timber management plan.
- b. **Avoid and minimize impacts from private landowner harvests within the right of way** – The goal of the measure is to avoid and minimize impacts from private landowner harvests by working with property owners within the right of way who plan to harvest their property. FHWA and INDOT propose to develop a voluntary agreement with the interested landowners, such as a “right of entry” agreement or other type of covenant, to pay the landowner to limit the time of year in which they harvest their property. This time period would be limited to the late fall and winter when Indiana bats are not present in the forested areas.

Status – To be completed. All tree cutting activities will only occur within the construction limits. All tree clearing within the proposed construction limits will follow USFWS seasonal cutting restrictions. The construction limits will be identified during final design. The Revised BO for Tier 1 and the Section 1 Tier 2 BO include the dates of April 15 to September 15. However, after that BO was issued, USFWS provided (on February 14, 2008) revised tree clearing restriction dates of April 1 to September 30 for areas not within the Indiana bat WAA. The I-69 project is governed by the conditions of the BO, and INDOT and FHWA have adopted the updated tree clearing restriction dates for the project. There are no forested medians in I-69 Section 6; therefore, management following INDR guidelines is not necessary.

3. **Mist Netting** – In areas with suitable summer habitat for the Indiana bat and northern long-eared bat, mist net surveys will be conducted between May 15 and August 15 at locations determined in consultation with USFWS as part of Tier 2 studies. If Indiana bats are captured, some will be fitted with radio transmitters and tracked to their diurnal roosts for



at least five days unless otherwise determined by USFWS. If northern long-eared bats are captured in Section 6, some will be fitted with radio transmitters and tracked to their diurnal roosts for at least 5 days unless otherwise determined by USFWS.

**Status** – Completed. For I-69 Section 6, 29 sites were surveyed in 2004, seven were surveyed in 2005 and 19 were surveyed in 2015. See Section 5.17.3.1 and Section 5.17.3.2 for summaries of Indiana bat and northern long-eared bat captures, roost identifications and subsequent maternity colony determinations.

#### 4. **Bridges** – Bridges will include the following design features:

- a. **Surveys** – The undersides of existing bridges that must be removed for construction of I-69 shall be visually surveyed to determine their use as roosts by Indiana bats or northern long-eared bats during the summer.

**Status** – A total of 19 bridges were inspected for bats in I-69 Section 6 during the summer of 2004. No Indiana bats or northern long-eared bats were noted roosting. Big brown bats were documented under two bridges that span Little Buck Creek. Bridges will be re-inspected prior to construction.

Additionally, as a mitigation measure, bridges and culverts will be inspected prior to construction in accordance with a protocol to be determined in coordination with USFWS. The protocol shall define all inspection parameters including: what structures are to be inspected, when (season and time of day) inspections shall take place, who has authority to conduct inspections, documentation requirements and proper agency notification procedure when roosting bats are encountered.

- b. **Bat-friendly Bridges** – Where feasible and appropriate, Interstate and access road bridges will be designed to provide suitable night roosts for Indiana bats and other bat species in consultation with USFWS.

**Status** – Due to concerns relative to attracting bats to the high-speed interstate facility, it is currently proposed to not include any bat friendly bridges on I-69. USFWS concurs with no “bat friendly bridges” for the project.

- c. **Floodplains** – Where reasonable and appropriate, floodplains and oxbows will be bridged to protect environmentally sensitive areas. The Patoka River floodplain will be bridged in its entirety, thus minimizing impacts to many different habitats.

**Update** – To be completed. Although it is not anticipated that any floodplains in I-69 Section 6 will be bridged in their entirety, floodplain encroachments will be minimized, where reasonable, by using existing bridge crossings and by applying design practices such as longer bridges and perpendicular stream crossings where new crossings are warranted. I-69 Section 6 contains several 100-year floodplains, including: White River, Indian Creek, Clear Creek, Stotts Creek, Crooked Creek, Honey Creek, Pleasant Run, Little Buck Creek, and State Ditch. A final hydraulic



design study will be completed during the design phase to determine span lengths and a summary will be included in the Field Check Plans and Design Summary.

5. **Stream Relocations** – Site-specific plans for stream relocations will be developed in design considering the needs of sensitive species and environmental concerns. Plans will include the planting of woody and herbaceous vegetation to stabilize the banks. Such plantings will provide foraging cover for many species. Stream Mitigation and Monitoring plans will be developed for stream relocations, as appropriate.

Status – To be completed.

### All Habitats

6. **Medians and Alignments** – Variable-width medians will be used where appropriate to minimize impacts to sensitive and/or significant habitats. Context Sensitive Solutions will be used, where possible. This may involve vertical and horizontal shifts in the interstate.

Status – A typical median width of 48-60 feet is proposed for I-69 Section 6 with no trees in the median.

7. **Minimize Interchanges** – Efforts have been made to limit interchanges in karst areas, thereby limiting access and discouraging secondary growth and impacts. In Tier 2, further consideration will be given to limiting the location and number of interchanges in karst areas.

Status – Only Sections 4 and 5 are located within the Karst Region. Interchanges were designed to minimize impacts. Specific design elements used included folded ramps, the use of smaller urban style interchanges in rural areas, using existing interchange locations when possible, using existing overpasses when possible, and using existing pavement layouts when possible.

8. **Memoranda of Understanding (MOUs)** – Construction will adhere to the Wetland MOU (dated January 28, 1991) and Karst MOU (dated October 13, 1993). The Wetland MOU minimizes impacts to the Indiana bat and northern long-eared bat by mitigating for wetland losses, and creating bat foraging areas at multiple ratios to those lost to the project. The Karst MOU avoids and minimizes impacts to the Indiana bat and northern long-eared bat by numerous measures which protect sensitive karst features including hibernacula.

Status – To be completed. Wetland impacts associated with I-69 Section 6 will be mitigated in accordance with the Wetlands MOU. There is no karst topography within I-69 Section 6 that requires mitigation.



9. **Water Quality** – Water contamination will be avoided/minimized by the following:

- a. **Equipment Service** – Equipment servicing and maintenance areas will be designated to areas away from streambeds, sinkholes, or areas draining into sinkholes.

Status – To be completed. There is no karst topography within I-69 Section 6.

- b. **Roadside Drainage** – Where appropriate in karst areas, roadside ditches will be constructed that are grass-lined and connected to filter strips and containment basins.

Status – Completed. There is no karst topography within I-69 Section 6.

- c. **Equipment Maintenance** – Construction equipment will be maintained in proper mechanical condition.

Status – To be completed. This item is contained in INDOT *Standard Specifications*<sup>14</sup> and will be implemented during construction.

- d. **Spill Prevention/Containment** – The design for the roadway will include appropriate measures for spill prevention/containment.

Status – Special measures including diversions of highway runoff from direct discharge off of bridge decks into streams, and containment basins to detain accidental spills, will be incorporated into final design plans for perennial streams within the Indiana bat and northern long-eared bat maternity colony areas to address water quality concerns associated with bats.

Measures for spill prevention/containment will be included in the roadway design. Contractors will be required to provide an acceptable spill response plan. This response plan will include telephone numbers for emergency response personnel and copies of agreements with any agencies which are part of the spill response effort. An emergency response telephone number is also required. The Rule 5 Permit that contractors must obtain will require that each contractor have spill containment plans in their contract documents.

- e. **Herbicide Use Plan** – The use of herbicides will be minimized in environmentally sensitive areas such as karst areas to protect Indiana bats and northern long-eared bats and their prey. Environmentally sensitive areas will be determined in coordination with INDOT as appropriate. Appropriate signage will be posted along the interstate to alert maintenance staff of these areas.

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<sup>14</sup> “Indiana Department of Transportation Standard Specifications, 2016,  
<http://www.in.gov/dot/div/contracts/standards/book/sep15/sep.htm>



Status – The use of herbicides will be minimized within the environmentally sensitive habitats. These areas have yet to be determined.

- f. **Revegetation** – Revegetation of disturbed areas will occur in accordance with INDOT *Standard Specifications*. Woody vegetation will only be utilized beyond the clear zone. Revegetation of disturbed soils in the right of way and medians will utilize native grasses and wildflowers, as appropriate, similar to the native seed mixes of other nearby states.

Status – To be completed. Revegetation of disturbed areas will occur in accordance with INDOT *Standard Specifications*. Woody vegetation will only be used a reasonable distance beyond the clear zone to ensure a safe facility. Revegetation of disturbed soils in the right of way and medians will use native grasses and wildflowers as appropriate, such as those cultivated through INDOT’s Roadside Heritage program. Locations that may be considered, but are not limited to, stream crossings and the interchange locations.

- g. **Low Salt Zones** – A low salt and no spray strategy will be developed in karst areas for this project. A signing strategy for these items will also be developed. The low salt zones will be determined in coordination with the INDOT.

Status – There is no karst topography within I-69 Section 6; therefore, implementation of this measure is not anticipated.

- h. **Bridge Design** – Where feasible and appropriate, bridges will be designed with no or a minimum number of in-span drains. To the extent possible, the water flow will be directed towards the ends of the bridge and to the riprap drainage turnouts.

Status – To be completed.

10. **Erosion Control** – Temporary erosion control measures will be used to minimize sediment and debris. Timely revegetation after soil disturbance will be implemented and monitored. Re-vegetation will consider site specific needs for water and karst. Erosion control measures will be put in place as a first step in construction and maintained throughout construction.

Status – To be completed. BMPs will be used in the construction of this project to minimize impacts of erosion. Erosion control measures will be put in place as a first step in construction and maintained throughout construction. Temporary erosion control devices, such as silt fencing, check dams, sediment basins, inlet protection, sodding, and other appropriate BMPs will be used to minimize sediment and debris in tributaries within the project area. Timely revegetation will be implemented after soil disturbance and monitored for coverage and viability. Any riprap used will be of a large diameter in order to allow space for habitat for aquatic species after placement. Slopes will be designed that resist erosion. If slopes exceed 2 to 1, they will include stabilization



techniques. Soil bioengineering techniques for bank stabilization will be considered where situations allow. INDOT will complete contractor compliance inspections on a regular basis to monitor erosion and sediment control on the project.

- 11. Parking and Turning Areas** – Parking and turning areas for heavy equipment will be confined to sites that will minimize soil erosion and tree clearing, and will avoid environmentally sensitive areas, such as karst.

Status – To be completed. There is no karst in Section 6.

## B. Restoration / Replacement

### Summer Habitat

- 1. Summer Habitat Creation/Enhancement** – Indiana bat and northern long-eared bat summer habitat will be created and enhanced in the Action Area through wetland and forest mitigation focused on riparian corridors and existing forest blocks to provide habitat connectivity. The following areas and possibly others have been investigated for wetland and forest mitigation to create and enhance summer habitat for the Indiana bat: Pigeon Creek, Patoka River Bottoms, White River (Petersburg), Thousand Acre Woods, White River (Elnora), First Creek, American Bottoms, Garrison Chapel Valley, Beanblossom Bottoms, White River (Gosport), White River (Blue Bluff), and Bradford Woods.

In selecting sites for summer habitat creation and enhancement, priority will be given to sites located within a 2.5-mile radius from a recorded Indiana bat capture site or roost tree. If willing sellers cannot be found within these areas, other areas may be used as second choice areas as long as they are within the Action Area and close enough to benefit these maternity colonies, or are outside the Action Area but still deemed acceptable to USFWS.

Where appropriate, mitigation sites will be planted with a mixture of native trees that are largely composed of species that have been identified as having relatively high value as potential Indiana bat roost trees. Tree plantings will be monitored for five years after planting to ensure establishment and protected in perpetuity via conservation easements.

Status – To be completed. The primary focus area for Indiana bat and northern long-eared bat summer habitat mitigation will be within the White River floodplain west of existing SR 37 and the proposed alternatives. Additional areas outside of the White River floodplain may receive consideration as well.

- 2. Wetland MOU** – Wetlands will be mitigated at ratios agreed on in the Wetland MOU (dated January 28, 1991). Wetland replacement ratios are as follows:





- a. Farmed wetlands 1 to 1.
- b. Scrub/shrub and palustrine/lacustrine emergent wetlands 2 - 3 to 1 depending upon quality.
- c. Bottomland hardwood forest wetlands 3 - 4 to 1 depending upon quality.
- d. Exceptional, unique, critical (i.e. cypress swamps) 4 and above to 1 depending upon quality.

Status – To be completed. The MOU between INDOT, IDNR and USFWS was developed to ensure that wetland impacts are avoided, minimized, and mitigated to compensate for the loss of wetland functions and values. See Section 7.4 for estimated mitigation quantities for alternatives.

3. **Forest Mitigation** – The Tier 1 *Forest and Wetland Mitigation and Enhancement Plan (Appendix Q)* identifies the general location of potential mitigation sites for upland and bottomland forests. Preference will be given to areas contiguous to large forested tracts that have recorded federal- and state-listed species. The actual mitigation sites implemented will be determined in or following Tier 2 in consultation with USFWS and other environmental review agencies. Coordination with the environmental review agencies will assure that these forest mitigation sites are strategically situated in biologically attractive ecosystems. Forest impacts will be mitigated at a ratio of 3 to 1. All forest mitigation lands will be protected in perpetuity via conservation easements. The 3 to 1 forest mitigation may not be located entirely within the Action Area. Forest impacts occurring within each of the northern long-eared maternity colony areas would be mitigated by replacement (i.e. planting of new forest and purchase of existing) at approximately 3:1, preferably in the vicinity of the known roosting habitat.

Status – To be completed. For the I-69 Evansville to Indianapolis project as a whole, FHWA and INDOT committed to mitigate impacts to upland forests at a 3 to 1 ratio. Mitigation goals are to replace direct forest impacts at a minimum 1 to 1 ratio and provide up to a 2 to 1 ratio of forest preservation. The 3 to 1 ratio will be achieved for the overall I-69 Evansville to Indianapolis project; the ratio for an individual Tier 2 section could be higher or lower than 3 to 1. The potential impacts to upland forests due to I-69 Section 6 Revised Preferred Alternative is 159 acres (See Table 5.20-5). The total area needed for mitigation based on the 3 to 1 ratio would be 477 acres of mitigation. All forest mitigation lands will be protected in perpetuity through direct purchase or conservation easements.

In I-69 Section 6, the proposed conceptual forest mitigation sites are described above. This mitigation will be accomplished either by purchasing and protecting existing tracts of forests or by planting trees. Preference will be given to areas contiguous to large forested tracts that have recorded federal- and state-listed threatened and endangered species. Coordination with resource agencies will assure that these forest mitigation sites



are strategically situated in biologically attractive ecosystems. All forest mitigation lands will be protected in perpetuity through conservation easements or other appropriate measures. The species to be planted and the long-term management of these mitigation sites will be coordinated with the agencies relative to the conditions of the necessary permits and authorizations.

#### C. Conservation / Preservation

##### Summer Habitat

1. **Summer Habitat** – Investigations will be coordinated with USFWS on purchasing lands at fair market value in the Action Area from “willing sellers” to preserve summer habitat. Any acquired summer habitat area would be turned over to an appropriate government conservation and management agency for protection in perpetuity via conservation easements.

Status – To be completed. This will occur during mitigation and permitting. Additional conceptual detail will be provided in the Tier 2 BA for I-69 Section 6.

#### D. Education / Research / Monitoring

##### Summer Habitat

1. **Mist Netting** – A work plan for surveying, monitoring, and reporting will be developed and conducted in consultation with and approved by USFWS. This mist netting effort will be beyond the Tier 2 sampling requirements. Fifty mist netting sampling sites are currently under consideration. In earlier discussions, FHWA/INDOT agreed with the Service to complete surveys at 50 mist netting sites; however, 2 additional sites have been added to the list as recommended by the Service. To limit the number of surveyed sites to 50, possibly 2 sites can be removed in I-69 Section 6. Monitoring surveys focused at each of known maternity colonies will be completed the summer before construction begins in a given section and will continue each subsequent summer during the construction phase and for at least five summers after construction has been completed. If Indiana bats are captured in any section, or if northern long-eared bats are captured in Section 5 (as well as in I-69 Section 6 when construction occurs there), radio transmitters will be used in an attempt to locate roost trees, and multiple emergence counts will be made at each located roost tree. These monitoring efforts will be documented and summarized within an annual report prepared for USFWS.

Status – To be completed (tentatively 9 monitoring mist netting sites in Section 6) in coordination with USFWS, INDOT and FHWA.

##### General

2. **Educational Poster** – Total funding of \$25,000 will be provided for the creation of an educational poster or exhibit and/or other educational outreach media to inform the public



about the presence and protection of bats, particularly the Indiana bat. Funding would be provided after a Notice to Proceed is issued for construction of the first section of the project.

Status – Completed.

3. **Rest Areas** – Rest Areas will be designed with displays to educate the public on the presence and protection of sensitive species and habitats. Attractive displays near picnic areas and buildings will serve to raise public awareness as they utilize I-69. Information of the life history of the Indiana bat, protecting karst, and protecting water quality will be included in such displays.

Status – No rest areas are being proposed for I-69 Section 6.

4. **Access to Patoka NWR** – If reasonable, an interchange will be constructed that would provide access to a potential Visitor’s Center at the Patoka River National Wildlife Refuge.

Status – Completed. The Patoka River National Wildlife Refuge is in I-69 Section 2 and not in the I-69 Section 6 project area. Interchanges within the vicinity of the Patoka River National Wildlife Refuge include signage directing motorists to the Refuge’s office.

5. **GIS Information** – Geographic Information System (GIS) maps and databases developed and compiled for use in proposed I-69 planning will be made available to the public. These data provide information that can be used to determine suitable habitats, as well as highlight other environmental concerns in local, county, and regional planning. Digital data and on-line maps are being made available.<sup>15</sup> In addition, detailed GIS forest data (five-meter resolution) has been developed for the 13<sup>16</sup> maternity colony foraging areas (circles with 2.5-mile radius) and WAA. This data was developed in order to better determine habitat impacts to the Indiana bat. This is the most accurate and detailed forest data known to exist for those areas. This data could potentially be used by USFWS, other government agencies, or others to examine effects on the Indiana bat, northern long-eared bat, other species, or ecosystems over time.

Status – Completed.

In addition to the conservation measures listed above, the following conservation recommendations for the Indiana bat were included in the Amendment 2 to the BO for Tier 1. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action/program on listed species or critical habitat, to help implement

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<sup>15</sup> Indiana Geographic Information Council, IndianaMAP, <http://maps.indiana.edu/> (Last accessed 08/30/2017).

<sup>16</sup> Thirteen (13) Indiana bat maternity colonies were originally identified in Tier 1. Pre-construction mist netting in 2010 for a portion of Section 4 identified an additional maternity colony, and two additional colonies were identified in 2012 in Section 5. This brings the project-wide total to 16 maternity colonies.



recovery plans, or to develop information. Conservation recommendations generally do not focus on a specific project, but rather on an agency's overall program.

1. Working with the Service, develop national guidelines or best management practices for addressing Indiana bat issues associated with FHWA projects within the range of the Indiana bat, including measures to avoid or minimize private landowner impacts to the species prior to state and/or federal acquisition.
2. Provide funding to expand scientific research and educational outreach efforts on Indiana bats in coordination with the Service's BFO.
3. In coordination with the BFO, purchase or otherwise protect additional Indiana bat hibernacula and forested swarming habitat in Indiana.
4. Provide funding to staff a full-time Indiana bat Conservation Coordinator position within the BFO, which has the Service's national lead for this wide-ranging species.
5. Provide funding for research to address WNS in bats.

FHWA and INDOT have no current plan to commit additional funding to implement these conservation recommendations. However, both INDOT and FHWA continue to work with USFWS to provide information and develop BMPs associated with highway development, management, and maintenance to assist in the conservation of the Indiana bat.

#### 5.17.4.2 Bald Eagle (*Haliaeetus leucocephalus*)

Most conservation measures for the bald eagle are also measures for the Indiana bat, and have been updated in the Indiana bat conservation measures described above. The conservation measures for the bald eagle are described in the revised BO for Tier 1 provided in **Appendix W**.

On June 28, 2007, the Secretary of the Interior announced that the bald eagle would be removed from the endangered species list. In the announcement, the Secretary noted that the bald eagle would continue to be protected by the Bald and Golden Eagle Protection Act and the MBTA. Both federal laws prohibit the "taking" of bald eagles. In guidance issued in June 2007 the Department of the Interior stated that USFWS would honor existing ESA authorizations in place before the effective date of the delisting. The guidance indicates that USFWS does not intend to seek prosecution of a "take" of any bald eagle under either the MBTA or the Bald and Golden Eagle Protection Act, if the "take" is in full compliance with the terms and conditions of an incidental take statement issued to the action agency.

A Bald and Golden Eagle Protection Act permit from USFWS was acquired for this project for the bald eagle on June 25, 2009. This permit includes all six Sections of I-69. FHWA and INDOT intend to comply fully with the terms and conditions imposed by the incidental take statement included in the August 24, 2006, revised BO for Tier 1, as it proceeds with this project.



Conservation measures developed for the bald eagle as part of the BA for Tier 1 and BA for Tier 1 Addendum will be completed as a condition of the permit, despite the species delisting.

There are no bald eagle nests within one-half mile of the proposed mainline highway, although an active nest exists approximately 0.3 mile from proposed local access road improvements. This is outside of the recommended 660-foot radius for activities as described in the USFWS National Bald Eagle Management Guidelines.

### **5.17.5 Summary**

This study has included an evaluation of potential impacts on federal listed threatened and endangered species, as well as state listed species. The evaluation of impacts on federal listed species has been carried out in consultation with USFWS under Section 7 of the ESA.

In Section 7 consultation during the preparation of the Tier 1 EIS, USFWS initially identified six species in the 26-county study area that required evaluation. All six of those species were evaluated in the Tier 1 DEIS. In comments on the Tier 1 DEIS, USFWS requested that FHWA and INDOT prepare a BA for a single preferred alternative prior to publication of the FEIS. Subsequently, INDOT identified the Alternative 3C as the Tier 1 Preferred Alternative. FHWA and INDOT then proceeded with Section 7 consultation regarding the impacts of Preferred Alternative 3C. Of the six species evaluated in the Tier 1 DEIS, USFWS identified three species that may be present in the action area for Preferred Alternative 3C. Those three species were the Indiana bat, the bald eagle and the eastern fanshell mussel. The bald eagle is no longer a listed species but remains protected under other laws.

FHWA and INDOT initiated formal consultation with USFWS on the Indiana bat, the bald eagle and the eastern fanshell mussel. FHWA and INDOT prepared a BA for Tier 1 for all three species identified by USFWS and an addendum to the BA for Tier 1 for the Indiana bat. Based on these, USFWS concurred that the project “is not likely to adversely affect” the eastern fanshell mussel. Formal consultation concluded with the issuance of a revised BO for Tier 1 by USFWS on August 24, 2006.

The revised BO for Tier 1 concluded that Preferred Alternative 3C “is not likely to jeopardize the continued existence” of the Indiana bat or the bald eagle nor would it be “likely to destroy or adversely modify [Indiana bat] designated critical habitat” (p. 98). It also noted, “[b]ecause no critical habitat has been designated for the bald eagle, none will be adversely modified by this project” (p. 37). The revised BO for Tier 1 also included an incidental take statement for both species. The BO specifies the procedures to be followed for Section 7 consultation in Tier 2.

The Tier 2 biological surveys conducted in I-69 Section 6 included generalized pedestrian surveys during project field work, mist netting for Indiana bats and northern long-eared bats, surveys for fish, crayfish and unionids (mussels). No federally-listed species of flora or fauna were identified within I-69 Section 6 during the generalized survey.



A total of 10 Indiana bats were captured during the 2004 mist net survey, five of which were fitted with radio-transmitters and tracked after release. Three of these were tracked to a total of four roost trees. One of these roosts is located within close proximity to existing SR 37. Additional mist netting surveys were completed during the summer of 2005 and focused around the location of Indiana bat captures where no primary roost trees were identified in 2004. Seven sites were surveyed for a total of 24 net nights. Three reproductive female Indiana bats were captured as a result of this effort, fitted with radio transmitters, and subsequently tracked to a total of six roost trees, all of which were closely associated with the White River floodplain more than 0.4 mile from existing SR 37.

Mist netting surveys at 19 sites in 2015 yielded a three juvenile Indiana bats each of which was fitted with a radio transmitter. One of these was tracked to two roosts within the White River floodplain, west of the river and over 1.5 miles from existing SR 37. From data obtained through the 2004, 2005 and 2015 surveys, USFWS have designated four Indiana bat maternity colonies, each with a 2.5-mile radius. Two of these are in the southern portion of the I-69 Section 6 project, north of Martinsville, with the remaining two in the northern portion, north of SR 144.

A total of 21 northern long-eared bats were captured in 2004 from 11 survey sites with an additional six captured in 2005 from four sites. Because the northern long-eared bat had not yet been listed as threatened by USFWS, no radio-telemetry efforts to locate roosts were conducted. In 2015, a total of three northern long-eared bats were captured from three separate sites. Two of these were fitted with radio transmitters, but tracking only resulted in the identification of one roost tree in the White River floodplain that yielded low emergence counts. This roost is more than 1.25 miles from existing SR 37.

Based on the results of these surveys no direct or indirect impacts on federal listed endangered or threatened species that would jeopardize the continued existence of such species are anticipated as a result of any of the alternatives in I-69 Section 6.

Due to the availability of habitat or their known presence in the I-69 Section 6 field survey study area, impacts to the following state listed species are possible: evening bat, little brown bat, eastern tri-colored bat, and eastern red bat. Forest and wetland mitigation for I-69 Section 6 is anticipated to benefit both federal and state listed species.

No formal surveys were conducted for the rusty patched bumble bee; only recorded data was used. USFWS has developed “high potential” zones around each current (2007-2016) rusty patched bumble bee record, and have concluded that the bee is only likely to be present within these specific areas. There are three such zones in Indiana. Although not of uniform size, they have discrete boundaries that are being used by USFWS field offices to help action agencies determine when consultation under the ESA section 7(a) (2) may be necessary. One zone is in northern Marion County although it is not near the I69 project area (<https://ecos.fws.gov/ipac/>). Based on the project location and action area, USFWS has determined that consultation for the rusty patched bumble bee under section 7 (a) (2) for the I69 Section 6 project is not required.