APPENDIX T

SURVEY FOR THE FEDERALLY ENDANGERED INDIANA BAT *(Myotis sodalis)*, VIRGINIA BIG-EARED BAT *(Corynorhinus townsendii virginianus)*, AND RUNNING BUFFALO CLOVER *(Trifolium stoloniferum)* AT THE PROPOSED STURGEON CREEK AND WAR FORK RESERVOIR SITES

SURVEY FOR THE FEDERALLY ENDANGERED INDIANA BAT (*MYOTIS SODALIS*), VIRGINIA BIG-EARED BAT (*CORYNORHINUS TOWNSENDII VIRGINIANUS*), AND RUNNING BUFFALO CLOVER (*TRIFOLIUM STOLONIFERUM*) AT THE PROPOSED STURGEON CREEK AND WAR FORK RESERVOIR SITES IN JACKSON COUNTY, KENTUCKY

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I. INTRODUCTION

Eco-Tech, Incorporated was contracted by Mangi Environmental Group Incorporated, to provide field surveys for the federally endangered Indiana bat (*Myotis sodalis*), Virginia big-eared bat (*Corynorhinus townsendii virginianus*), and running buffalo clover (*Trifolium stoloniferum*) at the proposed Sturgeon Creek and War Fork reservoir sites, Jackson County, Kentucky (see attached project location maps).

Indiana bats have been documented during the autumn and winter (hibernating) in Jackson County. A few hibernacula are located just downstream of the War Fork site. Virginia big-eared bats have been documented year around in Jackson County and they use some of the caves downstream of the War Fork site during both summer and winter. Running buffalo clover is known from a single site in Jackson County, along Little Clover Creek.

II. SPECIES STATUS, DISTRIBUTION, AND NATURAL HISTORY

A. Species Status

Indiana Bat

The Indiana bat was listed as an endangered species on March 11, 1967 by the United States Fish and Wildlife Service (USFWS). However, the Indiana bat did not receive protection until enactment of the Endangered Species Act (ESA) in 1973 (Public Law 93-205), as amended. Several years following its listing, an Indiana bat recovery plan was developed by biologists (i.e., the recovery team), which outlines habitat requirements, critical habitat, potential causes for declines, and recovery objectives. The recovery plan was reviewed and published by the USFWS in 1983 (Brady *et al.* 1983). Currently, the Indiana bat recovery team is utilizing new information and making revisions to the recovery plan (USFWS 1999).

Although most of the hibernacula that contain large populations of Indiana bats have been protected, the species still appears to continue a 5% decline in range-wide population every two years. Currently, researchers are focusing studies on summer habitat, heavy metals, the influence of pesticides, and genetic variability within the species to establish causes of the continuous declines in range-wide populations.

Virginia Big-eared Bat

The Virginia big-eared bat was listed as an endangered species on November 30, 1979 by the USFWS. A recovery plan was published in 1984 (Bagley 1984). Human disturbance of both summer and winter (hibernacula) caves appears to be the greatest concern. Disturbance during hibernation causes bats to lose stored fat reserves, and repeated disturbances can cause the bats to die before spring when insects are again available. If female bats are disturbed during the maternity season, they may drop their young to their deaths or the whole colony may abandon a roost for a less suitable location.

Running Buffalo Clover

When running buffalo clover was proposed for listing as an endangered species on March 10, 1986, it was only extant at two sites in West Virginia (Bartgis 1985, USFWS 1986). Subsequently, this species was listed as federally endangered on June 5, 1987 (USFWS 1987).

Since that time remnant populations have been found in several other states within the historical range. Running buffalo clover, a member of the pea family (Fabaceae), is one of four species of clover that are native to the eastern United States.

B. Distribution

Indiana bat

The Indiana bat's range includes most of the eastern United States. It occurs from Oklahoma, Iowa, and Wisconsin east to Vermont, and south to northwestern Florida (Barbour and Davis 1969). The majority (85%) of the range-wide population hibernates in nine Priority 1 hibernacula (sites that contain more than 30,000 individuals), which are located in Indiana (three sites), Kentucky (three sites), and Missouri (three sites). Some Indiana bats migrate long distances from their hibernacula to find suitable summer habitat to raise offspring. Until recently it was thought that the entire species, with the exception of some males, migrated north and west from their hibernacula to forested areas in Missouri, Indiana, Kentucky, Iowa, Ohio, and Michigan during the summer (Barbour and Davis 1969). This migration pattern is illustrated by Barbour and Davis (1969), with summer band recoveries of both male and female bats banded at Carter Caves, Carter County, Kentucky, from near the Wayne National Forest in southern Ohio. Currently, reproductive Indiana bats have been documented from the following states: Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. While reproductive Indiana bats have not been documented in Jackson County, there are many winter records and it is likely that some bats remain in close proximity to the caves during the summer.

Virginia big-eared bat

The Virginia big-eared bat, reclassified from the genus *Plecotus* (Tumlison and Douglas 1992), is an endangered subspecies of Townsend's big-eared bat (*C. townsendii*). Virginia big-eared bats occur as isolated populations in eastern Kentucky, eastern West Virginia, southwestern Virginia and northwestern North Carolina (Barbour and Davis 1969, Slone and Wethington 1998). In Kentucky they have been documented from nine counties (Estill, Jackson, Lee, Menifee, Morgan, Powell, Rockcastle, Rowan, Wolfe). Virginia big-eared bats prefer caves in karst regions (i.e., areas underlain with limestone bedrock and many caves and sinkholes) dominated by oak-hickory forest. Virginia big-eared bats are nonmigratory bats and seldom move far from their home roosting site. However, Virginia big-eared bats do readily move from one roost to another within their home range. The longest movement recorded for Virginia big-eared bats in Kentucky and West Virginia averaged about 40 miles (Barbour and Davis 1969).

Running Buffalo Clover

Until the mid-1800's this clover ranged from eastern Kansas to West Virginia and was apparently abundant in certain locations, such as the Bluegrass Region of Kentucky. It is currently known only from scattered remnant populations in West Virginia, Kentucky, Ohio, Indiana, and Missouri.

C. Natural History

Indiana Bat

Winter Habitat

Indiana bats use sloughing bark, and cracks in dead, partially dead, and live trees as day roosts during autumn (Kiser and Elliott 1996, MacGregor *et al.*1999). Autumn roost trees range from 4.7 to 26.4 inches in diameter at breast height (dbh) and occur in forested, semi-forested, and open habitats (Kiser and Elliott 1996). Depending on local weather conditions, Indiana bats normally enter the hibernaculum in October and remain there through April (Hall 1962, LaVal *et al.* 1977, LaVal and LaVal 1980). Indiana bats hibernate primarily in caves, but occasionally have been found in abandoned mines. An abandoned iron mine in Missouri historically contained 139,000 Indiana bats. Most of the hibernacula with large colonies are located in Arkansas, Illinois, Indiana, Kentucky, Missouri, New York, and Tennessee (Brady *et al.* 1983, USFWS 1999). Smaller hibernacula are located in Alabama, Connecticut, Florida, Georgia, Iowa, Maryland, Massachusetts, Michigan, Mississippi, New Jersey, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Vermont, Virginia, and West Virginia (ibid., Bryan *et al.* 1994).

According to Barbour and Davis (1969), temperature and relative humidity are important factors in the selection of hibernation sites. During the early fall Indiana bats roost in warm sections of caves and move down a temperature gradient as temperatures decrease. In mid-winter Indiana bats tend to roost in portions of the cave where temperatures are cool (37 to 43 F). Relative humidity in Indiana bat hibernacula tends to be high, ranging from 66% to 95% (Barbour and Davis 1969). Prior to entering the hibernacula in autumn, swarming occurs at the entrances of either the hibernacula (Cope and Humphrey 1977) or other caves located near the hibernacula (LaVal *et al.* 1977, LaVal and LaVal 1980). Swarming usually lasts for several weeks (August - September) and mating occurs toward the end of this period. Mating females usually enter directly into hibernation, whereas males may remain active through the end of November. Adult females store sperm through the winter thus delaying fertilization until early May. During April and May the majority of the Indiana bat population will leave the cave areas and find suitable summer habitat. Some male and non-reproductive female Indiana bats will remain near the hibernacula during the summer. Females usually start grouping into larger nursery colonies by mid-May and give birth to a single young between late June and early July (Easterla and Watkins 1969, Humphrey *et al.* 1977).

Summer Habitat

Maternity colonies have been found under sloughing bark of dead, partially dead, and live trees in upland and lowland forests (Cope *et al.* 1974, Humphrey *et al.* 1977, Gardner *et al.* 1991). Such colonies are usually located in large-diameter, standing dead trees, with direct exposure to sunlight (Callahan *et al.* 1997). Maternity roosts can contain over 350 individual bats during July and August (Kiser *et al.* 1998). During Callahan *et al.*s (1997) study, he arranged roost trees into two groups depending on the intensity of use and size of the colony that used each tree. Callahan (1993) classified any tree that was used more than once by greater than 30 bats each time as a primary roost tree, and any tree with less than 30 bats or used only once as an alternate roost tree. The primary roost trees had an average dbh of 22.4 inches, while open snags used as alternate roosts had an average dbh of 20.9 inches (Callahan *et al.* 1997). Indiana bats require

more than one roost tree to fulfill their needs during the summer (Callahan *et al.* 1997). In Michigan, Indiana bats used two to four different roost trees during one season (Kurta and Williams 1992). Indiana bats are known to roost in several different species of trees, but they appear to select roost trees by the structural composition of each tree. Therefore, it is difficult to determine if one particular species of tree is more important than others. Twelve tree species have been listed in the Habitat Suitability Index Model (Romme *et al.* 1995) as primary species (class 1 trees). The trees listed by Romme *et al.* (1995) include silver maple (*Acer saccharinum*), shagbark hickory (*Carya ovata*), shellbark hickory (*C. laciniosa*), bitternut hickory (*C. cordiformis*), green ash (*Fraxinus pennsylvanica*), white ash (*F. americana*), eastern cottonwood (*Populus deltoides*), red oak (*Quercus rubra*), post oak (*Q. stellata*), white oak (*Q. alba*), slippery elm (*Ulmus rubra*), and American elm (*Ulmus americana*). In addition to these species, Romme *et al.* (1995) listed sugar maple (*A. saccharum*), shingle oak (*Q. imbricaria*), and sassafras (*Sassafras albidum*) as class 2 trees. The class 2 trees are those species believed to be less important, but still have the necessary characteristics to be used as roosts. Trees normally used as primary roosts are dead and have a diameter at breast height (dbh) greater than 12 inches (Romme *et al.* 1995). However, in some rare cases primary roosts have been found in large hollow live trees. Kurta *et al.* (1993) found a primary roost in a 22 inch dbh hollow sycamore (*Platanus occidentalis*) in Michigan. Roost trees often provide suitable habitat as maternity roost for only a short period of time. However, bats will use them in consecutive years, if they remain standing and have sloughing bark (Gardner *et al.* 1991, Callahan *et al.* 1997).

Food Habits

Historically, the Indiana bat was thought to prey primarily on moths (Lepidoptera), beetles (Coleoptera), true flies (Diptera), and caddisflies (Trichoptera) (Belwood 1979, Brack 1983, Brack and LaVal 1985). During a study by Belwood (1979), the primary insects consumed by females and juveniles in southern Indiana were Lepidoptera (57%), Diptera (18%), and Coleoptera (9%). Belwood's information was very similar to a three year study conducted by Brack (1983) throughout Indiana. Brack (1983) found that Indiana bats also consumed Lepidoptera (48%),Coleoptera (24%), and Diptera (8.5%). However, he found Trichoptera (9.8%) to be an important food source. Recent studies by Lee (1993) and Kurta and Whitaker (1998) found the same four insect orders were consumed by Indiana bats in central/northern Indiana and in Michigan. However, these studies showed that Indiana bats preyed much more on caddisflies in central/northern Indiana and in Michigan. The female Indiana bats in central and northern Indiana consumed 40% Lepidoptera, 29% Trichoptera, 13% Coleoptera, and 9% Diptera (Lee 1993). The most recent Indiana bat food habits study was conducted in Michigan at the northern limits of the species range. These bats consumed primarily Trichoptera (55.1%) and Diptera (25.5%) which have aquatic larvae (Kurta and Whitaker 1998). These authors hypothesized that Indiana bats in northern portions of their range feed more on aquatic insects than southern populations because they foraged primarily over streams and wetlands.

The only food habits information from Kentucky for Indiana bats is from Jackson County. Kiser and Elliott (1996) conducted a study to determine the food habits of male Indiana bats at a cave entrance during autumn. During autumn in 1994 and 1995, male Indiana bats consumed primarily Lepidoptera (28.5% and 34.0%), Coleoptera (15.9% and 40.2%), Homoptera (15.3% and 4.5%), and Diptera (28.8 % and 18.8%) (Kiser and Elliott 1996). The increase in

consumption of snout beetles (Coleoptera: Curculionidae) during the 1995 samples indicates that Indiana bats are opportunistic foragers.

Indiana bats forage primarily in forested habitats (Cope *et al.* 1974, Humphrey *et al.* 1977, LaVal *et al.*1977, Belwood 1979), but they will also forage in edges of forests and croplands, fallow fields, and areas of impounded water (Gardner *et al.* 1991). Indiana bats may use four different foraging areas during a nightly foraging bout (Murray 1998). Indiana bats use the same travel corridor each night to move from the roost tree to foraging areas. It has been documented that Indiana bats may travel up to three miles from their summer roosts to summer foraging areas and will visit these same areas each night. A pregnant female captured near Morehead, Kentucky maintained a systematic travel pattern to reach an upland pond in a shelterwood-cut (J. MacGregor and J. Kiser, unpublished data). This bat arrived at the pond and adjacent woods within a couple of minutes each night that it was tracked. Reproductively active females traveled a maximum mean distance of 1.5 miles from their roost trees to foraging areas in Illinois (Gardner *et al.* 1991). During a recent study by Pruitt *et al.* (1995) at the Jefferson Proving Ground (JPG), Jefferson County, Indiana, reproductive female bats were found to travel a mean distance of 1.7 miles from their original capture sites to their roost trees. Also at JPG, a male traveled 0.4 mile from the capture site to its roost; this distance is less, but similar to the distance of 0.7 mile found by Gardner *et al.* (1991) for males in Illinois.

Virginia big-eared bat

Winter and Summer Habitat

Virginia big-eared bats roost in caves during both the summer and winter. Caves used by these bats are typically located in karst regions dominated by oak-hickory or beech-maple-hemlock forests (Barbour and Davis 1969). Virginia big-eared bats hibernate in caves and mines where temperatures are 55□ F or less, but generally above freezing. They have been found hibernating in temperatures as low as 28.5□ F (Barbour and Davis 1969). In Kentucky and West Virginia, Virginia big-eared bats hibernate solitarily or in tight clusters of several hundred individuals. Winter colonies are usually larger than summer colonies and are composed equally of males and females, whereas summer colonies are smaller and divided into bachelor and maternity colonies (Barbour and Davis 1969).

Food Habits

Virginia big-eared bats are believed to feed primarily on small moths (micro-lepidoptera). They have also been found to consume other insects, including representatives of Neuroptera, Coleoptera, Diptera, and Hymenoptera (Hamilton 1943, Ross 1967, Whitaker *et al.* 1977). Virginia big-eared bats forage along canyon walls (Caire *et al.* 1984), on mountain slopes, forest edges along intermittent streams (Clark *et al.* 1993), and in old fields (Dalton *et al.* 1986, 1989; Burford and Lacki 1995). Distances traveled from roosts sites to foraging areas tend to vary throughout their range. During a recent study by Adam *et al.* (1994) in the Daniel Boone National Forest, Kentucky, reproductive female bats were found to travel distances of 0.5 to 0.71 mile from their roosting site to foraging areas. These distances are smaller than estimates for the Virginia big-eared bat in Virginia where traveling averaged `2 miles (Dalton *et al.* 1986, 1989).

As to date a paucity of information exists of the breeding biology of the Virginia big-eared bat. Most of what is known is based on a single study of a similar species (*Corynorhinus rafinesquii*)

by Pearson *et al.* (1952). Breeding among Virginia big-eared bats starts in early October and does not peak until late November into early February. Maternity colonies begin to form in late April and early May. Soon after maternity colonies form females give birth to a single young, usually from late May into early June. However, dates vary considerably in different colonies and in different years. Variability is most likely due to several factors; bats in colonies come from different hibernation sites, many arrive at different times, cold temperatures delay development and yearling bats often give birth later than older bats (Barbour and Davis 1969).

Running Buffalo Clover

The preferred habitats for running buffalo clover are old trails, traces, and roads; grazed bottomlands, low moist forests, successional areas in mesic forests, streambanks, lawns, shoals, and cemeteries with native vegetation, with well-drained and mesic soils and filtered to partial light (Kentucky State Nature Preserves Commission [KSNPC] 1998). What all these different habitats have in common is moderate, periodic disturbance such as light grazing, animal trails, or even occasional mowing. Running buffalo clover is a perennial, forming runners or stolons that allow it to spread and form new plants. It also spreads by seeds. Flowering occurs from April to June and the seed heads are visible until August. It has a pair of leaves on the flower stalk, which distinguishes it from most other species of clover.

III. STUDY AREA

Sturgeon Creek and War Fork study areas are located in northeast Jackson County in Kentucky. The project areas are situated within the southern reaches of the Kentucky River Basin. Sturgeon Creek is a direct tributary of the Kentucky. War Fork is a headwater tributary of Station Camp Creek which flows directly into the Kentucky River.

Both Sturgeon Creek and War Fork are located within the Cumberland Plateau Section of the Appalachian Plateaus Province. This region lies within the mixed mesophytic forest region (Braun 1950). White oak-hemlock, mixed oak, and oak- hickory forest are common on the gentle to steep slopes of this region. In areas where streams have cut through the surface rock, deep gorges have formed with numerous rock houses. In these deep gorge areas hemlock-mixed mesophytic forest and hemlock-rhododendron communities are common.

IV. METHODS

A. Mist Net Site Selection

The methods used to conduct summer habitat field surveys for Indiana bats follow the mist netting guidelines (Appendix II) in the *Agency Draft Indiana Bat (Myotis sodalis) Revised Recovery Plan* [United States Fish and Wildlife Service (USFWS) 1999]. The recovery plan (page 53) states that there should be one net site per kilometer (0.6 mile) of stream and two net sites per square kilometer (247 acres) of forested habitat. Using these guidelines it was determined that 26 mist net sites would be required at the Sturgeon Creek sites and nine (9) net sites at the War Fork site.

Topographic maps and personal communications with land owners and Forest Service employees were used to identify mist net sites. Mist net sites consisted primarily of stream

corridors, but also included gravel and dirt roads (especially those with water holes or road ruts), trails, camping areas, ponds, openings into the forest, and rock houses. The study areas provided excellent roosting and foraging habitat for Indiana bats, as well as mist net sites where bats could be captured. Biologists used several parameters to evaluate each potential mist net site (discussed in next section).

B. Mist Net Survey

Each mist net site consisted of at least one net set where a net set is one to four mist nets hung between two poles. Poles are 10 to 30 feet high and have ropes affixed to them to raise and lower the nets. These net sets are located so that no individual set would interfere with the other set (at least 100 feet apart). The mist nets used have a mesh size of 1.5 inches, are constructed of 50 denier/2-ply nylon, and have a length of nine (9) to 60 feet, depending on the corridor width. The bottom of the mist net was lowered to the water surface to prevent bats from flying under the nets while drinking water. Nets are tended from dusk (9:00 p.m.) until 2:00 a.m. local time each night or until weather conditions precluded further mist netting. All mist nets were checked for bats every 15 to 20 minutes. Parameters used for selecting exact net locations included: access, canopy closure, travel corridors, size and quality of the adjacent habitat, and the presence of water.

Access is the distance that netting equipment would need to be carried from the vehicle to the exact net locations. **Canopy closure** over a flight corridor increases the chances of capture because it prevents bats using the corridor from flying over the nets. A well defined **travel corridor** (such as a stream, road, or trail) with little interference from dense shrubs or subcanopy trees but with some canopy closure is where nets are set. Because Indiana bats have an aversion to major highways and require a relatively large woodland that contains trees with sloughing bark, **size and quality of the adjacent habitat** is important to the species. Previous experience has demonstrated that the **presence of water** at the net site increases the use of the area by bats. Bats often fly low over pools in streams and road ruts in woodlands to obtain water while foraging.

All bats captured were carefully removed from the net. Once bats were removed from mist nets they were identified to species and placed into a cloth bag to collect guano. All bats were banded with either Hughes celluloid bands (2.3 mm) or Lambournes metal rings to identify them if they were caught again that night or encountered during other studies. The band number, species, sex, forearm length, weight, reproductive condition, age, mist net site, and time of capture were recorded. All bats were released unharmed at the point of capture. No bats were injured, killed or retained as specimens during this project. Hair and guano samples were collected from many of the northern long-eared and little brown bats captured. The hair and guano samples will be sent to the USFWS, so they can be used in a pesticide and heavy metal research project. Several bats were photographed for documentation prior to release.

C. Cliffline Survey

Extensive field surveys of the rock oucrops, rock houses/shelters, rock faces, and clifflines at the sites were conducted during both winter and summer to determine whether they provided roosting habitat for Virginia big-eared bats. Special attention was given to locating unknown caves or abandoned mine portals so that they could be evaluated for potential rare bat habitat.

D. Running Buffalo Clover Survey

Field surveys for running buffalo clover and/or running buffalo clover habitat were conducted concurrently with mist net surveys and cliffline surveys. Running buffalo clover habitat was evaluated using information from numerous technical reports and published articles as well as our extensive field experience with this species.

E. Anabat Analysis

Insectivorous bats use high frequency echolocation calls, mostly above the frequency range audible to humans, to navigate and hunt their prey during the night. The calls of most bats are produced in the ultrasonic range (above 20 kHz). These sounds provide an opportunity to survey and identify insectivorous bats, especially when other conventional techniques (i.e. mist netting and roost search) cannot be used.

_Bat call identification requires the use of specialized computer software, and a library of reference calls from the bat species in a region. When a bat call has been recorded, it is displayed on a computer screen as a pattern of dots on a frequency vs time graph. Different types of bats give calls with different frequencies, shapes and timing. Echolocation calls are commonly classified into three types: search phase pulses, approach phase pulses, and terminal phase/feeding buzz pulses. Search phase pulses are produced as a bat searches for prey. The structure, frequency range, and time between successive pulses are all relatively consistent within the same habitat. The structure of the search phase call is dependent on the size, wing morphology, species, and foraging habitat of the bat. Search phase calls are used in acoustic identification of most bat species because they are consistent in structure (Britzke 2000). Approach phase pulses are developed from search phase pulses as a potential prey item is detected. These calls are seldom used in the acoustic identification of bat species do to the variability of frequency range (ibid.). Terminal phase/feeding buzz pulses are produced as a bat zeros in and attempts to capture a potential prey. Pulses decrease in frequency range and duration throughout the approach phase call sequence until the prey is captured. Feeding buzz calls also are not used to identify species do to the variable nature of these calls (ibid.).

_Anabat system components include: Anabat II bat Detector, the Zero Crossing Analysis Interface Module (ZCAM), computer for recording calls, computer software (Anabat 6, Analook). The Anabat II detector contains a broadband microphone, which detects sounds ranging from 20 to 200 kilohertz (kHz). When a sound within this range is detected, information on the call is sent through the ZCAM to a computer. The ZCAM processes the sound detected and changes it into an analog format. This format can then be interpreted by the Anabat 6 program into frequency time representation of the detected echolocation calls (Corben and O□Farrell 1999). The Anabat 6 program is used to record echolocation calls to an Anabat file format. Anabat takes information on echolocation calls from the ZCAM and constructs a visual display of the time (X-axis) and frequency (Y-axis) components of the echolocation calls (Britzke 2000, Corben and O□Farrell 1999). The Analook program is used in the analysis of previously saved echolocation call sequences. Analook loads Anabat 6 files that are displayed on an X Y graph with one alteration. The frequency axis on the Analook screen is on a long scale. This allows for better representation of the structure of the echolocation calls. Analook

allows for the cleaning and editing of echolocation call sequences in order to remove fragmentary calls and extraneous noises. From these cleaned echolocation call sequences, Analook can be used to obtain numerical values for different parameters that describe the structure of the echolocation call (Britzke 2000, Corben and O□Farrell 1999).

Anabat call recording and analysis was conducted at three sites on the Sturgeon Creek site and a single site on the War Fork site.

V. RESULTS AND DISCUSSION

A. Mist Net Site Selection

The field survey involved 38 survey nights of mist netting for Indiana and Virginia big-eared bats, 29 on the proposed Sturgeon Creek site and nine (9) on the proposed War Fork site (Tables 1 and 2). If each net set per night counted as a net-night, then 52 net-nights were conducted at Sturgeon Creek and 25 net-nights were conducted at War Fork.

B. Mist Net Survey

Mist net surveys at Sturgeon Creek were conducted August 8-13, 1999, and May 15-August 9, 2000. Mist net surveys at War Fork were conducted August 13-15, 1999, and August 7-8, 2000. Mist net surveys were conducted at 25 different sites at Sturgeon Creek and seven (7) different sites at War Fork (see project location maps). Four (4) sites at Sturgeon Creek were netted twice. Two (2) sites at War Fork were netted twice. Mist net sites are listed in Table 1 (Sturgeon Creek) and Table 2 (War Fork) and each is shown on the attached project location maps. See Appendix A (site descriptions) for more detail on location, habitat, mist net placement, number and size of nets used for each site.

During 29 nights of mist netting on Sturgeon Creek a total of 168 bats of six species were captured (Tables 3 and 5). Species captured were eastern red bat (*Lasiurus borealis*) (72, 42.6%), eastern pipistrelle (*Pipistrellus subflavus*) (45, 26.6%), big brown bat (*Eptesicus fuscus*) (23, 13.6%), northern long-eared bat (*Myotis septentrionalis*) (22, 13.0%), little brown bat (*Myotis lucifugus*) (6, 3.6%), and Rafinesque□s big-eared bat (*Corynorhinus rafinesquii*) (1, 0.6%). The capture of 169 bats during 29 nights of effort resulted in a capture rate of 5.8 bats/night. This capture success is average for riparian habitats in forested areas and indicates that this area provides good foraging and drinking habitat for bats. No bats were captured at three sites (L, P, Q). Two bats were recaptured during the survey at Sturgeon Creek, both big brown bats. The first big brown bat (band A00586), originally captured August 10, 1999 at Site A, was recaptured on July 18, 2000, at Site M (about 0.125 mile downstream of Site A). The second big brown bat (band A00803), originally captured August 12, 1999 at Site F, was found in a rock crevice during cliffline surveys March 1, 2000, about 0.25 mile downstream of Site F.

During nine (9) nights of mist netting on War Fork a total of 129 bats of five species were captured (Tables 4 and 6). All species captured are common bats, and included the eastern red bat (81, 62.8%), northern long-eared bat (22, 17.0%), eastern pipistrelle (17, 13.2%), little brown

bat (5, 3.9%), and big brown bat (4, 3.1%). The capture of 129 bats during nine (9) nights of effort resulted in a capture rate of 14.3 bats/night. This capture success is higher than average for riparian habitats in forested areas and indicates that this area provides excellent foraging and drinking habitat for bats. Bats were captured at all sites. No bats were recaptured during the survey at War Fork.

C. Cliffline Survey

Clifflines, rock faces, rock houses/shelters, and rock outcrops were searched at both sites. Winter surveys were conducted January 12-13, March 1-2, and April 11, 2000. None of these were found to provide roosting habitat for large numbers of Indiana and/or Virginia big-eared bats. Some of these are likley used as summer night roosts. Big brown bats utilize rock crevices at both sites during the winter. One old mine portal was found near the Sturgeon Creek site and two were found near the War Fork site. These portals were evaluated and no evidence of bat use was found. Green salamanders (*Aneides aeneus*) and eastern woodrat (*Neotoma magister*) nests were found during surveys at War Fork, eastern woodrat nests were also found during surveys at Sturgeon Creek. Both are species of concern.

D. Running Buffalo Clover

Running buffalo clover and running buffalo clover habitat was searched for at both sites. War Fork has very little running buffalo clover habitat and no plants were found at the site. Sturgeon Creek has some potential habitat for running buffalo clover and two areas with potential habitat will be surveyed during May (flowering season) 2001 to determine whether or not plants are present.

E. Anabat Analysis

Bat calls were recorded on four nights (3 at Sturgeon Creek and 1 at War Fork) (Tables 7 and 8). A total of 455 calls were recorded at Sturgeon Creek. Nine species were recorded. These included eastern pipistrelle (209), eastern red bat (108), big brown bat (83), northern long-eared bat (11), hoary bat (*Lasiurus cinereus*) (4), little brown bat (4), Indiana bat (2), silver-haired bat (*Lasionycteris noctivagans*) (2), gray bat (*Myotis grisescens*) (1), and unknown (31). The hoary, Indiana, silver-haired, and gray bat were not captured during mist net surveys. A total of 91 calls were recorded at War Fork. Seven species were recorded. These included northern long-eared bat (32), eastern red bat (21), eastern pipistrelle (8), little brown bat (7), Rafinesque□s big-eared bat (3), gray bat (2), Indiana bat (2), and unknown (16). Rafinesque□s big-eared, gray, and Indiana bat were not captured during mist net surveys. The number in paretheses indicates the number of calls recorded. Number of calls recorded is not correlated with number of bats of particular species using an area (i.e., an individual bat may be recorded numerous times at a given site). The level of confidence associated with this analysis is approximately 80%.

VI. SUMMARY

A total of 29 nights of mist netting were conducted on the proposed Sturgeon Creek site and nine (9) nights of mist netting were conducted on the proposed War Fork site. A total of 168 bats of six species was captured on Sturgeon Creek (Tables 3 and 5). Species captured included eastern red bat (*Lasiurus borealis*), eastern pipistrelle (*Pipistrellus subflavus*), big brown bat (*Eptesicus fuscus*), northern long-eared bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), and Rafinesque's big-eared bat (*Corynorhinus rafinesquii*). A total of 129 bats of five species was captured on War Fork (Tables 4 and 6). Species captured included eastern red bat, northern long-eared bat, eastern pipistrelle bat, little brown bat, and big brown bat. Except for Rafinesque's big-eared bat, which is a species of concern, these species are widely dispersed in Kentucky and are commonly captured in a variety of habitats. A complete cliffline survey of both sites was completed January through April 2000. Surveys were conducted in areas of rock outcrops, rock houses/shelters, rock faces, clifflines, and mine portals. Although some of these may be used as night roosts during the summer, none were found to provide roosting habitat for large numbers of Indiana and/or Virginia big-eared bats. Several big brown bats were found utilizing rock crevices during winter. Green salamanders (*Aneides aeneus*) and eastern woodrat (*Neotoma magister*) nests were also found during surveys at War Fork, eastern woodrat nests were found during surveys at Sturgeon Creek. Both are species of concern. Running buffalo clover (*Trifolium stoloniferum*) has not been found at either site. However, two areas at Sturgeon Creek were found to have suitable habitat and will be surveyed in spring 2001. Bat calls were recorded on four nights (3 at Sturgeon Creek and 1 at War Fork) . A total of 455 calls were recorded at Sturgeon Creek. A total of 91 calls were recorded at War Fork. Anabat analysis resulted in additional bat species not captured during mist net surveys. These species were hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and gray bat (*Myotis grisescens*) at Sturgeon Creek and Rafinesque's big-eared bat, gray bat, and Indiana bat (*Myotis sodalis*) at War Fork. While there is a margin of error associated with this type of analysis, Anabat recording has been a useful tool for locating Indiana bats in other studies. No Indiana or Virginia big-eared (*Corynorhinus townsendii virginianus*) bats were captured during mist netting activities at the proposed Sturgeon and War Fork reservoir sites in Jackson County, Kentucky. However, the forest and rockshelters along both of these streams provides potential foraging and roosting habitat for Indiana and Virginia big-eared bats.

VII. RECOMMENDATIONS

We offer the following recommendations that may benefit the Indiana and Virginia big-eared bat:

1) Trees should only be cut from November 1 through March 1, especially those species listed in Section II. C. Whenever and wherever possible, leave any dead or damaged trees that are not problematic.

2) Living trees located three feet below the permanent flood pool and up to the 25-year flood pool level in the head of the reservoir could be left. When the water levels rise in the reservoirs for extended periods of time, these trees will slowly die to create potential roost trees. Flooding should provide potential roost trees for several years.

3) Short-term habitat can be created by girdling trees along the perimeter of the reservoirs or within undisturbed areas surrounding each reservoir. Two trees every 500 feet adjacent to or right along the reservoir boundaries could be girdled. Trees selected for girdling should be of the species discussed in Section II. C. If there are not enough tree species from this list of appropriate size, other tree species may be used. However, trees with slick, tight bark should not be used, which includes such trees as American beech (*Fagus grandifolia*), American hornbeam (*Carpinus caroliniana*), and eastern hemlock (*Tsuga canadensis*). One of the trees selected for girdling every 500 feet should have a dbh greater than nine inches, while the second should have a dbh between five and nine inches. The smaller trees may serve as alternate roosts.

4) Artificial bat boxes can provide summer roosting habitat in the form of temporary roosts (used only occasionally or between foraging bouts) or regular roosts (mostly bachelors and/or non-reproductive females) for myotine bats [*Myotis septentrionalis* (northern long-eared bat) and *M. lucifugus* (little brown bat)]. While Indiana bats have not been documented using artificial bat boxes, very few detailed monitoring studies have been conducted in prime habitats. Thirty boxes installed at strategic locations (headwaters of reservoirs, edge of lake/ littoral zones, along flyways) and configurations (proper aspect, height, distance from trees, etc.) would provide an excellent opportunity to test the use of artificial boxes as potential conservation measures. These boxes could provide needed information on their effectiveness. There are several good bat box designs. We currently use two styles; a rocket box design and a nursery house design.

5) Caves downstream of the War Fork site may need additional protection from human disturbance. One cave is already gated. However, the gate may need some modification. Gating other caves should be considered as it may benefit the rare bat species that utilize these habitats.

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Table 1. Date surveyed, site and location, number of net sets, number of bats captured, and quadrangle map for mist netting sites at the proposed Sturgeon Creek reservoir site, Jackson County, Kentucky.

Date	Site and Location	Number of Net Sets	Number of Bats Captured	Quadrangle Map
8/10/99	A Sturgeon Creek	2	3	Sturgeon
8/10/99	B Sturgeon Creek	2	12	Sturgeon
8/11/99	C Sturgeon Creek	2	7	Sturgeon
8/11/99	D Sturgeon Creek	2	7	Sturgeon
8/11/99	E Sturgeon Creek	2	67	Sturgeon
8/12/99	F Blackwater Creek	2	5	Sturgeon
8/12/99	G Sturgeon Creek	2	4	Sturgeon
8/12/99	H Sturgeon Creek	2	13	Sturgeon
5/15/00	I Sturgeon Creek	2	4	Surgeon
5/15/00	J Sturgeon Creek	2	6	Sturgeon

Table 1. Continued.

Date	Site and Location	Number of Net Sets	Number of Bats Captured	Quadrangle Map
5/16/00	K Radford Hill strip mine	3	1	Maulden
5/16/00	L Radford Hill strip mine	2	0	Maulden
7/18/00	M Sturgeon Creek	2	2	Sturgeon
7/18/00	N Sturgeon Creek	2	1	Sturgeon
7/18/00	O Sturgeon Creek	2	3	Sturgeon
7/18/00	B Sturgeon Creek	2	0	Sturgeon
8/2/00	I Sturgeon Creek	2	2	Sturgeon
8/2/00	P dirt road	1	0	Sturgeon
8/2/00	Q bench pond	1	0	Sturgeon
8/2/00	J Sturgeon Creek	2	0	Sturgeon
8/3/00	R	1	2	Sturgeon

Table 1. Continued.

Date	Site and Location	Number of Net Sets	Number of Bats Captured	Quadrangle Map
	Cartwright Road #1			
8/3/00	S Cartwright Road #2	1	6	Sturgeon
8/3/00	T Cartwright Road #3	2	1	Sturgeon
8/3/00	U Cartwright Road #4	1	0	Sturgeon
8/3/00	V Cartwright Road #5	1	5	Sturgeon
8/8/00	W Mummie-Grassy Creek Road	2	6	Sturgeon
8/8/00	X Sturgeon Creek	1	4	Sturgeon
8/8/00	Y rockhouse and opening to field	2	3	Sturgeon
8/8/00	U Cartwright Road #4	2	4	Sturgeon
TOTALS	25 different sites	52 net-nights	168 bats	

Table 2. Date surveyed, site and location, number of net sets, number of bats captured, and quadrangle map for mist netting sites at the proposed War Fork reservoir site, Jackson County, Kentucky.

Date	Site and Location	Number of Net Sets	Number of Bats Captured	Quadrangle Map
8/13/99	A Steer Fork	3	6	McKee
8/13/99	B War Fork	3	13	McKee
8/13/99	C War Fork	4	49	McKee
8/14/99	D War Fork	3	17	McKee
8/7/00	C War Fork	3	19	McKee
8/7/00	A Steer Fork	2	1	McKee
8/7/00	E Steer Fork	2	10	McKee
8/7/00	F wildlife waterhole and ATV trail	3	12	McKee
8/7/00	G ATV trail	2	2	McKee
TOTALS	7 different sites	25 net-nights	129 bats	

Table 3. Date surveyed, site and band number, species, sex, forearm length, weight, reproductive condition, age and time of capture for bats captured during mist netting activities at the proposed Sturgeon Creek reservoir site, Jackson County, Kentucky, August 10 through August 13, 1999, and May 15 through August 8 and 9, 2000.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/10/99	A	A00586	*Eptesicus fuscus*	M	45	13.4	NS	A	22:30
8/10/99	A	A00594	*Lasiurus borealis*	M	36	10.4	NS	A	23:00
8/11/99	A	A00579	*Myotis septentrionalis*	M	35	6.2	NS	A	0:45
8/10/99	B	DNB	*Pipistrellus subflavus*	F	33	4.7	NR	J	21:03
8/10/99	B	DNB	*Lasiurus borealis*	M	40	8.6	NS	J	21:10
8/10/99	B	DNB	*Pipistrellus subflavus*	M	32	4.8	NS	J	21:45
8/10/99	B	DNB	*Lasiurus borealis*	F	44	10.6	NR	J	21:45
8/10/99	B	A00751	*Lasiurus borealis*	F	44	12.3	NR	A	21:45
8/10/99	B	A00752	*Lasiurus borealis*	F	38	9.0	NR	A	21:45
8/10/99	B	A00753	*Pipistrellus subflavus*	F	34	5.6	PL	A	21:45
8/10/99	B	A00754	*Lasiurus borealis*	F	42	12.0	NR	A	22:15
8/10/99	B	A00755	*Lasiurus borealis*	F	44	11.0	NR	J	22:22
8/10/99	B	A00756	*Myotis septentrionalis*	M	36	5.2	NS	A	23:09
8/10/99	B	A00757	*Lasiurus borealis*	F	43	11.2	NR	J	23:50

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/10/99	B	A00758	*Myotis lucifugus*	M	35	5.4	NS	A	23:53
8/11/99	C	A00578	*Lasiurus borealis*	M	40	10.0	NS	A	22:00
8/11/99	C	A00589	*Lasiurus borealis*	F	38	10.0	NR	A	22:30
8/11/99	C	A00584	*Lasiurus borealis*	F	42	11.6	NR	A	22:30
8/11/99	C	A00580	*Lasiurus borealis*	F	41	12.0	NR	A	23:00
8/11/99	C	A00586	*Lasiurus borealis*	F	41	12.4	NR	A	23:00
8/11/99	C	A00588	*Lasiurus borealis*	M	39	10.8	S	A	23:00
8/11/99	C	A00590	*Lasiurus borealis*	M	38	9.4	S	A	23:00
8/11/99	D	A00768	*Myotis septentrionalis*	M	34	4.6	NS	J	23:09
8/11/99	D	A00769	*Lasiurus borealis*	F	40	11.4	NR	J	23:32
8/11/99	D	A00770	*Myotis septentrionalis*	M	34	6.0	NS	J	23:57
8/12/99	D	A00771	*Lasiurus borealis*	M	39	8.6	NS	J	0:15
8/12/99	D	A00772	*Lasiurus borealis*	F	38	11.2	NR	J	1:06
8/12/99	D	A00773	*Lasiurus borealis*	M	39	9.2	NS	J	1:16
8/11/99	D	DNB	*Myotis septentrionalis*	EFH	33	EFH	EFH	EFH	1:45
8/11/99	E	A00519	*Pipistrellus subflavus*	F	31	5.5	NR	A	20:43

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/11/99	E	A00518	*Pipistrellus subflavus*	M	32	4.9	NS	A	20:45
8/11/99	E	A00517	*Lasiurus borealis*	M	36	7.5	NS	J	21:15
8/11/99	E	A00516	*Myotis septentrionalis*	F	33	5.9	NR	A	21:15
8/11/99	E	A00515	*Eptesicus fuscus*	M	45	15.7	NS	A	21:21
8/11/99	E	A00514	*Pipistrellus subflavus*	F	30	5.6	NR	J	21:21
8/11/99	E	A00513	*Lasiurus borealis*	M	38	10.7	NS	A	21:21
8/11/99	E	A00512	*Lasiurus borealis*	F	39	10.0	NR	A	21:45
8/11/99	E	A00511	*Lasiurus borealis*	M	38	9.4	NS	A	21:45
8/11/99	E	A00510	*Lasiurus borealis*	M	36	9.1	NS	A	21:45
8/11/99	E	A00509	*Lasiurus borealis*	F	38	10.3	NR	A	21:45
8/11/99	E	A00508	*Lasiurus borealis*	F	40	10.4	NR	A	21:45
8/11/99	E	A00507	*Lasiurus borealis*	M	37	9.5	NS	A	22:03
8/11/99	E	A00506	*Lasiurus borealis*	M	36	7.9	NS	A	22:03
8/11/99	E	A00504	*Lasiurus borealis*	M	47	8.1	NS	A	22:03
8/11/99	E	A00505	*Eptesicus fuscus*	M	43	14.8	NS	A	22:05
8/11/99	E	A00503	*Lasiurus borealis*	F	39	11.0	NR	A	22:08

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/11/99	E	A00502	*Lasiurus borealis*	M	37	10.6	NS	A	22:20
8/11/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	22:20
8/11/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	22:22
8/11/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	22:22
8/11/99	E	A00700	*Pipistrellus subflavus*	F	32	5.0	NR	A	22:43
8/11/99	E	DNB	*Pipistrellus subflavus*	M	32	5.0	NS	A	22:45
8/11/99	E	A00501	*Lasiurus borealis*	M	37	10.2	NS	A	22:47
8/11/99	E	A00699	*Lasiurus borealis*	M	37	8.4	NS	A	22:49
8/11/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	22:58
8/11/99	E	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	22:58
8/11/99	E	A00698	*Pipistrellus subflavus*	F	31	5.4	NR	J	23:08
8/11/99	E	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	23:08
8/11/99	E	A00697	*Pipistrellus subflavus*	F	32	6.2	NR	A	23:16
8/11/99	E	A00696	*Pipistrellus subflavus*	M	32	4.7	NS	A	23:30
8/11/99	E	A00695	*Pipistrellus subflavus*	F	31	5.2	NR	J	23:33
8/11/99	E	A00694	*Pipistrellus subflavus*	M	31	4.5	NS	A	23:40

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/11/99	E	A00693	*Lasiurus borealis*	M	38	8.4	NS	A	23:40
8/11/99	E	A00692	*Eptesicus fuscus*	M	43	13.0	NS	A	23:58
8/11/99	E	A00691	*Lasiurus borealis*	F	39	9.7	NR	A	23:58
8/12/99	E	A00690	*Lasiurus borealis*	M	38	10.4	NS	A	0:07
8/12/99	E	A00689	*Pipistrellus subflavus*	F	32	4.6	NR	J	0:10
8/12/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	0:14
8/12/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	0:18
8/12/99	E	A00688	*Pipistrellus subflavus*	M	32	4.9	NS	A	0:30
8/12/99	E	A00687	*Lasiurus borealis*	F	38	8.3	NR	A	0:30
8/12/99	E	A00686	*Eptesicus fuscus*	F	46	13.8	NR	A	0:39
8/12/99	E	A00685	*Eptesicus fuscus*	M	43	14.9	NS	A	0:39
8/12/99	E	A00684	*Eptesicus fuscus*	M	43	16.0	NS	A	0:39
8/12/99	E	A00683	*Lasiurus borealis*	M	37	9.1	NS	A	0:39
8/12/99	E	A00682	*Lasiurus borealis*	F	40	8.9	NR	A	0:39
8/12/99	E	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	0:39
8/12/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	0:57

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/12/99	E	A00681	*Pipistrellus subflavus*	F	33	5.6	NR	A	1:01
8/12/99	E	A00680	*Lasiurus borealis*	F	39	11.4	NR	A	1:05
8/12/99	E	A00679	*Pipistrellus subflavus*	M	31	5.2	NS	A	1:05
8/12/99	E	A00678	*Eptesicus fuscus*	M	43	15.5	NS	A	1:07
8/12/99	E	A00677	*Pipistrellus subflavus*	M	31	5.2	NS	J	1:07
8/12/99	E	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	1:39
8/12/99	E	A00676	*Lasiurus borealis*	F	40	10.9	NR	A	1:44
8/12/99	E	A00675	*Pipistrellus subflavus*	F	33	5.0	NR	J	1:44
8/12/99	E	A00674	*Lasiurus borealis*	F	39	10.1	NR	A	1:45
8/12/99	E	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	1:49
8/12/99	E	A00673	*Myotis septentrionalis*	M	34	6.6	NS	A	1:50
8/12/99	E	A00672	*Lasiurus borealis*	F	38	10.2	NR	A	1:54
8/12/99	E	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	1:56
8/12/99	E	A00671	*Lasiurus borealis*	F	39	11.6	NR	A	2:12
8/12/99	E	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	2:14
8/12/99	E	A00670	*Myotis septentrionalis*	F	33	7.3	NR	A	2:20

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/12/99	E	A00669	*Lasiurus borealis*	M	37	8.5	NS	A	2:21
8/12/99	E	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	2:22
8/12/99	F	A00596	*Lasiurus borealis*	F	41	10.4	NR	A	21:00
8/12/99	F	A00582	*Pipistrellus subflavus*	M	32	5.4	NS	A	21:15
8/12/99	F	A00801	*Myotis septentrionalis*	F	34	5.8	NR	A	21:30
8/12/99	F	A00802	*Pipistrellus subflavus*	F	34	6.0	NR	A	21:45
8/12/99	F	A00803	*Eptesicus fuscus*	F	47	21.4	P	A	22:30
8/12/99	G	A00775	*Pipistrellus subflavus*	M	31	5.8	NS	J	21:50
8/12/99	G	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:20
8/12/99	G	EFN	*Eptesicus fuscus*	EFN	EFN	EFN	EFN	EFN	22:20
8/12/99	G	A00774	*Lasiurus borealis*	F	38	11.2	NR	J	22:48
8/12/99	H	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	20:39
8/12/99	H	A00668	*Lasiurus borealis*	M	38	11.4	NS	A	20:39
8/12/99	H	A00667	*Eptesicus fuscus*	M	43	18.4	NS	A	21:08
8/12/99	H	A00666	*Pipistrellus subflavus*	F	33	5.3	NR	J	21:30
8/12/99	H	A00665	*Pipistrellus subflavus*	F	32	6.2	NR	A	21:30

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/12/99	H	A00664	*Pipistrellus subflavus*	M	32	5.3	NS	J	21:30
8/12/99	H	A00663	*Lasiurus borealis*	F	41	11.7	NR	A	21:30
8/12/99	H	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:36
8/12/99	H	A00662	*Myotis septentrionalis*	F	36	6.6	NR	A	22:00
8/12/99	H	A00661	*Lasiurus borealis*	M	38	8.9	NS	A	22:29
8/12/99	H	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	22:55
8/13/99	H	A00660	*Myotis septentrionalis*	M	32	5.7	NS	A	0:40
8/13/99	H	A00659	*Pipistrellus subflavus*	M	32	4.9	NS	J	2:04
5/15/00	I	A00740	*Pipistrellus subflavus*	F	31	5.2	P	A	21:20
5/15/00	I	A00728	*Pipistrellus subflavus*	F	32	5.2	P	A	21:20
5/15/00	I	A00742	*Eptesicus fuscus*	F	43	20.2	P	A	21:40
5/15/00	I	A00743	*Myotis septentrionalis*	F	35	8.3	P	A	23:40
5/15/00	J	154	*Pipistrellus subflavus*	F	34	5.8	P	A	21:30
5/15/00	J	A00834	*Myotis septentrionalis*	F	36	8.8	P	A	21:30
5/15/00	J	155	*Pipistrellus subflavus*	F	32	6.4	P	A	22:00
5/15/00	J	A00835	*Myotis lucifugus*	F	37	9.6	P	A	22:30

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
5/15/00	J	A00836	*Myotis lucifugus*	F	36	9.9	P	A	22:45
5/15/00	J	A00837	*Myotis lucifugus*	M	35	6.0	NS	A	23:45
5/16/00	K	A00744	*Myotis septentrionalis*	F	36	7.5	P	A	21:45
7/18/00	M	A00586 recapture	*Eptesicus fuscus*	M	45	16.0	NS	A	23:30
7/18/00	M	A00893	*Lasiurus borealis*	F	40	10.8	NR	J	23:30
7/19/00	N	DNB	*Myotis septentrionalis*	M	35	5.5	NS	J	0:00
7/18/00	O	A00747	*Pipistrellus subflavus*	M	32	5.4	NS	A	23:20
7/18/00	O	A00751	*Pipistrellus subflavus*	M	31	5.1	NS	A	23:20
7/19/00	O	A00736	*Lasiurus borealis*	M	41	9.4	NS	J	2:00
8/2/00	I	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:55
8/2/00	I	DNB	*Eptesicus fuscus*	M	48	EFH	EFH	A	22:20
8/3/00	R	A00731	*Lasiurus borealis*	F	39	10.4	NR	A	22:15
8/4/00	R	A00732	*Lasiurus borealis*	M	39	9.4	S	A	1:00
8/3/00	S	A00749	*Eptesicus fuscus*	M	43	16.4	S	A	21:15
8/3/00	S	A00734	*Eptesicus fuscus*	F	44	17.0	NR	A	21:15
8/3/00	S	A00738	*Eptesicus fuscus*	M	41	16.2	NS	A	21:45

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/3/00	S	EFN	*Eptesicus fuscus*	EFN	EFN	EFN	EFN	EFN	21:45
8/3/00	S	A00745	*Pipistrellus subflavus*	F	32	4.8	NR	J	22:30
8/4/00	S	A00733	*Lasiurus borealis*	F	41	10.1	NR	A	1:30
8/4/00	T	402	*Myotis septentrionalis*	M	34	6.0	S	A	1:00
8/3/00	V	A00620	*Eptesicus fuscus*	M	45	17.0	NS	J	21:35
8/3/00	V	EFN	*Eptesicus fuscus*	EFN	EFN	EFN	EFN	EFN	21:46
8/3/00	V	3356 KY (black)	*Pipistrellus subflavus*	M	32	5.3	NS	J	22:42
8/4/00	V	3357 KY (black)	*Myotis septentrionalis*	M	36	5.2	NS	J	0:55
8/4/00	V	A00018	*Myotis septentrionalis*	F	37	6.3	PL	A	0:55
8/8/00	W	264	*Eptesicus fuscus*	F	48	15.3	NR	A	21:10
8/8/00	W	DNB	*Lasiurus borealis*	F	38	10.5	NR	A	21:45
8/8/00	W	265	*Myotis septentrionalis*	M	35	5.2	NS	A	22:40
8/8/00	W	266	*Corynorhinus rafinesquii*	F	44	11.2	NR	A	23:05
8/8/00	W	EFH	*Myotis septentrionalis*	M	36	4.9	NS	A	23:50
8/9/00	W	267	*Myotis septentrionalis*	M	37	5.2	NS	A	0:45

Table 3. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/8/00	X	A00798	*Pipistrellus subflavus*	M	31	5.4	NS	J	21:40
8/8/00	X	A00795	*Pipistrellus subflavus*	M	30	5.0	NS	J	21:40
8/8/00	X	EFN	*Myotis lucifugus*	EFN	EFN	EFN	EFN	EFN	21:40
8/8/00	X	A00797	*Myotis lucifugus*	F	36	6.9	NR	A	21:40
8/8/00	Y	A00796	*Pipistrellus subflavus*	M	33	5.9	S	A	21:30
8/8/00	Y	A00799	*Eptesicus fuscus*	M	42	14.6	S	A	22:15
8/8/00	Y	EFN	*Myotis septentrionalis*	EFN	EFN	EFN	EFN	EFN	22:30
8/8/00	U	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:00
8/8/00	U	A01071	*Lasiurus borealis*	M	41	9.4	NR	J	21:25
8/8/00	U	A01072	*Lasiurus borealis*	F	42	10.6	NR	A	22:20
8/9/00	U	A01073	*Lasiurus borealis*	M	41	9.5	NR	A	0:20

Bands numbers with beginning with "A00" are KDFWR aluminum bands, three digit numbers are black-numbered orange celluloid bands. Others are as noted in the table.

A = adult
DNB = did not band
EFH = escaped from hand
EFN = escaped from net
F = female
J = juvenile
M = male
ND = not determined
NR = non-reproductive
NS = non-scrotal
P = pregnant
PL = post-lactating
S = scrotal

Table 4. Date surveyed, site and band number, species, sex, forearm length, weight, reproductive condition, age and time of capture for bats captured during mist netting activities at the proposed War Fork reservoir site, Jackson County, Kentucky, August 13 through August 15, 1999, and August 7 and 8, 2000.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/13/99	A	A00804	*Lasiurus borealis*	M	40	10.2	S	A	21:15
8/13/99	A	A00805	*Lasiurus borealis*	F	41	12.6	NR	A	21:35
8/13/99	A	A00806	*Lasiurus borealis*	M	39	10.2	S	A	22:45
8/13/99	A	A00807	*Lasiurus borealis*	M	38	9.4	S	A	23:30
8/13/99	A	EFN	*Lasiurus borealis*	F	EFN	EFN	EFN	A	23:30
8/13/99	A	A00808	*Lasiurus borealis*	M	40	11.0	S	A	1:00
8/13/99	B	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:10
8/13/99	B	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:15
8/13/99	B	A00777	*Myotis septentrionalis*	F	33	4.2	NR	J	21:15
8/13/99	B	A00778	*Lasiurus borealis*	M	35	8.6	S	A	21:18
8/13/99	B	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:20
8/13/99	B	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:20
8/13/99	B	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:30
8/13/99	B	A00779	*Lasiurus borealis*	M	34	8.8	S	A	22:14
8/13/99	B	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	22:25

Table 4. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/13/99	B	DNB	*Myotis septentrionalis*	M	32	5.0	NS	J	0:15
8/13/99	B	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	1:00
8/13/99	B	A00880	*Lasiurus borealis*	F	37	9.8	NR	A	1:47
8/13/99	B	A00887	*Lasiurus borealis*	M	38	9.4	S	A	1:50
8/13/99	C	A00658	*Lasiurus borealis*	M	39	8.6	NS	A	20:54
8/13/99	C	A00657	*Lasiurus borealis*	M	38	11.2	NS	A	20:58
8/13/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:01
8/13/99	C	A00656	*Lasiurus borealis*	F	38	9.4	NR	A	21:02
8/13/99	C	EFN	*Eptesicus fuscus*	EFN	EFN	EFN	EFN	EFN	21:04
8/13/99	C	A00654	*Pipistrellus subflavus*	M	31	5.0	NS	A	21:08
8/13/99	C	A00653	*Pipistrellus subflavus*	M	33	5.2	NS	A	21:08
8/13/99	C	DNB	*Lasiurus borealis*	M	37	8.9	NS	A	21:10
8/13/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:12
8/13/99	C	A00651	*Pipistrellus subflavus*	M	32	5.8	NS	A	21:17
8/13/99	C	A00701	*Pipistrellus subflavus*	M	31	5.1	NS	A	21:20
8/13/99	C	A00652	*Myotis septentrionalis*	F	34	5.4	NR	A	21:22
8/13/99	C	A00702	*Lasiurus borealis*	F	39	15.6	NR	A	21:24

Table 4. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/13/99	C	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	21:33
8/13/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	21:34
8/13/99	C	A00655	*Lasiurus borealis*	M	39	8.9	NS	A	21:02
8/13/99	C	A00703	*Lasiurus borealis*	F	39	16.4	NR	A	22:42
8/13/99	C	A00704	*Lasiurus borealis*	M	40	10.5	NS	A	22:43
8/13/99	C	A00705	*Lasiurus borealis*	M	37	9.6	NS	A	22:50
8/13/99	C	A00706	*Lasiurus borealis*	M	29	4.4	NS	J	22:50
8/13/99	C	A00707	*Lasiurus borealis*	F	39	12.7	NR	A	22:53
8/13/99	C	A00708	*Lasiurus borealis*	M	37	10.4	NS	A	23:43
8/13/99	C	A00709	*Lasiurus borealis*	M	37	9.4	NS	A	23:45
8/13/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	23:47
8/13/99	C	A00710	*Lasiurus borealis*	F	40	12.6	NR	A	23:56
8/14/99	C	A00711	*Lasiurus borealis*	M	37	9.4	NS	A	0:27
8/14/99	C	A00713	*Lasiurus borealis*	F	39	10.9	NR	A	0:28
8/14/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	0:57
8/14/99	C	A00712	*Myotis septentrionalis*	M	36	6.0	NS	A	0:57
8/14/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	0:59

Table 4. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/14/99	C	A00714	*Lasiurus borealis*	M	39	9.2	NS	A	1:16
8/14/99	C	A00716	*Lasiurus borealis*	M	37	9.1	NS	A	1:26
8/14/99	C	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	1:26
8/14/99	C	A00717	*Lasiurus borealis*	F	41	11.0	NR	A	1:27
8/14/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	1:28
8/14/99	C	A00718	*Lasiurus borealis*	M	38	9.5	NS	A	1:28
8/14/99	C	EFN	*Pipistrellus subflavus*	EFN	EFN	EFN	EFN	EFN	1:28
8/14/99	C	A00720	*Lasiurus borealis*	F	43	12.0	NR	A	1:42
8/14/99	C	A00719	*Myotis septentrionalis*	M	34	6.6	NS	A	1:42
8/14/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	1:42
8/14/99	C	A00722	*Lasiurus borealis*	M	36	9.5	NS	A	1:42
8/14/99	C	A00721	*Pipistrellus subflavus*	M	31	4.5	NS	A	2:14
8/14/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	2:15
8/14/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	2:16
8/14/99	C	EFN	*Lasiurus borealis*	EFN	EFN	EFN	EFN	EFN	2:18
8/14/99	C	A00723	*Myotis septentrionalis*	M	32	7.0	NS	A	2:28
8/14/99	C	A00724	*Myotis lucifugus*	M	34	6.6	NS	A	2:28

Table 4. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/14/99	C	A00725	*Lasiurus borealis*	F	39	11.9	NR	A	2:29
8/14/99	C	A00715	*Myotis septentrionalis*	F	34	6.0	NR	A	0:58
8/14/99	D	A00809	*Lasiurus borealis*	F	39	11.0	NR	A	21:15
8/14/99	D	A00810	*Myotis septentrionalis*	F	35	6.6	NR	A	21:15
8/14/99	D	A00811	*Lasiurus borealis*	M	39	12.0	S	A	21:15
8/14/99	D	A00812	*Lasiurus borealis*	M	38	10.4	S	A	21:15
8/14/99	D	A00813	*Lasiurus borealis*	M	41	9.8	S	A	22:00
8/14/99	D	A00814	*Lasiurus borealis*	F	43	12.0	NR	A	22:00
8/14/99	D	A00815	*Lasiurus borealis*	F	40	11.0	NR	A	22:00
8/14/99	D	A00816	*Pipistrellus subflavus*	M	33	5.8	S	A	22:15
8/14/99	D	A00817	*Pipistrellus subflavus*	M	32	5.8	S	A	22:15
8/14/99	D	A00818	*Myotis lucifugus*	M	37	8.8	S	A	22:30
8/14/99	D	A00819	*Lasiurus borealis*	M	37	10.6	S	A	22:45
8/14/99	D	A00820	*Lasiurus borealis*	M	38	9.4	S	A	23:15
8/14/99	D	A00821	*Myotis lucifugus*	M	36	7.6	S	A	23:15
8/14/99	D	A00822	*Lasiurus borealis*	M	40	10.0	S	A	23:45
8/15/99	D	A00824	*Lasiurus borealis*	F	43	13.2	NR	A	0:00

Table 4. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/15/99	D	A00825	*Myotis lucifugus*	M	32	7.8	S	A	0:45
8/15/99	D	A00826	*Lasiurus borealis*	F	39	11.0	NR	A	1:30
8/7/00	C	A00737	*Lasiurus borealis*	F	40	11.1	NR	A	21:05
8/7/00	C	A00741	*Lasiurus borealis*	M	36	8.6	NS	J	21:05
8/7/00	C	A00748	*Lasiurus borealis*	F	40	11.6	NR	A	21:40
8/7/00	C	A00729	*Lasiurus borealis*	M	37	9.5	NS	J	21:40
8/7/00	C	A00739	*Myotis lucifugus*	M	34	6.4	NS	A	22:30
8/7/00	C	A00746	*Lasiurus borealis*	F	40	16.6	NR	A	23:10
8/7/00	C	A00782	*Lasiurus borealis*	M	40	9.9	S	A	23:10
8/7/00	C	A00783	*Lasiurus borealis*	M	39	10.0	S	J	23:20
8/7/00	C	A00784	*Lasiurus borealis*	M	38	9.1	S	J	23:40
8/7/00	C	A00785	*Lasiurus borealis*	F	40	13.4	NR	A	23:40
8/8/00	C	A00786	*Lasiurus borealis*	M	37	9.2	S	J	0:40
8/8/00	C	A00787	*Eptesicus fuscus*	M	41	16.7	S	A	1:00
8/8/00	C	A00788	*Eptesicus fuscus*	F	46	17.9	NR	A	1:00
8/8/00	C	A00789	*Pipistrellus subflavus*	M	31	5.0	NS	J	1:10
8/8/00	C	A00790	*Pipistrellus subflavus*	M	32	5.5	NS	A	1:40

Table 4. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/8/00	C	A00791	*Pipistrellus subflavus*	M	31	5.2	NS	J	1:45
8/8/00	C	A00792	*Pipistrellus subflavus*	F	32	5.6	NS	A	2:00
8/8/00	C	A00793	*Pipistrellus subflavus*	F	30	5.3	NS	J	2:20
8/8/00	C	A00794	*Pipistrellus subflavus*	M	31	5.4	NS	J	2:40
8/7/00	A	EFN	*Eptesicus fuscus*	M	EFN	EFN	EFN	A	21:44
8/7/00	E	A01076	*Pipistrellus subflavus*	M	32	6.2	S	A	20:50
8/7/00	E	A01077	*Lasiurus borealis*	M	39	12.2	S	J	21:20
8/7/00	E	A01064	*Myotis septentrionalis*	M	35	6.2	S	A	21:50
8/7/00	E	A01060	*Lasiurus borealis*	M	39	9.9	S	J	21:50
8/7/00	E	EFN	*Lasiurus borealis*	F	EFN	EFN	EFN	J	21:50
8/7/00	E	A01065	*Lasiurus borealis*	M	39	10.1	S	J	23:37
8/8/00	E	A01066	*Lasiurus borealis*	F	41	11.5	NR	A	1:38
8/8/00	E	A01068	*Lasiurus borealis*	F	39	10.3	NR	J	2:03
8/8/00	E	A01069	*Lasiurus borealis*	F	42	12.9	NR	A	2:03
8/8/00	E	A01067	*Myotis septentrionalis*	F	36	6.6	NR	A	2:03
8/7/00	F	414	*Myotis septentrionalis*	F	35	6.0	NR	ND	21:15
8/7/00	F	415	*Myotis septentrionalis*	F	34	6.4	NR	ND	21:15

Table 4. Continued.

Date	Site Number	Band Number	Species	Sex	Forearm Length (mm)	Weight (g)	Reproductive Condition	Age	Time of Capture
8/7/00	F	416	*Myotis septentrionalis*	F	35	6.2	NR	ND	21:30
8/7/00	F	417	*Myotis septentrionalis*	F	34	5.8	NR	ND	21:30
8/7/00	F	418	*Myotis septentrionalis*	F	35	5.7	NR	ND	21:30
8/7/00	F	419	*Myotis septentrionalis*	M	36	6.2	S	A	21:30
8/7/00	F	A00851	*Lasiurus borealis*	M	38	10.0	S	ND	22:00
8/7/00	F	413	*Myotis septentrionalis*	F	35	6.3	NR	ND	22:00
8/7/00	F	420	*Myotis septentrionalis*	M	35	5.8	S	A	22:05
8/7/00	F	403	*Myotis septentrionalis*	M	36	5.9	NS	ND	22:15
8/8/00	F	404	*Myotis septentrionalis*	F	37	7.2	NR	A	1:00
8/8/00	F	A00871	*Lasiurus borealis*	M	41	13.4	S	A	1:30
8/7/00	G	262	*Myotis septentrionalis*	F	39	5.4	NR	A	22:15
8/8/00	G	263	*Myotis septentrionalis*	F	37	6.2	NR	A	0:00

Bands numbers with beginning with A00" are KDFWR aluminum bands, three digit numbers are black-numbered orange celluloid bands. Others are as noted in the table.

A = adult
DNB = did not band
EFH = escaped from hand
EFN = escaped from net
J = juvenile
M = male
ND = determined
NR = non-reproductive
S = scrotal

Table 4. Continued.

F = female

NS = non-scrotal

Table 5. Total number of each bat species captured at the proposed Sturgeon Creek Reservoir site in Jackson County, Kentucky.

Species	Total Captured	Percent of Total Captured
Corynorhinus rafinesquii	1	0.6%
Eptesicus fuscus	22	13.1%
Myotis lucifugus	6	3.6%
Myotis septentrionalis	22	13.1%
Lasiurus borealis	72	42.9%
Pipistrellus subflavus	45	26.8%
Total Bats Captured	168	100.1%

Table 6. Total number of each bat species captured at the proposed War Fork Reservoir site in Jackson County, Kentucky.

Species	Total Captured	Percent of Total Captured
Eptesicus fuscus	4	3.1%
Myotis lucifugus	5	3.9%
Myotis septentrionalis	22	17.0%
Lasiurus borealis	81	62.8%
Pipistrellus subflavus	17	13.2%
Total Bats Captured	129	100%

Table 7. Summary of Anabat data, bat calls recorded during mist netting efforts on Sturgeon Creek, Jackson County, Kentucky, July 18 and 19, and August 2 through 4, 2000.

Date	Site	Number of calls recorded	Species recorded
7/18/00	M	455	B=83 G=1 H=4 I=2 L=4 N=11 P=209 R=108 SH=2 U=31
8/2/00	J	76	B=29 L=1 N=3 P=22 R=14 U=7
8/3/00	V	39	B=6 I=2 L=2 N=5 P=16 R=4 U=4
Date	**Site**	**Number of calls recorded**	**Species recorded**

Table 7. Continued.

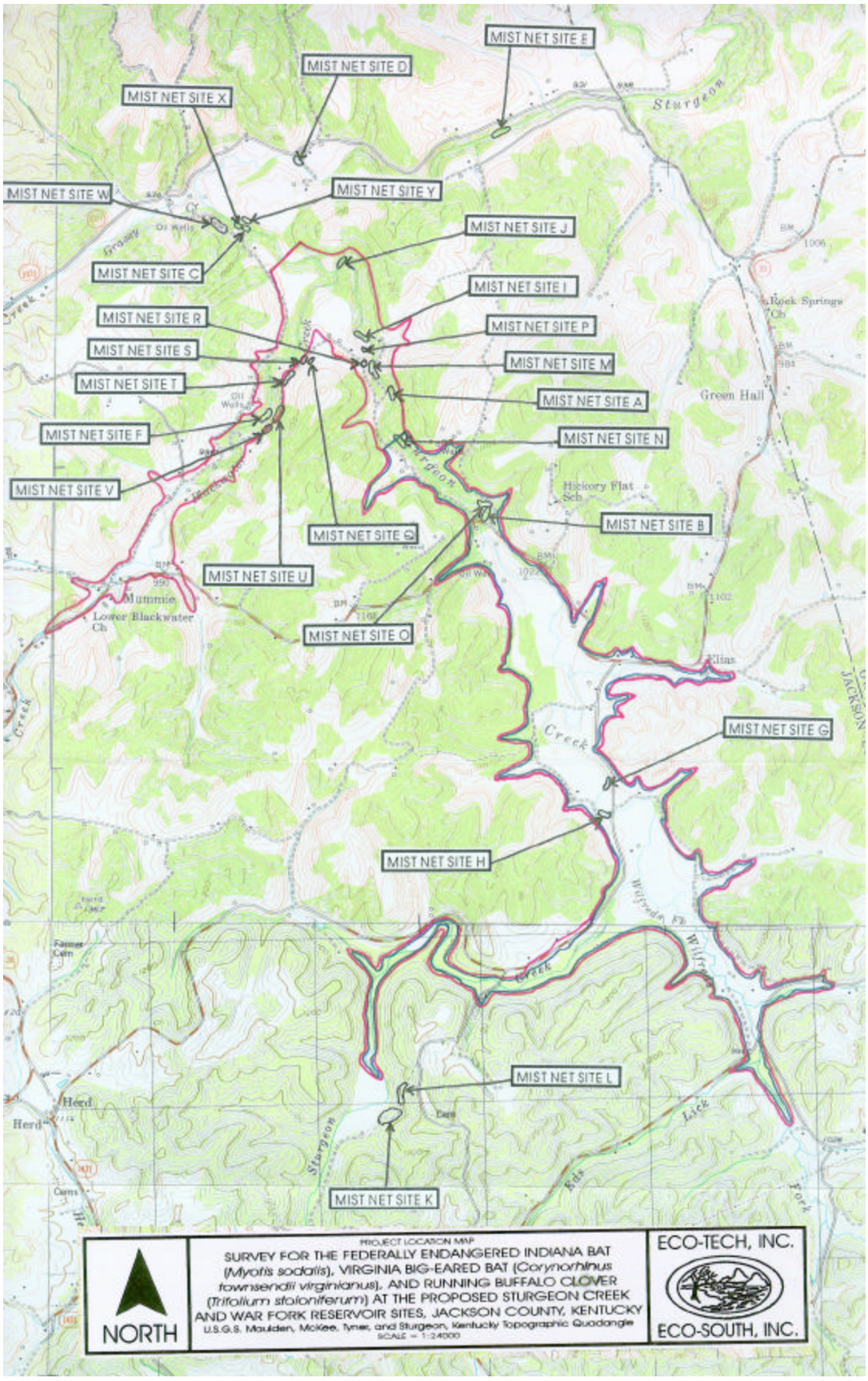
TOTALS	3 sites	570	B=118 G=1 H=4 I=4 L=7 N=19 P=247 R=126 SH=2 U=42

B = big brown bat
G = gray bat
H = hoary bat
I = Indiana bat
L = little brown bat
N = northern long-eared bat
P = eastern pipistrelle
R = eastern red bat
SH = silver-haired bat
U = unknown

Table 8. Summary of Anabat data, bat calls recorded during mist netting efforts on War Fork, Jackson County, Kentucky, August 7 and 8, 2000.

Date	Site	Number of calls recorded	Species recorded
8/7/00	A	91	G=2 I=2 L=7 N=32 P=8 R=21 Ra=3 U=16

G = gray bat
I = Indiana bat
L = little brown bat
N = northern long-eared bat
P = eastern pipistrelle
R = eastern red bat
Ra = Rafinesque big-eared bat
U = unknown


MIST NET SITE E
MIST NET SITE D
MIST NET SITE X
MIST NET SITE W
MIST NET SITE Y
MIST NET SITE J
MIST NET SITE C
MIST NET SITE I
MIST NET SITE R
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MIST NET SITE F
MIST NET SITE N
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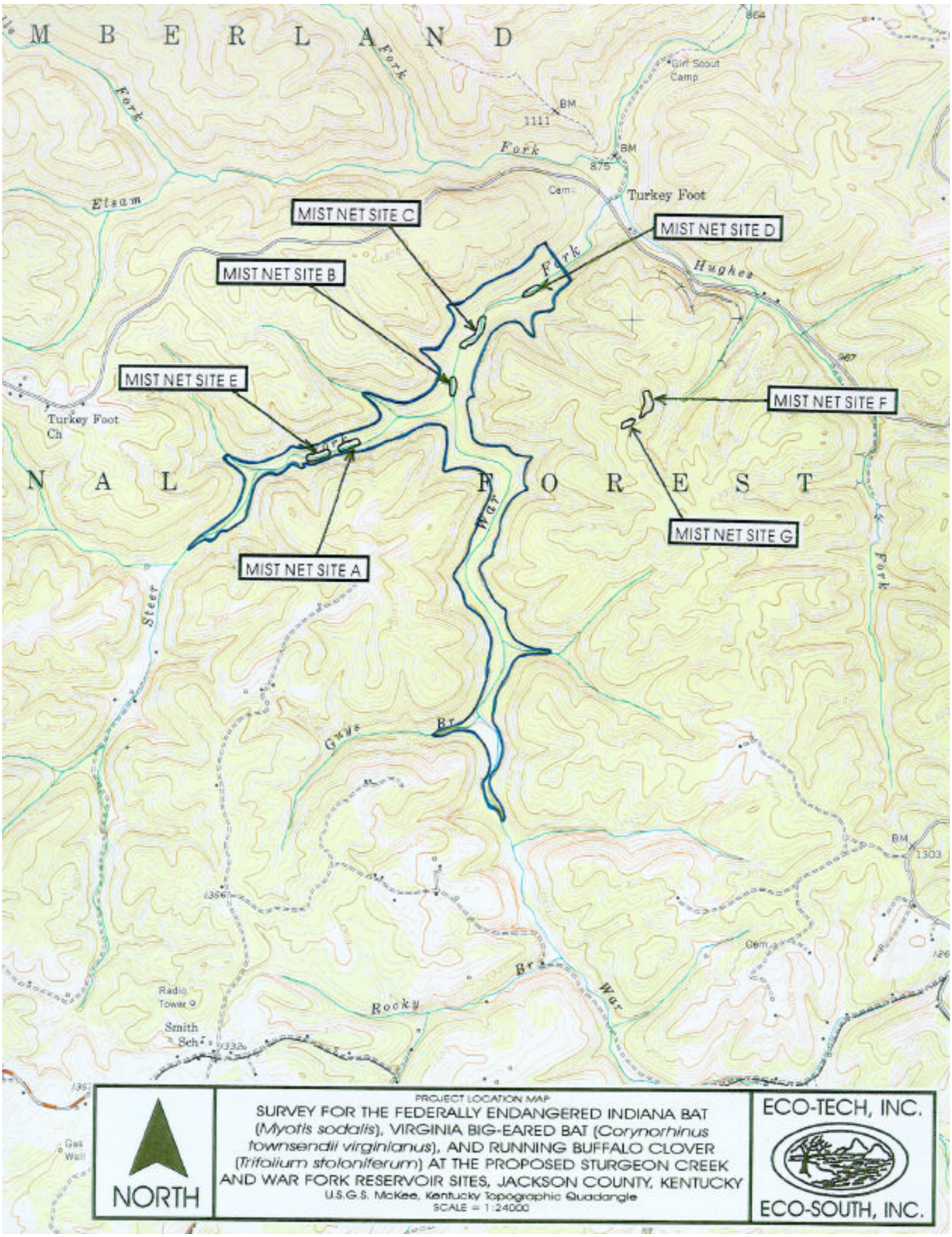
MIST NET SITE B
MIST NET SITE Q
MIST NET SITE U
MIST NET SITE O
MIST NET SITE G
MIST NET SITE H
MIST NET SITE L
MIST NET SITE K
Sturgeon
Green Hall
Hickory Flat Sch
Mummie
Lower Blackwater Ch
Rock Springs Ch
Elms
Herd
Farmer Cem
Lick
Fork
NORTH
PROJECT LOCATION MAP
SURVEY FOR THE FEDERALLY ENDANGERED INDIANA BAT (Myotis sodalis), VIRGINIA BIG-EARED BAT (Corynorhinus townsendii virginianus), AND RUNNING BUFFALO CLOVER (Trifolium stoloniferum) AT THE PROPOSED STURGEON CREEK AND WAR FORK RESERVOIR SITES, JACKSON COUNTY, KENTUCKY
U.S.G.S. Maulden, McKee, Tyner, and Sturgeon, Kentucky Topographic Quadrangle
SCALE = 1:24000
ECO-TECH, INC.
ECO-SOUTH, INC.


MIST NET SITE C
MIST NET SITE D
MIST NET SITE B
MIST NET SITE E
MIST NET SITE F
MIST NET SITE G
MIST NET SITE A
NORTH
PROJECT LOCATION MAP
SURVEY FOR THE FEDERALLY ENDANGERED INDIANA BAT (Myotis sodalis), VIRGINIA BIG-EARED BAT (Corynorhinus townsendii virginianus), AND RUNNING BUFFALO CLOVER (Trifolium stoloniferum) AT THE PROPOSED STURGEON CREEK AND WAR FORK RESERVOIR SITES, JACKSON COUNTY, KENTUCKY
U.S.G.S. McKee, Kentucky Topographic Quadangle
SCALE = 1:24000
ECO-TECH, INC.
ECO-SOUTH, INC.

Appendix A, Site descriptions of mist netting locations on the proposed Sturgeon Creek (A-Y) and War Fork (A-G)reservoir sites, Jackson County, Kentucky, August 10-15, 1999, and May 15-August 9, 2000, is unavailable electronically. Each site description contains the following information: Site name (letter designation and proposed reservoir site) County and Quadrangle in which site is located, date of the site survey, general location description, bat species captured at the site, other animal species observed on the site, and a sketch of the mist net site. These descriptions are available in the hardcopy version of the Jackson County Lake Project Final Environmental Impact Statement. Refer to the hardcopy for this information.

Appendix B, Photographs, is unavailable electronically. These photographs are available in the hardcopy version of the Jackson County Lake Project Final Environmental Impact Statement. Refer to the hardcopy for these graphics.