

**Informal Consultation and Management Guidelines For The
Northern Long-eared Bat Involving Ongoing
Operations on Army National Guard Property**

27 April 15

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1. General

A. *Purpose.* Pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), federal agencies are to consult with the applicable Service (US Fish and Wildlife Service (USFWS) or National Marine Fisheries Service) to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered species. Per 50 CFR 402.14(a), federal agencies are required to consult with the appropriate Service if a proposed action “may affect” a listed species or designated critical habitat.

The intent of this consultation is to evaluate Military operations and activities on Army National Guard (ARNG) installations and facilities that may affect, but are not likely to adversely affect (NLAA) the northern long-eared bat (*Myotis septentrionalis*; NLEB), a species listed as Threatened under the ESA as of May 4, 2015 (USFWS 2015a). The ARNG, in cooperation with the USFWS, proposes these guidelines containing operating procedures/conservation measures for the NLEB that the USFWS has deemed acceptable to concur on a NLAA determination when implemented on ARNG sites covered by this consultation (Table 1). Thus, this will be a programmatic informal consultation. Any activities not included in this consultation will be subject to separate section 7(a)(2) consultation. The ARNG acknowledges that this should technically be an informal conference, but with a final listing rule published for the NLEB and its effective date close at hand, the ARNG prefers to initiate this consultation per Section 7(a)(2) of the ESA.

This evaluation includes: 1) consultation requirements; 2) Army National Guard structure; 3) distribution and status of the species; 4) description of Military Missions and Operations; 5) survey results; 6) proposed conservation measures to limit potential impacts from Military operations and activities; and 7) conclusions.

This Biological Evaluation (BE) will serve as guidelines that establish programmatic baseline standards for managing the NLEB on applicable ARNG installations and facilities. It will also be used in developing management and conservation for the NLEB as part of an installation’s Integrated Natural Resource Management Plan (INRMP). For facilities without an INRMP, implementation of the NLEB management guidelines will ensure compliance with the ESA and the conservation of the NLEB. An installation INRMP will supplement these guidelines with detailed measures to meet installation-specific NLEB conservation and unique military mission needs. The requirements established for the NLEB in the INRMPs will apply to all activities on the installation.

B. *Applicability.* The programmatic guidelines are applicable to the identified properties and areas of operations (Table 1) of the State ARNG that are a party to this BE.

C. *Timeline and Revision.* This informal consultation will be effective for a one year period beginning from the date of USFWS concurrence on the ARNG’s NLAA

determination. Within the year of the effective period of this consultation, the ARNG will revise these guidelines as necessary to be consistent with any applicable final rule(s) published, and to incorporate any best scientific and commercial data available that are relevant to the activities subject to this consultation.

D. *Goal.* The ARNG's goal is to implement management guidelines that will allow the ARNG to accomplish military readiness missions while concurrently developing and implementing methods to assist in the conservation of the NLEB.

E. *Section 7 Consultation.* Participating State ARNGs will conduct their activities as described in this BE and comply with all conservation measures identified in this document prior to and after the listing of the NLEB. If any changes in these activities are necessary or if additional actions will occur that are not covered by this informal consultation, the applicable State ARNG will consult with their associated USFWS field office to determine whether additional informal or formal consultation is appropriate.

II. Additional Consultation

A. *Consultation Requirement.* In proposing actions that deviate from these guidelines that "may affect" the NLEB or for actions in which further consultation has been agreed to, the State ARNG will comply with the consultation requirements of section 7 of the Endangered Species Act (ESA) per the implementing regulations at 50 CFR part 402; and ARNG policies and guidance.

B. *Informal Consultation.* The ARNG Directorate Environmental Programs Division (ARNG Directorate) recognizes that informal consultation with the USFWS is critical to resolving potential problems and establishing the foundation to address issues in a proactive and positive manner. For any "may affect" determinations, the State ARNGs will seek to modify proposed actions and work with the USFWS to obtain concurrence on a "may affect, but not likely to adversely affect" (NLAA) determination. Issue resolution through informal consultation is the preferred method.

C. *Formal Consultation.* If implementation of these guidelines is not possible or feasible for a proposed action and adverse affects cannot be avoided, the ARNG Directorate will initiate formal Section 7 conference/consultation in accordance with the procedures in 50 CFR 402 and applicable ARNG-Directorate policies and guidance.

D. *Confirmation.* The NLAA determination and concurrence of this BE will stay in effect for a one year period starting from the date of USFWS concurrence. The ARNG Directorate will re-initiate consultation on these guidelines if (i) information arises indicating that implementation of the guidelines may not avoid adverse impacts on the NLEB for certain activities; (ii) data/new research endorses inclusion of new, or modification of established, measures in the guidelines that still support a NLAA determination; or (iii) a "take" occurs even though the State ARNG is fully implementing the guidelines. The ARNG Directorate will notify USFWS within five business days if issues pertaining to (i) and/or (iii) arise, and work with the USFWS on addressing such

issues through informal consultation. The ARNG Directorate will make the necessary changes to the guidelines, if any, and conduct the necessary internal staffing prior to submitting the revised document to USFWS for concurrence. During this period, the NLAA concurrence will still be valid for the conservation measures not subject to any scrutiny or concern.

E. *Programmatic Informal Consultation Process.* Each State ARNG will screen applicable installation activities through an ARNG/USFWS cooperatively generated checklist to ensure the activity is conducted as described in this BE. For each activity completed under the programmatic informal consultation, each installation will document site-specific information including the activities implemented, and describe how compliance was maintained with the conservation guidelines/measures within this document. At the end of the effective one year period of this consultation, the ARNG Directorate will collectively report to the USFWS all the applicable activities that occurred on the State sites covered by this consultation.

F. *Emergency Consultation.* Unpredictable catastrophes such as wildfires, tornados, or significant hurricane damage may present conditions that cannot be anticipated under these guidelines. In the case of a catastrophic event, the State ARNG will implement these guidelines to the greatest extent possible, but imminent threat to life or property may take precedence. The ARNG will record impacts on NLEB habitat and any definitive impacts on bats resulting from the event, and document any actions that were necessary during the event such as creation of fire breaks, removal of hazardous trees, etc. The State ARNG will initiate emergency consultation with the USFWS as soon as possible. The State ARNG will reevaluate conservation and management requirements, if necessary, to better prepare for the conservation of the NLEB during such unanticipated events.

When, and if, necessary, the State ARNG will apply emergency consultation procedures for the Threatened and Endangered species that may be impacted by such unpredictable events on ARNG sites.

G. *Other Listed Species.* Other ESA listed Threatened or Endangered species may occur on State ARNG sites covered by this BE. This BE only addresses the NLEB because consultation has already occurred for the other listed or, depending on the State ARNG site, activities may have no effect on other listed species. Prior to implementing any Conservation Measure identified in this PBE, the State ARNG will address and assess impacts of such measures on applicable listed species. Conservation Measures and Reasonable and Prudent Measures of any relevant Biological Opinion(s) will continue to be implemented for listed species on sites subject to this consultation. If necessary, the State ARNG will informally consult with the USFWS to address a situation where implementation of a Conservation Measures may affect NLEB or other listed species. It is anticipated that implementation of the Conservation Measures will provide a benefit to other listed bat species and migratory birds.

III. Army National Guard.

The National Guard Bureau (NGB) is a federal agency, and as such, must comply with Federal statutes and regulations. As a result of the unique structure of the National Guard, the ARNG Directorate, a component of NGB, carries out Army Command responsibilities and serves as a channel of communication among NGB, the United States Army, and the State ARNGs. State Guard organizations are mandated to comply with natural resource laws, statutes, policies, and executive orders for ARNG actions on behalf of the NGB, in accordance with ARNG Directorate and US Army Guidance. Funding and policy for natural resources management are provided by the ARNG. The ARNG Directorate establishes policy and guidance, provides natural resources technical support, and is responsible for tracking projects, quality assurance of compliance documents, and execution of funds. Relevant to this conference, the Directorate is the federal lead for ESA compliance.

State ARNGs are State agencies with dual federal and State missions. State ARNGs are under the direct command of The Adjutant General (TAG), who is under the direction of the governor. Ownership of State ARNG sites may range from State or federally-owned to leased from private landowners. The State ARNG is responsible for the operation and maintenance of a majority of these sites, but other State or federal agencies may have that responsibility based on use agreements. For actions without Federal involvement on the State-owned or other non-federal property, the ESA, State and local conservation laws and regulations apply. For any of the sites where there is a federal nexus (an action authorized, funded, or carried out by the ARNG), the ARNG Directorate is the responsible party for ESA Section 7 compliance.

The ARNG Directorate, per 50 CFR 402.08, designate the State ARNGs as a non-federal representative to conduct informal consultation with the USFWS regarding the NLEB and any other ESA listed species that may be addressed during such consultation. The ARNG Directorate will be involved in any informal consultation that may occur on activities that do not comply with this programmatic informal consultation, and initiate and participate in any resulting formal consultation.

IV. Distribution and Status of the NLEB.

According to the NLEB final rule (USFWS 2015a), the bat is known or believed to occur in 37 States and the District of Columbia within the US. In Canada it is found from all Provinces from the Atlantic Coast westward to the southern Yukon Territory and eastern British Columbia. The northeast is considered to be the core range of the species and the area that has been hit hardest by white-nose syndrome (WNS). Based on hibernacula data, population numbers of NLEB have experienced a decline of approximately 99% in this core area (USFWS 2013). WNS is the most severe and immediate threat to NLEB survival, and is the basis for the listing of the species as threatened IAW ESA sections 3(6) and 4(a)(1) – Factor C: Disease or Predation. Currently, 30 State or federally-owned ARNG installations representing 19 States are recording the NLEB as occurring or presumed on site (Table 1) based on recent or past

surveys. A number of other State ARNG sites anticipate that the NLEB may occur on site, but surveys have not been completed to confirm presence or absence. In general, the status of the species as a whole is declining and the status of the species on various installations ranges from declining in the east to stable in areas where effects of WNS have not yet occurred.

The active season of the NLEB is roughly April – October (USFWS 2015a). However, the spring staging and fall swarming periods can begin earlier in mid-March and extend to late November (USFWS 2014). Due to the regional differences in active season, and spring staging and fall swarming periods, each State ARNG will coordinate with their applicable USFWS Field Office to establish the appropriate dates for these life-cycle events in their respective areas.

During the active season NLEBs roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and snags, typically ≥ 3 inches diameter at breast height (DBH) in over 35 different tree species. They are also known to roost in sheds and barns, but the overwhelming majority of roosts are in trees (USFWS 2014). NLEBs have been known or suspected of roosting/foraging on some of the installations listed in Table 1. Tree species such as black and red oak, silver and sugar maples, hickories, American beech, short-leaf pine, hemlock, birch, spruce, etc ≥ 3 inches DBH are known to occur on State ARNG sites throughout the range of NLEB. Summer roosting habitat is available and possibly used on these sites.

As described in the final rule (USFWS 2015), NLEBs predominantly overwinter in hibernacula that include caves and abandoned mines. The hibernacula are typically large, with large passages and entrances to much smaller hibernacula that have relatively constant, cooler temperatures (0 to 9 °C [32 to 48 °F]) with high humidity and no air currents. The sites they favor are often in very high humidity areas to such a large degree that droplets of water are often observed on their fur. The NLEB has also been found to overwinter in structures resembling mines and caves such as abandoned railroad tunnels and hydro-electric dam facilities, to name a few. Based on current knowledge, there are no known NLEB hibernacula on or within five miles of any ARNG site. Therefore this document does not address potential impacts on or conservation of hibernacula and associated swarming and staging areas. To ensure the conservation of the NLEB, State ARNG sites that are party to this consultation will contact their local USFWS Field Office and request current information on hibernacula that are within five miles prior to implementation of any forest management or land clearing activities (i.e., timber removal, prescribed fire). If a hibernaculum is located within five miles of an ARNG site, the applicable State ARNG will re-initiate informal consultation with the USFWS to address activities that may affect NLEB during the spring swarming and fall staging periods, and while in hibernation.

More detailed information on the life history and habitat requirements of the NLEB can be found in the 2015 final listing rule (USFWS 2015a).

Action Area

There are numerous armories, readiness centers, and other small State and federally-owned ARNG facilities within the range of the NLEB. A majority of them are less than 50 acres and many of these are 10 acres or less in size. However, a number of these locations occur in rural areas and contain potential foraging habitat and trees ≥ 3 inches at DBH that may be suitable for roosting NLEBs. Implementation of these guidelines at these sites should ensure the effects of current and future activities will be insignificant or discountable.

Activities that will not affect NLEB

Activities at installations outside the range of the NLEB will result in no effect to the species. Within the range, activities that occur in unsuitable habitat will result in no effects to the species. The Northern Long-eared Bat Interim Conference and Planning Guidance (USFWS 2014) states, “Trees found in highly-developed urban areas (e.g., street trees, downtown areas) are extremely unlikely to be suitable NLEB habitat.” Therefore, based on this information and the fact that there will likely be no activities identified in this BE taking place on such facilities, the ARNG Directorate determines that all sites within highly-developed urban areas¹ will have no effect on NLEB and thus be excluded from these guidelines and ESA consultation requirements.

If there is any indication that NLEBs are using such a site, the appropriate State ARNG will notify their USFWS field office and immediately apply these guidelines to the applicable site or conduct project by project Section consultation as required.

Activities that may affect NLEB

For all other sites used for ARNG operations that contain habitat elements for the NLEB within its range, the ARNG will assume that NLEB are present. The ARNG will apply these guidelines to such locations unless surveys conducted in accordance with the 2015 Indiana bat summer survey guidelines (USFWS 2015b) determine the NLEB is not present on the site. A determination of “not present” will be valid for a minimum of two years per the NLEB interim guidance (USFWS 2015b) unless significant habitat changes are proposed in an area to warrant a reduced timeframe. Table 1 contains a list of the ARNG sites and the activities they will be implementing that are addressed in this BE and covered under the programmatic informal consultation.

¹ Highly-developed areas do not contain suitable forested/wooded habitat within 1000 feet.

Table 1. State ARNG sites and Their Activities Covered Under the Programmatic Informal Consultation

State Army National Guard (ARNG)	Site Name	Approx. Size & Location (acres) (map of site(s) if you can)	Approx. Forested Acres	NLEB Present or Assumed*	Firing and Maneuver Range(s) during active season (identify activity)**	Flight Operations During Active Season (ID type of craft, night/day)**	Smokes/ Obscurants during active season (ID type to be used)**	Construction(s) (Acreage of site & % forested)**	Forest Management (type of activity & size in acres)**	Prescribed Burn(s) (habitat, size, time of yr)**	Anticipated single/multiple Tree Removal During Active Period (area size, numbers)**	Pesticide Application(s) in/near Forested Areas (target sp.)**	Recreational Activities**
ARARNG	Fort Chaffee	64,292; approximately five miles east of the City of Fort Smith	47,178	Assumed	All	Helicopters (primarily Blackhawk), C130; night and day	Yes	No new construction planned	None	~10,000 acres, all habitat types, typically September - April	None	None	Fish/hunt
CTARNG	Stones Rance Military Reservation	1,863; 462 Boston Post Rd, East Lyme 06333-1405	1,500	Assumed	Demolition Range	Blackhawk	N/A	20/80%	Thin trees 100ac	N/A	Unsafe remove only	N/A	Deer Hunting
CTARNG	East Haven Rifle Range	122; 591 N High St, East Haven 06512-1555	70	Assumed	Small Arms	Blackhawk	N/A	35/60%	N/A	N/A	Maintenance	N/A	N/A
INARNG	Alexandria	2.0; 105 E Water St., Alexandria 46001	0.5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line and gravel lot.	No
INARNG	Camp Atterbury	33139.0; approximately 10 miles northwest of Columbus, Indiana	33139	Yes	Yes	Operations	Yes	30/4	TSI (~750 acres)/Harvest (~250 acres)	Yes	No	per PBO	Yes
INARNG	Camp Fowler	105.0; W CR 200 N & SR 39, Fowler, Clinton County, IN 46041	56	Assumed	Yes	Operations	Yes	No	No	No	No	Herbicides	No
INARNG	Connersville National Guard Armory (NGA)	7.5; 3000 N Waterloo, Connersville 47331-9801	3	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Johnson County Armed Forces Reserve Center (AFRC)	39.9; 325 E Minuteman Way, Franklin 46131	1	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Kingsbury Local Training Area (LTA)	1061.0; 5344 South Hupp Rd, Laporte, Laporte County, IN 46350	868	Assumed	Yes	Limited VIP	No	No	No	No	No	Herbicides	Yes
INARNG	Knightstown Training and Support	387.0; 10892 IN-140, Knightstown, Rush County, IN 46148	14	Assumed	Yes	Limited VIP	No	unknown	No	No	No	Herbicides	No
INARNG	La Porte NGA	9.0; 2391 W State Road 2, La Porte 46350-5324	2	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Lawrence Readiness Center	2.0; 9920 E 59th St, Lawrence, Marion County, IN 46226	12	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Lebanon NGA	3.0; 801 North East St., Lebanon 46052-1840	0.25	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No

State Army National Guard (ARNG)	Site Name	Approx. Size & Location (acres) (map of site(s) if you can)	Approx. Forested Acres	NLEB Present or Assumed*	Firing and Maneuver Range(s) during active season (identify activity)**	Flight Operations During Active Season (ID type of craft, night/day)**	Smokes/ Obscurants during active season (ID type to be used)**	Construction(s) (Acreage of site & % forested)**	Forest Management (type of activity & size in acres)**	Prescribed Burn(s) (habitat, size, time of yr)**	Anticipated single/multiple Tree Removal During Active Period (area size, numbers)**	Pesticide Application(s) in/near Forested Areas (target sp.)**	Recreational Activities**
INARNG	Linton NGA	15.5; 2000 Highway 54 East, Linton 47441	13.5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Madison NGA	10.0; 1533 Clifty Dr., Madison 47250-1685	5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Monticello NGA	5.0; 299 Armory Rd., Monticello 47960-2572	1.5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Muscatatuck Urban Training Center	934.0; 4230 E Administration DR Butlerville 47223-0077	630	Yes	Yes	Operations	Yes	10/0	Yes	No	No	Herbicides	Yes
INARNG	Panther LTA	30.0; Betsey Cull Dr, North Vernon, Jennings County, IN 47265	0	Assumed	No	Operations	No	No	No	No	No	Herbicides	No
INARNG	Peru NGA	4.1; 77 German St., Peru 46970-2801	0.5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Plymouth NGA	4.1; 1220 W Madison, St., Plymouth 46563-1418	0.25	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Rensselaer NGA	5.0; 1417 E Grace St., Rensselaer 47978-9804	0.19	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Richmond NGA	5.7; 1200 W. Main Street, Richmond, Wayne County, IN 47374	1.5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Scottsburg NGA	15.0; 1015 S Main St., Scottsburg 47170-1621	0.5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	South Bend AFRC	16.0; 1901 S Kemble Ave., South Bend 46613-1714	3	Assumed	No	Limited VIP	No	Yes/No trees	No	No	No	herbicide application fence line	No
INARNG	Valparaiso NGA	5.0; 1502 Linwood Ave., Valparaiso 46383-8397	1	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
INARNG	Vincennes NGA	4.3; 1514 Emison ST Vincennes 47591-0281	0.5	Assumed	No	Limited VIP	No	unknown	No	No	No	herbicide application fence line	No
KSARNG	Kansas Training Range-Smoky Hills	3,500; approximately 10 miles south of Salina, KS	126	not sure	off-road driving course, firing activity at multiple ranges	N/A	N/A	yes	occasional invasive tree removal	approximately 1000 acres/per year, anywhere from Nov-April	Annual Training project tree removal	N/A	N/A
KYARNG	Disney Training Site (TS) (Near Artemus, KY)	558; 537 TVA Rd, Artemus 40903-9998	250	assumed	All	Helicopter	unknown	none	minor tree removal activities	none	none	none	fish/hunt

State Army National Guard (ARNG)	Site Name	Approx. Size & Location (acres) (map of site(s) if you can)	Approx. Forested Acres	NLEB Present or Assumed*	Firing and Maneuver Range(s) during active season (identify activity)**	Flight Operations During Active Season (ID type of craft, night/day)**	Smokes/ Obscurrants during active season (ID type to be used)**	Construction(s) (Acreage of site & % forested)**	Forest Management (type of activity & size in acres)**	Prescribed Burn(s) (habitat, size, time of yr)**	Anticipated single/multiple Tree Removal During Active Period (area size, numbers)**	Pesticide Application(s) in/near Forested Areas (target sp.)**	Recreational Activities**
KYARNG	Hidden Valley TS (Near Clay City, KY)	524; Hidden Valley Rd., Stanton, KY 40380	400	assumed	All	Helicopter	unknown	none	minor tree removal activities	Proposed Grassland	none	none	fish/hunt
KYARNG	Wendel H. Ford Regional Training Center (RTC) (near Greenville, KY)	11,265; 4675 N State 181 RTE Greenville 42345-0508	4,500	unknown	All	Helicopter	unknown	none	minor tree removal activities	Grassland	none	none	fish/hunt
MEARNG	Hollis TS	425; 0 Nason Hill Rd, Hollis Center 04042-0000	400	Assumed	Driver training, dismantled maneuvers, blanks, pyro, engineer equipment	UH-60, OH-58, day	N/A	15 acre, 0%	RX Fire, 400 acres	400 acres, pitch pine/scrub oak barren, Apr-May and Aug - Oct	Possible	N/A	Non motorized, non-consumptive
MEARNG	Auburn TS	232; 64 Mt Apatite Rd, Auburn 04210-8911	180	Assumed	Driver training, dismantled maneuvers, blanks, pyro, engineer equipment	UH-60, OH-58, day	N/A	20 acre, 0%	Federal timber sale, 100 acres	N/A	Possible	N/A	Non motorized, non-consumptive
MEARNG	Gardiner TS	115; Lewiston Rd, West Gardiner, ME 04345	110	Assumed	Driver training, dismantled maneuvers, blanks, pyro, engineer equipment, Small arms range	UH-60, OH-58, day	N/A	10 acre, 90%	State timber sale, 80 acres	20 acres, grass/shrubland, Apr-May and Aug - Oct	Possible	N/A	Non motorized, non-consumptive
MEARNG	Bog Brook TS	217; 0 US Route 2 BYP / Gilead Rd, West Bethel 04217-0000	207	Present	Driver training, dismantled maneuvers, blanks, pyro, engineer equipment	UH-60, OH-58, CH-47, day	N/A	10 acre, 90%	Federal timber sale, 175 acres	N/A	Possible	N/A	Non motorized, non-consumptive
MEARNG	Plymouth TS	323; Bardon Hill Rd, Plymouth, ME	295	Assumed	Driver training, dismantled maneuvers, blanks, pyro, engineer equipment	UH-60, OH-58, day	N/A	20 acre, 50%	State timber sale, 200 acres	N/A	Possible	N/A	Non motorized, non-consumptive
MEARNG	Bangor TS	172; 28 Hayes St, Bangor 04401-3026	50	Assumed	Driver training, dismantled maneuvers, blanks, pyro, engineer equipment, Small arms range, RTI, AFRC	UH-60, OH-58, day	N/A	No new construction planned	N/A	N/A	Possible	N/A	Non motorized, non-consumptive
MEARNG	Caswell TS	1,056; 0 Butterfield Lake Rd, Loring Afb, Caswell 04750-3100	950	Present	Driver training, dismantled maneuvers, blanks, pyro, engineer equipment	UH-60, OH-58, day	N/A	No new construction planned	Federal Timber sale, 800 acres	N/A	Possible	N/A	Non motorized, non-consumptive
MEARNG	Brunswick TS	60; 11 Ordnance Dr, Brunswick 04011-0000	30	Assumed	Dismounted training, Readiness Center, Search & Rescue Simulation	N/A	N/A	No new construction planned	N/A	N/A	Possible	N/A	Non motorized, non-consumptive
MAARNG	Camp Edwards	14,500; Buzzards Bay, MA	9,600	Present	Small arms (9mm, 5.56, 7.62, m203); vehicle convoy, dismantled maneuver through training areas	Helicopters (primarily Blackhawk), C130; night and day	No	Primarily H, but small A projects (<1 acre) meeting summer survey guidelines and no bats	Primarily H, but small A projects (<1 acre) meeting summer survey guidelines and no bats	A (grassland, shrubland; mainly less than 20 acres); H woodland up to 300 acres	Limited need: primarily H; A (mostly single and supported by thermal imaging and acoustic)	No	Hunting: turkey (A), deer (H); wildlife viewing (A: grasslands)

State Army National Guard (ARNG)	Site Name	Approx. Size & Location (acres) (map of site(s) if you can)	Approx. Forested Acres	NLEB Present or Assumed*	Firing and Maneuver Range(s) during active season (identify activity)**	Flight Operations During Active Season (ID type of craft, night/day)**	Smokes/ Obscurrants during active season (ID type to be used)**	Construction(s) (Acreage of site & % forested)**	Forest Management (type of activity & size in acres)**	Prescribed Burn(s) (habitat, size, time of yr)**	Anticipated single/multiple Tree Removal During Active Period (area size, numbers)**	Pesticide Application(s) in/near Forested Areas (target sp.)**	Recreational Activities**
MAARNG	Camp Curtis Guild	700; 25 Haverhill, Reading 01867	700	Assumed	No ranges; dismounted and limited mounted maneuver	Helicopters (primarily Blackhawk and daytime)	No	None	H (small scale understory and limited canopy removal)	No	Primarily H; A (mostly single and supported by thermal imaging and acoustic)	No	None
MIARNG	Fort Custer Training Center	7,500; Kalamazoo Country, south of Augusta, MI (42°17'33"N 85°19'33"W)	6,500	assumed	small arms, LAW, Demo, Driving, Bivouac	none	fire, mustard gas	1000 acres CIS potentially; 100 acres other construction, fully forested	timber harvest ~100 acres/year	around 1000 acres/yr, mostly spring, some fall, yes in habitat	what is considered active?	edges of fenceline, weeds	deer hunts
MIARNG	Camp Grayling Military Training Center	147,000; Camp Grayling Joint Maneuver Training Center, Grayling Township, MI 49739	110,000	Present	yes	Winged, rotary, drones	Yes	10, 0% forested	None - managed by the MI Dept of Natural Resources	Yes, grasslands	none	none	Hunting, fishing, ORV, camping
MNARNG	Arden Hills Army Training Site	1,500; 1245 W 96 HWY Arden Hills 55112-5722	200	Assumed	yes	yes	yes	yes	none	none	no	no	
MNARNG	Camp Ripley	53,000; 15000 Highway 115 HWY Little Falls 56345-4173	31,000	Present	yes	yes	yes	yes	300 acres, less than 1%	13000 acres, 95 %	yes	yes	
MOARNG	Camp Clark	1,282; approximately 5 miles east southeast of Nevada, MO	500	Present	Yes	yes	yes	yes	yes	yes	yes	no	yes
MOARNG	Camp Crowder	4,362; approximately 5 miles south of Neosho, MO	3,190	present	yes	yes	yes	yes	yes	yes	yes	yes	yes
MOARNG	Macon TS	3,083; approximately 1 mile south southwest of Macon, MO	1,740	assumed	no	yes	yes	yes	no	yes	yes	no	yes
MOARNG	Truman TS	691; approximately 5 miles north of Warsaw, MO	580	assumed	no	yes	yes	no	no	yes	no	no	yes
MOARNG	Wappapello TS	2,200; approximately 2 miles south of Wappapello, MO	2,030	assumed	yes	yes	yes	yes	no	no	no	no	yes
NJARNG	Lawrenceville Armory	78; 101 Eggert Crossing, Lawrenceville 08648-2805	27	assumed	no	UH60 day and night	no	no	no	no	no	no	no
NJARNG	Picatinny Field Maintenance Shop	29; approximately 7 miles north of Dover, NJ	9	assumed	no	UH60 day and night	no	no	no	no	no	no	no
NJARNG	Dover Armory	16; 479 W. Clinton, Dover 07801-1799	8	assumed	no	UH60 day and night	no	no	no	no	no	no	no

State Army National Guard (ARNG)	Site Name	Approx. Size & Location (acres) (map of site(s) if you can)	Approx. Forested Acres	NLEB Present or Assumed*	Firing and Maneuver Range(s) during active season (identify activity)**	Flight Operations During Active Season (ID type of craft, night/day)**	Smokes/ Obscurants during active season (ID type to be used)**	Construction(s) (Acreage of site & % forested)**	Forest Management (type of activity & size in acres)**	Prescribed Burn(s) (habitat, size, time of yr)**	Anticipated single/multiple Tree Removal During Active Period (area size, numbers)**	Pesticide Application(s) in/near Forested Areas (target sp.)**	Recreational Activities**
NJARNG	Flemington Armory	14; 422 ATE Highway, Flemington 08822-9511	9	assumed	no	UH60 day and night	no	no	no	no	no	no	no
NJARNG	Franklin Armory	10; 12 Munsonhurst, Franklin 07416-1803	5	assumed	no	UH60 day and night	no	no	no	no	no	no	no
NJARNG	Morristown Armory	43; 430 Westernnue, Morristown 07960-0499	25	assumed	no	UH60 day and night	no	no	no	no	no	no	no
NJARNG	Washington Armory	35; 550 Route, Washington 07865-4327	10	assumed	no	UH60 day and night	no	no	no	no	no	no	no
NJARNG	Unit Training Equipment Site (UTES)	28; approximately 6 miles east southeast of New Egypt, NJ	8	assumed	no	UH60 day and night	no	no	no	no	no	no	no
NJARNG	Note: While the onsite forested acreage is small, Picatinny, Dover, Flemington, Franklin, UTES, and Washington abut larger forested tracts owned by state and local gov't.												
VTARNG	Ethan Allen Firing Range	11,200; approximately 20 miles east of Burlington, VT	9,000	Present	Standard weapons qualifications on small arms, M16/M4, M249 M240, M9, M1911, M203, MK19 grenade, 105mm howitzer, 120mm howitzer, .22 cal, .45 cal pistol, .38 cal pistol, .50 cal, 12 guage shotgun, 60mm mortar, 81mm mortar, 120mm mortar	HH-60 Blackhawk training, UH-72, OH-58. All aircraft have small percentage of nighttime operations. Majority is daytime	WP in 170 acre impact area. M18 colored smoke	5 acres, none forested	100 acres forest health thinning	500 acres in April, mostly grassland	None during active period	Glyphosate, 20 acres cut stump application for honeysuckle. Limited backpack sprayer application for japanese knotweed and honeysuckle	None
VTARNG	Camp Johnson	650; approximately 3 miles east of Burlington, VT	400	Present	blanks	HH-60 Blackhawk training, UH-72, OH-58. All aircraft have small percentage of nighttime operations. Majority is daytime	M18 colored smoke	none	none	7 acres every other year in pitch pine forest openings	none	Glyphosate, 5 acres. Cut stump application on honeysuckle, buckthorn. Limited backpack spray application to Phragmites (1 acre)	None
VAARNG	Fort Pickett	43,000; approximately one mile east of Blackstone, VA	32,000	Present	Yes	Yes	Yes	yes	Anually Harvest 500+/- Acres	3,000+/- Acres November 15 through May 15	Yes Various reasons	Yes	Yes Twin Lakes

* The term "assumed" implies that the site is within range of NLEB and adequate habitat exists. Do not enter sites where surveys have been conducted and no NLEB detected.

** Takes into consideration that applicable conservation measures will be implemented

V. Military Activities, Applied Conservation Measures, and Effects Determination.

The Army National Guard (ARNG) is a unique, dual-status force – simultaneously a reserve component of the Army and a State-based force. It has both State and federal missions. Under State law the ARNG protects life and property and preserves peace, order and public safety through emergency relief support during natural disasters, search and rescue operations, support to civil defense authorities, maintenance of vital public services and counter drug operations. The ARNG's federal mission, as enumerated in Title 10 of the U.S. Code, is to maintain well-trained, well-equipped units available for prompt mobilization during war and provide assistance during natural emergencies. ARNG units may also be mobilized to perform humanitarian missions, peacekeeping missions and other missions as directed by the President and Secretary of Defense.

ARNG installations provide ARNG Soldiers a platform for the military training necessary to ensure they are fully prepared to execute their mission on the State and federal level. ARNG facilities must be in a condition that provides ARNG soldiers the ability to train as if in real combat or domestic setting in order to ensure mission success and safety of soldiers. Sustaining a healthy ecosystem through forest management, invasive species control, and other land management activities supports a sustainable platform for mission implementation.

A. Existing firing and maneuver ranges. Firing and maneuver ranges on ARNG property provide training and testing for the M16/M4 weapons family, M249 and M240 series machine guns, M9 and M1911 series pistols, M203 and MK19 grenade launchers, anti-tank weapons, helicopter gunnery, tank firing, 105 mm through 203 mm cannons, tracked and wheeled vehicles, live grenades, demolitions, and other military operations. The NLEB within these active ranges have been repeatedly exposed to loud noises associated with munitions, detonations, and training vehicles. Camp Atterbury (USFWS 2010), Fort Leonard Wood (USFWS 2010), and Fort Drum (USFS 2008) have assessed range and training noise impacts on Indiana bats (*Myotis sodalis*). Fort Leonard Wood monitored radio-telemetered Indiana bats and found that the bats did not avoid active ranges or alter foraging behavior during night-time maneuvers. A 2002 study on Camp Atterbury found that five of eleven Indiana bats tracked with radio transmitters periodically roosted in the impact area (Whitaker & Gummer 2002). Given these findings, along with the abundance and installation-wide distribution of the bats on the sites, they concluded, and USFWS concurred, that sound intensity and duration associated with past training events have not adversely affected Indiana bats due to the bats having become habituated to such stimuli. It is reasonable to believe that the NLEB have also become habituated to ongoing operational noise on existing ARNG ranges.

Recent studies have indicated that anthropogenic noise can alter foraging behavior and success of bats, including some gleaning species like the NLEB (Bunkley et al., 2015; Schaub et al., 2008; Siemers and Schaub, 2011). Based on the potential that new sound stimuli may affect the NLEB by influencing foraging behavior and

success, the relevant State ARNG in coordination with the ARNG Directorate, will consult with the USFWS when new activities are proposed that significantly differ in sound intensity, quantity/duration of noise events, and/or range utilization (i.e., introducing nighttime use of a range) that may affect NLEB.

Bats are vulnerable to mortality from vehicle strikes (Siebert and Connor, 1991; Glista and DeVault, 2008; Russell et al., 2009). Collisions with vehicles are documented for the endangered Indiana bat, as well as the NLEB (Russell et al., 2009). In this study, researchers monitored highway crossings of a roost of approximately 23,000 bats, mainly little brown bats (*Myotis lucifigus*). A total of 26,442 occurrences of bats crossing the highway during dusk (10 days) and dawn (six days) were recorded and 29 road-killed bats were found, one being an Indiana bat. In Glista and DeVault (2008), researchers surveyed 158.5 km of roads for mortality of vertebrates. A total of one road-killed bat (eastern red bat, *Lasiurus borealis*) was found during the road mortality detection surveys – travelling at speeds less than 40 km/h). Finally, Siebert and Connor recorded one road-killed bat during their 50 surveys of a 1.6km of highway (U.S. 33 NW of Athens, OH) spanning from June 1987 to August 1988. The Biological Opinion for Construction, Operation, And Maintenance of the U.S. 33 Nelsonville Bypass Road, OH (USFWS 2005), identified vehicle collision as an anticipated take of Indiana bat. However, in contrast to the roads and maneuver sites on State ARNG installations, the stretches of road discussed above have a constant volume of traffic during times of bat activity, and vehicles are travelling at greater speeds than what occurs on State ARNG sites. The numbers and intensity of night time maneuvers and vehicle use on ARNG sites, as well as operating speed of such vehicles, do not rise to the level associated with highway use. Therefore, the likelihood of bat road mortality occurring during dusk to dawn on ARNG sites is determined to be discountable. For any proposed or anticipated increase in nighttime vehicle use on State ARNG sites in areas where NLEB are known to forage, the ARNG will consult with the USFWS.

In conclusion training activities at firing and maneuver ranges are not likely to adversely affect the NLEB.

B Helicopters and fixed-wing aircraft. As with ranges, flight training has and continues to occur on multiple ARNG installations within the range of the NLEB. These operations include unmanned aerial vehicles (UAV), which are remotely piloted or self-piloted aircraft that are also used on ARNG properties. Studies have shown that helicopters tend to elicit a heightened response compared to fixed-wing aircraft. Even though that may be the case, helicopter training on ARNG sites usually occurs at altitudes of $\geq 500'$ and hovering operations occur over fields or other open areas, thus any impacts from noise or downdrafts would be temporary and minimal to roosting bats and trees. For ongoing night time operations, foraging bats will continue to be exposed to sound levels that have been shown not to alter foraging behavior (USFWS 2010). Given that NLEB forages in the canopy layer (USFWS 2013), collision during night time flight operations are very unlikely to occur. Based on the nature and implementation of air operations, and the assumed level of habituation to flight training stimuli, it is determined that sound generated by ongoing training activities at existing ranges is not

likely to adversely affect the NLEB. Similar conclusions were made at Fort Leonard Wood, (3D/I 1996), involving night-time maneuvers; air operations at Fort Drum, (USFWS 2009); and ongoing training activities at Camp Atterbury (USFWS 2010).

If there are any indications that flight training may be adversely impacting bats such as the observation of tree limbs and/or bark being blown off by helicopter downdraft, and/or wildlife air strike identified as NLEB, the applicable State ARNG will initiate consultation with their local USFWS field office. Consultation with the appropriate USFWS field office will also occur if flight training activities are introduced to new sites that have new impacts not discussed above, there is intensive low level hovering over forested areas during the active season (summer maternity season, and if applicable to the site, spring staging and fall swarming season), or there is any other change to flight operations that may affect NLEB in a manner significantly different than those described above.

In conclusion, use of aircraft are not likely to adversely affect the NLEB.

C. Military Training Smoke and Obscurants. Smoke/obscurants are used to conceal military movements and help protect troops and equipment in combat conditions. They can be used throughout the Training Area as part of another military operation, or as part of an independent training scenario. Although they would be primarily used during the day, smoke/obscurants may be deployed at night. Training on some state ARNG installations may include, but is not limited to smokes and obscurants such as fog oil, colored smoke grenades, white phosphorous, and graphite smoke. The effects of these smokes and obscurants were assessed in the Fort Drum (USFS 2008; Army 2012; Army 2014; USFWS 2009; USFWS 2013; USFWS 2015) and Camp Atterbury BAs and associated BOs (USFWS 2010). Research was cited indicating that prolonged dermal and respiratory exposures to these items, except for the graphite smoke, could have adverse effects on roosting and foraging Indiana bats. Given the similar roosting behavior and foraging locations of the NLEB, it is likely they will also be adversely affected by these smokes and obscurants. However, measures can be taken to avoid adverse effects of some smokes.

Camp Atterbury (USFWS 1998) conducted an ecological risk assessment (ERA) to assess which training materials and pesticides may cause adverse effects to Indiana bats. The ERA indicated that chemicals found in M18 colored smoke grenades may cause acute toxicological effects. They determined that Indiana bats roosting within 36 meters of the deployed grenades may inhale unsafe concentrations of M18 colored smoke during a one-minute period following release. To avoid the potential for adverse effects from colored smoke on NLEB, installations will not release M18 colored smoke grenades within 50 meters of known or suspected (indicated by results of acoustic or mist-netting surveys) roost sites during the active season. For sites where surveys have not been conducted to determine presence of NLEB, M18 colored smoke grenades will not be used during the NLEB active season within 50 meters of suitable roost trees, which are described in Section IV of this document. Therefore, by implementing this measure, it is believed the effects of colored smoke on NLEB will be insignificant.

Citing data from a National Research Council's report on the toxicity of military smokes and obscurants, Fort Drum determined that based on the low toxicity on experimental animals, the use of graphite smoke may affect, but is not likely to adversely affect the known and undiscovered maternity colonies of Indiana bats. The USFWS concurred that any adverse effects associated with graphite smoke are discountable or insignificant (USFWS 2009).

In the 2012 Fort Drum BO (USFWS 2012), the USFWS included a table of a number of studies that provided estimates of fog oil concentrations from typical smoke screening operations. The highest level of fog oil recorded was 140 mg/m³, which was the upper level of a range for a 30 minute release that averaged a 51.8 mg/m³ concentration 200 meters from the source. A 120 min release recorded a maximum level of 105 and 102 mg/m³ at 200 and 100 meters, respectively, from the source of release. The COE Engineer Research and Development Center conducted a study to evaluate the health effects of fog oil aerosols in a surrogate species (Red-winged Blackbird) for the Red-cockaded Woodpecker (Driver et al. 2002). Based on the results of the study, they concluded that adult Red-winged Blackbirds can apparently sustain fog oil exposures of about 400 mg/m³ for 4 hours with no detectable adverse effects.

The Lethal Concentration (LC)₅₀ of rats for inhalation of fog oil after 3.5 hours was 5,200 mg/m³. Less than 15% of the rats died at 4,000 mg/m³ (NRC 1999). Roosting NLEBs would most likely be exposed to fog oil levels well below those lethal to rats and having no detectable adverse effects on blackbirds. It would appear that release of fog oil at least 100 meter from any known or suspected roost sites would be sufficient to avoid impacts on NLEB. However, in a study conducted on Fort Leonard Wood, it was estimated that Indiana bats within 4,000 m of static smoke training and 7,000 m of mobile smoke training had the potential to inhale unsafe quantities of fog oil (USFWS 2009). To ensure that NLEB are not adversely affected by fog oil, ARNG sites will not use fog oil during the NLEB active period without additional consultation with the USFWS.

White phosphorous (WP) ignites when it is exposed to air and may cause burns. Smoke typically lasts up to 15 minutes. Rats exposed to WP for 15 min/day, 5 days/week for 13 weeks at 1,740 mg/m³ (H₃PO₄) resulted in the death of 32% of the rats within 6 weeks. Rats produced clear signs of irritation when exposed to H₃PO₄ at a concentration of 525 mg/m³ for 60 minutes. Longer term exposure at concentrations of 884 mg/m³ (15 min per day, 5 days per week for 6 or 13 weeks), resulted in slight laryngitis and tracheitis. A similar exposure, but at higher concentrations (H₃PO₄ at 1,742 mg/m³), resulted in wheezing, dyspnea, moderate-to-severe laryngitis and tracheitis, and interstitial pneumonia. No such effects were reported for rats exposed for 15 min per day, 5 days per week for 13 weeks with H₃PO₄ at 280 mg/m³. Reproduction and development of rats showed that higher WP exposure (1,742 mg/m³ for 15 min/day, 5 days/week for 10 weeks) were associated with lower natal weights and had severe effects on survivability (NRC 1999).

Table 2. Table from the 2012 Fort Drum BO of Estimates of fog oil concentrations resulting from typical smoke screening operations at given distances from the source.

Study	Distance from source (meters)	Average (mg/m3)	Range (mg/m3)	Maximum (mg/m3)
Lilegren et al. 1988 ^A	100	7.7		
	200	3.6		
	400	2.6		
Policastro et al. 1989 ^A	25	116		
	100	8		
	200	3		
Driver et al. 1993 ^B (30 min release)	100	64.3	27-120	
	200	51.8	7-140	
	400	27.9	1.8-93	
	1000	6.9	1.6-24	
Driver et al. 1993 ^B (300 min release)	100	64		
	200	29		
	400	8.7		
	1000	1.6		
Getz et al. 1996 (120 min release)	100	64	25-102	
	200	56	8-105	
	500	46	1.3-90	
	1000	13	0.8-25	
U.S. Army 1997 ^B	100	3.8		13.5
	250	3.5		12.7
	500	2.7		11.2
	1,000	1.2		4.3
Department of the Army 1997 (30 min release)	100		0-14	
	1000		0.1-1	
A- Results from studies conducted in the field B- Results from modeling				
Table is summarized from Getz et al. 1996 and ENSR 1999.				

It has been estimated that an exposure concentration of WP could reach 202 mg/m3 (H₃PO₄) 100 m downwind from deployment and about 1.4 mg/m3 (H₃PO₄) 5,000 m downwind. It was cited that the EPA does not expect community exposures to be severe at a distance of greater than 300 m; however, particularly susceptible individuals might experience respiratory irritation even at a distance of 5,000 m (NRC 1999).

To minimize the potential for adverse effects on NLEB, installations will not release WP within 200 meters of known or suspected roost sites during the active season. For sites where surveys have not been conducted to determine presence of NLEB, WP will not be released within 200 meters of suitable roost trees during the active season. Therefore, by implementing this measure, the anticipated level of WP at that distance should not expose NLEB to concentrations of H₃PO₄ that would be likely to adversely affect them.

For “other” smokes and obscurants, we cannot negate the potential for adverse affects on NLEB from exposure. Therefore, to avoid any potential for adverse affects, these items will not be employed during the bat active season. ARNG installations will consult with the USFWS if any of these “other” smokes or obscurants are being considered for release during the NLEB active season and there is scientific evidence to support that such substances can be released in a manner to avoid adverse effects or ensure such effects are insignificant or discountable.

Conservation Measures in known NLEB summer habitat or suitable habitat with assumed NLEB summer presence.

1. M18 colored smoke grenades will not be used within 50 meters of suitable roost trees during the NLEB active season.
2. Fog oil will not be released during the NLEB active season without additional consultation.
3. WP will not be released within 200 meters of suitable roosting habitat during the NLEB active season.
4. Other smoke/obscurants will not be employed during the NLEB active season without additional consultation.

In conclusion, with the incorporation of conservation measures, use of smoke and obscurants are not likely to adversely affect the NLEB.

D. Construction. Construction projects can include new buildings, building additions, new or upgraded utilities, etc. As part of construction there may be multiple activities including tree removal, site preparation, wetland fill, wetland mitigation, etc. On ARNG sites where NLEB are known or where no surveys have been conducted to determine presence in suitable habitat, tree cutting and clearing for construction projects will occur during the bat’s inactive season. If there is a need to remove a single or small cluster of trees during the active season, the State ARNG will conduct emergence surveys to determine if such removal can be done with insignificant or discountable effects on NLEB. As part of this informal consultation, construction projects will be limited to up to 10 acres of winter tree clearing and will not impact any documented roosts or foraging habitat.

Other construction activities such as site grading, road construction, vertical and horizontal building, and other activities are likely to occur during the NLEB active season during day light hours. Noise and vibrations generated by heavy equipment within or directly adjacent to roosting trees could temporarily disturb roosting bats. Ensuring construction sites are buffered from known or suspected roost sites, or areas of suitable habitat where surveys have not been conducted, it is anticipated that the intensity of noise and vibration associated with the construction will diminish a sufficient amount to reduce the likelihood of disturbing bats that roost, or may be roosting, in

these particular areas. By implementing adequate buffers (to be determined in consultation with the USFWS) around new construction projects, the ARNG determines that such activities “may affect, but not likely to adversely affect” the NLEB.

If netting or acoustic surveys have been conducted within the area of proposed construction and no NLEB have been detected, it is likely that NLEB are not roosting in the area and would not be affected by the proposed activity. In addition, in areas where NLEBs are already subject to noise and vibrations associated with ongoing actions, construction activities occurring in such area would not likely have an adverse effect on NLEBs.

Construction sites will implement sediment and erosion control best management practices (BMPs) to avoid/minimize altering clean drinking water and foraging areas. Areas for equipment servicing and maintenance will be situated an adequate, site-specific distance away from waterbodies. Construction sites will also be restored with native vegetation where possible.

Conservation Measures:

1. Roost Tree Protection. All documented roosts will be protected from construction for the lifespan of the roost tree, unless there is a human health and safety concern. Additionally, a 100 meter buffer will be placed around all maternity roosts to protect the roost from disturbance and to maintain a semblance of a natural environment for NLEB. The size and shape of a buffer will be determined on a case by case basis by the State ARNG in consultation with the USFWS. Factors that will be considered will include surrounding landscape, habitat connectivity, distance to other roosts, distance to known foraging areas, and any other issue important to target species.
2. Construction activities outside of suitable habitat will not occur within 100 meters of any known roost trees without additional site-specific consultation.
3. Time of Year Restriction for Tree Falling. To protect roosting NLEBs during their active season, clearing of trees > 3 in DBH will not occur during the active season unless negative presence/probable absence survey results were obtained for the area through appropriate surveys (USFWS 2015b).
4. Construction activities that remove suitable habitat within 0.25 miles of any known roost trees without additional site-specific consultation. Construction activities will also take into account factors such as the surrounding landscape, habitat connectivity, and distance to other roosts, distance to known foraging areas, and any other issue important to target species.
5. Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any construction activities for a given project in an applicable area. Flagging will be removed upon completion of the project.

6. Via Scope of Works, Contracts, etc., all personnel responsible for construction activities will be informed about the need to follow design plans, stay within flagging, minimize impacts to wildlife and other environmental concerns.
7. Outdoor Lighting Minimization. For all future projects in known NLEB summer habitat or areas where presence/absence has not been determined (no surveys to date), the State ARNG will evaluate the use of outdoor lighting and seek to minimize light pollution by angling lights downward or via other light minimization measures. By angling the light away from potential foraging and roosting areas, the area will be darker thus providing bats more protection from predators.
8. Demolition. If the building has pre-existing known bat colonies, then the environmental contact of the State ARNG must be contacted before demolition is to occur. If during the course of demolition, bats of any species are discovered, then all work must cease and USFWS must be immediately contacted. If bats are identified as NLEBs, then additional steps will be taken to try and minimize impacts to the species. If the structure is safe to leave as is, then it will be left until after October 15, or until bats have stopped using the structure. If the structure is unsafe and poses a risk to human health and safety, the State ARNG will request the assistance of the USFWS in determining reasonable measures to exclude the bats immediately. If this is not possible, or bats are found to be using the structure during the maternity season when pups are not volant, the State ARNG will contact USFWS to discuss the most appropriate next course of action.
9. Water Quality BMPs

In conclusion, site-specific consultation with the local USFWS field office will often be needed to adequately assess the potential direct and indirect effects associated with construction projects.

However, across the range of the species **no effects** are anticipated if construction projects:

- Are located entirely (including staging areas, construction footprint) outside of NLEB suitable summer habitat **OR**
- Involve maintenance, alteration, or demolition of bridges/structures without any signs of bats

Some projects may occur near or within suitable habitat within the range of NLEB, but the project will result in **no effects or discountable likelihood of effects** even without the implementation of any avoidance or minimization measures. Based on the proposed project description and NLEB, these include:

- Activities completely within existing road surfaces (e.g., road line painting)

- Activities within existing ROWs or at existing facilities that contain suitable habitat but that do not remove or alter the habitat (e.g., mowing, brush removal)
- Wetland or stream protection associated with wetland mitigation without any suitable habitat clearing
- Are located in areas with negative NLEB P/A summer surveys²

Other projects may occur near or within suitable habitat within the NLEB range, and it will be necessary to implement conservation measures to avoid or minimize impacts to the point of insignificant/discountable for projects to be included in this programmatic consultation. Construction projects that involve any of the features listed below are not likely to adversely affect NLEBs.

- structure maintenance
 - during the active season that does not bother roosting bats in any way (e.g., activity away from roosts inside common rooms in structures, normal cleaning and routine maintenance)
- bridge maintenance
 - during the active season that does not bother roosting bats in any way (e.g., road paving, wing-wall work, work above that does not drill down to the under side of the deck, some abutment, beam end, scour, or pier repair)
- structure or bridge maintenance
 - outside the active season that does not alter roosting potential for bats
- tree removal
 - outside the active season (i.e., winter; see Table 3); AND
 - within 100 feet of existing road surfaces³ (this would include roads within cantonment areas or other state, local roads but does not include trails or other travel corridors in training areas)(no acreage limits);
 - or
 - projects located >100 feet of existing road surfaces of up to 10 acres⁴
 - that do not remove “documented” roosts or foraging habitat; AND
 - include any applicable lighting minimization measures; AND
 - implement standard water quality BMPs

E. Forest management. Forest management includes both even-aged (e.g., clearcutting or shelterwood) and uneven-aged (single tree or group selection) harvest methods to manage forests to support military training, timber production/health, and wildlife habitat creation/enhancement. Environmental conditions (e.g., wet or rocky soils), training requirements, and stand characteristics dictate harvest methods.

² Refer to <http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>

³ Refer to FHWA 2015 Biological Assessment for complete analysis of construction activities within 100 feet of existing road surfaces.

⁴ 10 acres is approximately 5% of home range of 200 acres.

Timber harvest operations will not occur during the active season of the NLEB without additional consultation. This will avoid any potential direct, adverse effects on NLEBs.

Removal of trees could have an indirect effect from loss of potential roosting and foraging areas. The degree of potential impact would be dependent on whether the removal is temporary (i.e., timber harvest, to include clearcuts) or permanent (construction). As stated in the proposed listing rule for NLEB (USFWS 2013), studies to date have found that NLEBs show a varied degree of sensitivity to timber harvesting practices and the amount of forest removal occurring varies by State. Therefore, assessing the indirect impacts of forest loss on NLEB must factor in the acreage of suitable forest habitat on ARNG sites, and the percentage of available habitat that would be temporarily or permanently lost. State ARNG will screen projects that require tree removal for forest management activities the same as identified for constructions. The guidelines for tree removals are:

1. Occur outside the active season (see Table 3); AND
 - within 100 feet of existing road surfaces⁵ (this would include roads within cantonment , state, local roads, paved roads, and developed hard packed roads, but does not include trails or other travel corridors in training areas)(no acreage limits);or
 - clearcuts or similar harvest treatments located >100 feet of existing road surfaces of up to 10 acres (10 acres is 5% of a 200 acre home range)
 - selective harvest or similar treatments that maintain roosting habitat have no acreage limits
2. not remove “documented” roosts and their associated foraging habitat.

By conducting timber harvesting operations during the inactive season and maintaining forest cover, the ARNG determines that timber harvest operations “may affect, but not likely to adversely affect” the NLEB.

For timber harvesting operations, the ARNG will implement sediment and erosion control measures, and promote site regeneration with native vegetation.

Conservation Measures:

1. Roost Tree Protection. No documented roost trees, including roosts identified in the future, will be felled for the lifespan of the roost, unless there is a human health and safety concern.
2. Roost Tree Avoidance. Clearcutting will not occur within 0.25 mi (250 m) and overstory roost tree removal within 100 meters of documented maternity roost trees without further consultation with the USFWS

⁵ Refer to FHWA 2015 Biological Assessment for complete analysis of construction activities within 100 feet of existing road surfaces.

3. Time of Year Restriction. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect roosting bats during non-hibernation seasons. Felling of trees in known summer habitat or suitable habitat where NLEB are assumed present must take place while most NLEBs are at the hibernaculum.
4. Snag Retention. All snags will be left in silvicultural treatments unless there is a safety concern for the contractor or the military units training in the stands (e.g., maneuver corridors), they pose a threat to any nearby structure, or unless the treatment is a salvage harvest or clearcut. As feasible, snags will be distributed and retained throughout the landscape.

Table 3: Active Season Dates for the Northern Long-eared Bat based on Table 1 of the Northern Long-Eared Bat Conference Guidance (USFWS 2014). **Individual State ARNG should confirm dates with their local USFWS Field Office.**

State/Region	Active Season
Maine	Contact FO
Vermont	Contact FO
Massachusetts	Contact FO
Connecticut	Contact FO
Minnesota	Apr 1-Oct 1
Michigan	Apr 1-Oct 1
Kansas	Apr 1-Nov 1
Indiana	Apr 1-Nov 15
Kentucky	Apr 1-Oct 15
Missouri	Apr 1-Nov 15
New Jersey	Apr 1-Nov 15
Virginia	Apr 1-Nov 15
Oklahoma	Apr 1-Nov 15
Arkansas	Apr 1-Nov 30

F. Prescribed burns. Prescribed fire is used to improve line-of-sight on ranges and observation points for direct and indirect firing, maintain grassland/open shrubland for open maneuver training, and to reduce fuel accumulation to minimize wildfire risk. It is also used as a tool to maintain ecological health of grassland and forested areas. As stated in the proposed listing rule (USFWS 2013), a U.S. Forest Service review of prescribed fire and its effects on bats generally found that fire had beneficial effects on bat habitat. The majority of prescribed burns on State ARNG property occur in grassland areas. Such burns will occur during the growing and dormant seasons. Based on the buffers established between grassland and/or open shrublands with forests, it is not anticipated that any growing season burns will generate the smoke or heat intensity that will adversely affect bats roosting in trees adjacent to the targeted burn area.

Prescribed fire is gaining acceptance as a means of restoring and perpetuating oak (*Quercus*) dominated ecosystems in the eastern U.S. (Dickinson et al., 2010). State ARNG installations may use prescribed fire to regenerate oak ecosystem, which may occur during the growing season and bat active period. For forest burns, exposure of tree roosting bats to carbon monoxide (CO) is unlikely to be a concern when fireline intensity is low (~1.5 m flame length) (Dickinson et al., 2010). However, heat exposure may cause harm to such bats and maintaining minimal flame length is not always feasible. To minimize the potential impacts of forest burns on NLEB, the State ARNG will conduct such burns outside the active season in known summer habitat or in suitable habitat where NLEB are assumed present (where adequate P/A surveys have not taken place).

To ensure the effects of prescribed burns are insignificant or discountable, the State ARNG will employ the following conservation measures for all prescribed burns during the active period:

1. Wildland Fire Management Plan. Inclusion of protocols to mitigate impacts to the NLEB within the site-specific Integrated Wildland Fire Management Plan to closely control where, when, and how fires are set. This helps to control where flames and smoke occur on the landscape. Because both flames and smoke could negatively impact bats, it is important to try and minimize potential impacts from both. If new maternity roosts are discovered near proposed burn sites, then burn plans may be written to include additional provisions that protect maternity roosts by diverting smoke or flames from the roost, when possible.
2. Time of Year Restriction. No burning near known summer habitat or suitable habitat where NLEB is assumed present will occur from during the active season to prevent smoke and possible fires from penetrating forested areas where bats may be present. Therefore, even if a prescribed fire enters a forested area, there should be no bats present.
3. Wet Lines. Outside of the restriction period, make use of naturally occurring firebreaks or if necessary, establish wet lines around forested areas to preclude fire from entering, to the maximum extent practicable, when a prescribed burn will be within 100 meters of known summer habitat or areas of suitable habitat where adequate surveys have not yet determined status of NLEB in the area.
4. Time of Day Restriction. Whenever possible, all efforts will be made to have all flames extinguished and smoke generation minimized by sunset to reduce potential direct impacts to foraging bats.

G. Single or multiple tree removal during active season. Removal of single, multiple, or cluster of trees that are ≥ 3 inches DBH may be necessary to support maneuver areas, construction sites, or because they may pose a risk to property or human life. During the active season, in areas where there are documented or

potential roost trees, the ARNG will conduct emergence surveys⁶ for signs of bats being present prior to removal of trees that do not pose a risk to human life or property. If no bats exit the tree, removal will occur the following day. If bats are roosting in such tree(s), removal will be delayed until the inactive season or the bats are gone. If such tree removal is preferred immediately, the applicable state ARNG will consult with their local USFWS field office.

In conclusion, removal of a few trees is either not likely to adversely affect NLEB (with negative survey results) or additional consultation will occur.

H. Hazard Tree Removal. If there are hazard trees that are considered an imminent threat to human life or loss of property and need to be removed during the active season, the State ARNG will remove such trees and inform the USFWS field office of the action only if any bats were observed exiting the tree or any dead or injured bats (of any species) located. If by radio telemetry or emergence surveys NLEB are known or suspected of roosting in such tree(s), the State ARNG in coordination with the ARNG Directorate will initiate emergency consultation per the procedures in accordance with 50 CFR 402.05.

I. Pesticide use. All pesticides will be applied in accordance with their label and applicable laws and regulations. State ARNG will regularly check Protection Bulletins on EPA's Endangered Species Protection Program (ESPP) website to determine whether pesticide use in a certain geographic area may affect NLEB. Limitations on pesticide use will be implemented as required to protect NLEBs in all areas. Application of pesticides in and around buildings or other structures are not likely to have any effect on NLEB. If NLEBs are found roosting in a building, then pesticides will be used sparingly and no foggers will be used in and around the occupied building.

There will be no aerial application of pesticides within or bordering NLEB habitat during the active season without first consulting with the USFWS. Any broadcast application of pesticides will be done at least 30 meters from any known or suspected roost areas. All pesticide use within forested areas will be targeted, plant-specific applications. No trees >3 inches DBH will be targeted in areas of known or suspected roost trees unless known not to be a roost tree and removal is necessary to maintain range conditions, or they are encroaching on high hazard impact areas.

Within or around areas of known or suspected NLEB roost trees, ARNG sites will avoid application of pesticides in gusty winds or when constant wind speeds exceed five (5) MPH. This will further reduce the risk of sprayed or broadcast pesticides from drifting into roost tree areas or entering other non-target areas such as water bodies.

Conservation Measures for pesticide use:

1. Only pesticides registered by the EPA and applicable State may be applied and only in accordance with their label.

⁶ Follow 2015 Indiana Bat Summer Survey Guidance

2. Aerial applications will occur between the hours of sunrise and one hour before sunset. This will protect foraging bats in undiscovered foraging areas from direct exposure.
3. Whenever possible, herbicides that have low toxicity to mammals will be utilized with the tow behind power blowers. Herbicides that may be somewhat toxic to mammals will be mixed and applied at a rate, in accordance with the label, that should minimize any potential exposure concerns.
4. Application of pesticides from ground mounted vehicles (i.e., ATVs, tractors) that spray chemicals directly onto the ground and do not result in broad dispersal will be conducted at least 100 ft (30 m) from documented roost trees (including roosts identified in the future).
5. Application of pesticides that result in broad dispersal (e.g., tow behind power blowers) will be conducted at least 250 ft (76 m) away from documented roost trees (including roosts identified in the future).
6. Pesticides applied from tow behind power blowers will use appropriate nozzles and drift control additives, and will be applied using low pressure to reduce drift and potential swirling motion from the blower. All efforts will be made to only spray 10 feet from ground level or below.
7. Pesticides will not be applied outdoors when the wind speed exceeds 8 mi/hr for all applications except power mist blowers. Pesticides applied via power mist blower will only be applied with wind speeds <5 mi/hr. This is to reduce the risk of pesticide drift, which could impact water quality or non-target areas. Care will be taken to make sure that any spray drift is kept away from non-target areas and individuals.
8. If a bat colony is found roosting in a building, then insecticides will be used sparingly and no foggers will be used. This will minimize impacts to roosting northern long-eared bats if they are found within a building.

J. Vertebrate Pest Control

ARNG facilities may have pest control complaints, including bats, moles (order Insectivora), raccoons (*Procyon lotor*), squirrels (order Rodentia), skunks (order Carnivora), and woodchucks (order Rodentia). Each issue is handled on a case-by-case basis depending on the pest species and the situation. When possible, wildlife will be deterred from areas by removing features that are attractive to the animals (e.g. eliminating potential food/nesting sources, plugging openings into buildings, etc.). If deterrence efforts are ineffective, then it may be necessary to set live traps and relocate or euthanize animals, or use lethal control methods such as trapping, shooting, and/ or chemical control. All pest control efforts are performed in accordance with the most current Animal Welfare guidelines (<http://awic.nal.usda.gov>).

Lethal traps are primarily used for rodents and moles. Adhesive traps are allowable for rodent and insect control in buildings, however, if placed incorrectly, they may inadvertently capture bats. Both adult and juvenile bats are susceptible to capture in glue traps which could result in injury or mortality. To prevent accidental capture of bats, no adhesive traps can be placed in such a manner that they could capture bats. Glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur. If bats are present within the building, then live traps for rodents will be used instead of glue traps.

If there are large scale infestations of rodents and moles, chemical means may be necessary to effectively manage the outbreak. Bait stations will not be placed where it may be accessible to children or pets and must be monitored to prevent access to non-target animals.

In conclusion, no impacts to NLEB are anticipated from vertebrate pest control measures aimed at other target species. Impacts to NLEB from bat control are not anticipated given the conservation measures. Additional site-specific coordination will occur with local USFWS field office staff for any permanent exclusions of bat colonies.

Conservation Measures for Vertebrate Pest Control

1. No Lethal Control. No lethal control methods are permitted for bats unless there is a suspected human health risk for exposure to rabies or other disease. If individual bats are in buildings and there is no evidence of maternity use, then all efforts will be made to safely capture and release individual bats. Or, the bats will be excluded by establishing one-way valves over the roost's exit (if feasible).
2. Time of Year Restriction for Exclusion. The exclusion will only be done during times of the year when pups are not present or when they are volant (i.e., August - early May). The time of year restriction will minimize the risk of separating mothers from non-volant young, so it will prevent potential pup mortality during exclusion activities. Sealing cracks and crevices in buildings will also be done during the late fall or early spring. Sealing cracks and crevices prevents bats from entering a building and reduces human/bat conflicts.
3. The ARNG will coordinate with the local USFWS field office prior to any permanent exclusion activities at sites with known bat colonies.
4. Adhesive Trap Restrictions. No adhesive traps used for rodents or insects will be placed in such a manner that they could capture bats—glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur.

K. Recreational Activities. Outdoor activities such as, but not limited to, hiking, hunting, off-road vehicles (ORVs), and camping may occur on sites where NLEB are

known to occur or that have suitable habitat for the NLEB. The intensity and noise generated by these activities are likely to have effects that are insignificant or discountable to NLEB.

Roosting

Hunting activities have the potential to directly affect roosting NLEBs if a hunter should place a stand in an NLEB roost. Hunters are unlikely to place tree stands in snags due to the instability of snags and the risk that the tree may fall. Thus, NLEBs roosting in standing dead trees are not likely to be adversely affected by tree stands during the non-hibernation seasons. Tree stands may disturb roosting Indiana bats or damage roosts that are located within crevices of live trees or are in a dead tree limb of a live tree. Installment of a tree stand may cause NLEBs to abandon the roost. Hunting primarily occurs in the fall-winter when NLEBs are moving to the hibernaculum or are already in the hibernaculum, so NLEBs are more likely to roost alone or in small groups within trees or are within the hibernaculum. Since hunting is typically hunted in seasons when NLEB are less likely to be present, the use of tree stands may affect but is not likely to adversely affect roosting NLEBs.

Hunting activities also have the potential to directly affect roosting NLEBs if a hunter should shoot at game flying through the air or in a tree and the shot hits a tree containing roosting NLEBs. The likelihood of this happening is expected to be extremely rare, given the combination of occurrences that need to come together (i.e., the hunter being in a location suitable for NLEBs to be roosting and game birds or waterfowl to be flying, the hunter shooting at the right angle into a tree to hit and kill an Indiana bat, etc.). Additionally, most NLEBs would presumably be within the hibernaculum when the majority of hunting is conducted (October-February). Hunting may affect undiscovered roost sites. However, hunting activities are unlikely to directly affect roosting NLEBs since the combination of events that must occur are unlikely to happen.

There is potential that individuals hunting game may shoot into a forested area which has NLEB roosts. Fired projectiles may strike a NLEB roost and remove bark from the tree, rendering the roost unsuitable for future use. Snags are ephemeral in nature and frequently slough bark. NLEBs are known to frequently switch roosts assumed because of the fleeting nature of snags. Thus indirect effects are discountable.

All other recreational activities are expected to have no effects on roosting NLEBs.

Foraging

Skeet shooting could potentially result in injury or mortality of a foraging NLEB if skeet shooting was conducted in extreme early morning or at sunset when NLEBs may be active. However, a conservation measure is in place to restrict the hours of

operation for the skeet range, so it is not operational during times when NLEBs are foraging.

Subsequently, foraging NLEBs are unlikely to be adversely affected by operations at the skeet range and impacts are discountable.

Legal use of ORVs should have no effects to NLEB as ORV's will remain on the road/designated trails at all times and will not damage vegetation in the area. However, unauthorized ORV use off-trail may damage vegetation which can expose the soil to the elements and could lead to increased soil erosion. Soil erosion may lead to declines in water quality. Lower water quality may reduce aquatic insect availability, which are prey for Indiana bats. In addition, streams/wetlands may be converted overtime into mud pits that are unsuitable for drinking by Indiana bats. Due ample water and natural habitat available on ARNG facilities, it is unlikely that ORV use will adversely affect foraging NLEBs. Thus, effects are discountable.

All other recreational activities are expected to have no known direct effect on foraging NLEBs.

In conclusion, the majority of recreational activities with the exclusion of ORV use, hunting, and skeet shooting, are expected to have no effects on NLEBs. Given the conservation measures, recreational activities may affect but are not likely to adversely affect NLEBs.

The following conservation measures will be implemented to ensure certain recreational activities will NLAA NLEB:

1. Hunting hours of operation during the active season will be no earlier than sunrise and no later than sunset.
2. Skeet range hours of operation during the active season will be no earlier than sunrise and no later than sunset.
3. ORVs will only be allowed on established trails during the active season.

VI. Additional General Conservation Measures.

This section identifies the Conservation Measures (CM) proposed throughout this document that are considered necessary to either avoid adverse affects or to ensure the expected effects are beneficial, insignificant or discountable. Additional CMs are also proposed to promote the conservation of the NLEB.

- The State ARNG will conduct NLEB surveys in accordance with the Indiana Bat Summer Survey Guidance on applicable State ARNG installations and facilities as funding allows.

- The State ARNG will strive to initiate cooperative management efforts with adjacent landowners, if such efforts would complement installation NLEB conservation initiatives and/or support mission implementation.
- The State ARNG will initiate the promoting of or seek participation in cooperative NLEB management strategies, solutions, and efforts with other federal, state, and private organizations and landowners in the region.
- State ARNG installations with INRMPs will continue to manage their forests in accordance with their INRMP to retain habitat and biological diversity, and long term sustainability of the forest ecosystem.
- If applicable, implement land management activities in accordance with final 4(d) rule for the NLEB.

VII CONCLUSIONS

A. Northern Long-Eared Bat. Based on the State ARNGs' intent to follow USFWS guidance on NLEB management, carry out actions as described in Section V, and to implement the conservation measures identified in Section VI, the ARNG Directorate has determined that implementation of actions IAW with this document **“may affect, but not likely to adversely affect”** the NLEB.

B. Request of Concurrence. The ARNG Directorate requests that the USFWS review our findings and determinations stated herein and provide a letter of concurrence. If necessary, the applicable State ARNG(s) will initiate site-specific consultation with their USFWS Field Office on activities that are not included in this BE or if there is additional site-specific information to suggest alternative conservation measures.

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APPENDIX A: Glossary

action area - all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action.

active season – the time period when bats are not in hibernation. This includes spring emergence, young rearing, and breeding (swarming) and is typically from April through October (specific dates are defined by geographical area).

emergency - An emergency is a situation involving an act of God, disasters, casualties, national defense or security emergencies, etc., and includes response activities that must be taken to prevent imminent loss of human life or property.

forest fragmentation - the process by which large, unbroken tracts of forest are split into separate, smaller parcels of forest.

hibernaculum (plural **hibernacula**) - a site, usually a cave or mine, where bats hibernate during the winter (see suitable habitat).

is likely to adversely affect – the appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial.

known habitat - refers to suitable summer or winter habitat located within a determined distance of an occurrence record for a bat species. Distances will vary based on species and record type (e.g., maternity, swarming, winter, etc.).

- **spring staging/fall swarming:**
 - All suitable habitat located within 5 miles of a documented hibernaculum;
- **summer:**
 - All suitable habitat located within 3 miles of a documented NLEB bat capture record;
 - All suitable habitat located within 1.5 miles of a documented maternity roost tree (unless site-specific foraging data is available);
 - “Documented” roost trees and foraging – this is a subset of known habitat. These are the trees and patches of suitable habitat NLEB have been tracked to during radio tracking. In some cases, there is sufficient information to determine core roosting and/or foraging areas and estimate home ranges.
- **winter:**

- Hibernacula with known NLEB occurrences or is otherwise identified by the USFWS as important to future NLEB recovery efforts.

maternity colony - a group of reproductively active female bats and their young that occupy the same summer habitat. Males may also occur in maternity colonies. The maternity colony is comprised of both primary and alternate maternity roost trees.

maternity roost - a summer roost, usually a tree, used by reproductively active female bats and their young (males may also roost there). **They can be described as “primary” or “alternate” based upon the proportion of bats in a colony consistently occupying the roost site or how often it is used.**

may affect - the appropriate conclusion when a proposed action may pose any effects on listed species or designated critical habitat.

no effect - the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or designated critical habitat.

not likely to adversely affect (NLAA) - the appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. **Beneficial effects** are contemporaneous positive effects without any adverse effects to the species. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Discountable effects** are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

occupied habitat - known and suitable habitat that is expected or presumed to be in use by bats at the time of the project.

population - a group of bats occupying a specific geographic area.

recruitment - the number of young-of-the-year bats entering a population each year; the process by which juvenile bats enter the population.

reproductively active female - a pregnant, lactating, or post-lactating adult female bat.

roost tree - any tree in which bats roost (see suitable roost tree).

snag - a standing dead (or mostly dead) tree, generally with <10 percent living canopy.

staging - the departure of bats from hibernacula in the spring, including processes and behaviors that lead up to departure (see suitable habitat).

suitable habitat - Summer and/or winter habitat that is appropriate for use by NLEB (may be known or unknown in terms of documented use). See most recent summer survey guidance)

- **winter** (hibernacula) is restricted to underground caves and cave-like structures (e.g., abandoned mines, railroad tunnels). These hibernacula typically have large passages with significant cracks and crevices for roosting; relatively constant, cooler temperatures (0-9 degrees C) and with high humidity and minimal air currents.
- **summer** for NLEB consists of the variety of forested/wooded habitats where they roost, forage, and travel. This includes forested patches as well as linear features such as fencerows, riparian forests and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree and are less than 1000 feet from the next nearest suitable roost tree, woodlot, or wooded fencerow. May also include structures for roosting (e.g., barn).
- **spring staging/fall swarming** for NLEBs consists of the variety of forested/wooded habitats where they roost, forage, and travel within 5 miles of a hibernaculum. This includes forested patches as well as linear features such as fencerows, riparian forests and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree and are less than 1000 feet from the next nearest suitable roost tree, woodlot, or wooded fencerow.

suitable roost tree - any tree in which bats roost when they emerge from the hibernacula.. Females gather in maternity colonies and males may roost singly or in small groups.

During summer NLEBs roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and snags, typically ≥ 3 inches dbh.

survey - a method of sampling, such as mist netting, that provides data concerning the presence/absence of bats at a site; also, the act of enumerating the bats hibernating in a cave or mine.

NLEB summer survey guidance can be found at <http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>

swarming - A phenomenon in which, during late summer and autumn, numerous bats are observed entering and exiting entrances to caves and mines, but few, if any, of the bats may roost within the site during the day. Swarming probably is related to fall breeding activities and locating potential hibernation sites. (See suitable habitat).

unoccupied habitat - refers to known or suitable habitat not expected to be in use by bats at the time of impact.

take - Take is defined in Section 3 of the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

volant - able to fly.