Annual Report

Grant # 09-011W

Monitoring Indiana Bat Maternity Colonies at Southern Illinois

SUBMITTED TO:

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24 July 2009

BACKGROUND:

Indiana bat (*Myotis sodalis*) maternity colonies from southern Illinois have been studied for almost a decade. In particular the colony located at Bluff Lake and Union County Conservation Area (UCCA), Union County, IL has received a lot of attention (Carter, 2003; Carter and Feldhamer, 2005a; Carter and Feldhamer 2005b; Feldhamer et al., 2006). The objective of this study was to return to the original study site and examine the current status and location of the colony. Mist netting was the primary means of capturing Indiana bats. Roost trees and maternity colonies were located by tracking the female bats with radio transmitters. Additionally, a bat house that was erected in 2001 (Carter et al., 2001) was examined to determine the overall status and use of those bat houses. The bat house, located on Lower Bluff Lake was used as a site to capture reproductively active female Indiana bats; we then applied radio transmitters to selected females.

NETTING LOCATIONS:

Standard mist-netting techniques to target Indiana bats (Gardner et al. 1989) were used at five sites at UCCA (aka. Bluff Lake colony) in May and June of 2008 (Figure 1). There were a total of 41 net nights at UCCA Conservation Area (Table 5).

BAT HOUSES:

A bat house was constructed and installed in 2001 (Carter et al., 2001) to increase potential roost sites for Indiana bats at Bluff Lake. The location where the bat house is located was flooded with 0.3 to 1 m of water at the time of inspection. However the bat house was mounted on a pole at least 3 m above the ground and is safe from inundation. The bat house at UCCA was checked on 10 June 2008 and was overfull with both Indiana bats and little brown bats ranging from neonates to lactating females. Upon arriving at the bat house in late afternoon bats were seen flying around the bat house and juveniles were found swimming in the water. Deceased neonates were seen falling from the roost and were recovered from the water; bodies were sent to United States Fish and Wildlife for contaminant testing (no results to date). Several small shrubs were removed from the

vicinity of the bat house; cut branches were placed directly under the bat house to allow a refuge for falling juveniles.

CAPTURES:

From 2 June 2008 to 10 June 2008, a total of 48 bats were captured from UCCA (Table 1). Of these, 5 reproductively active female Indiana bats were captured (Table 2).

RADIO TELEMETRY:

Beginning 5 June 2008 radio transmitters were placed on 5 adult female Indiana bats, and through the use of radio telemetry bats were tracked to 9 day roosting; 5 of which were inaccessible due to extreme flooding on the property (Table 2; Figure 1).

COLONY STATUS:

The UCCA colony has spread throughout the property and may have also moved into areas near the bluffs. Indiana bats continue to use the bat house located on Lower Bluff Lake (Figure 1). While this colony is certainly still present and active as evident by the number of bats captured and roosts located, it is difficult to comment on the specific condition of this colony relative to past surveys because of the extreme difficulty in conducting field work in early summer 2008. Approximately half of the property was inaccessible for surveying due to extreme flooding; however fewer bats were caught in summer 2008 than in summer 2006 (Feldhamer et al., 2006). Different, and perhaps less ideal, netting locations were used during this survey because of access limitations resulting from the flooding. The Indiana bats in this colony were shown to use roost trees from the north, east and west ends of the property and were found to switch roost trees frequently. These limited results indicate there appears to be two different colonies because bats captured on the north end of the property roosted on the north and west ends and the bats captured at the bat houses stayed near Bluff Lake. Comparing roost tree locations with the 2006 survey would be difficult because only two bats in the 2008 survey were tracked reliably. One exit count was conducted on this property on 6 June 2008, and a total of 21 bats were recorded leaving roost tree #126 (Table 4).

MANAGEMENT RECOMMENDATIONS:

The specific condition of the UCCA colony cannot be determined because of insufficient data resulting from a lack of suitable mist-netting sites in 2008. Much of the property was severely flooded, making it difficult for mist-net surveys and subsequent tracking to occur. These areas of the property should prove highly valuable to bats in future years because of the large number of snags the heavy flooding may create. There were many suitable roost trees seen, however, roost sites were widespread with bats moving throughout the property to roost. This movement could be due to the high amount of fragmentation on this site, with large tracts of crop land between the bottomland forest sites. Management here should continue as normal as long as the bottomland forest tracts continue to provide suitable habitat. The UCCA colony is also using the Bluff Lake bat house, located on Lower Bluff Lake, along with little brown bats (Figure 1). This bat house is extremely full and a second bat house could be considered. The area immediately around the bat house should also be maintained yearly to keep trees from growing up under the bat house. There should be some shrubs left in the vicinity since juveniles were seen falling from the bat house and swimming to the nearest shrub.

LITERATURE CITED:

Carter, T.C. 2003. Summer habitat use of roost trees by the endangered Indiana bat (*Myotis sodalis*) in the Shawnee National Forest of southern Illinois. Ph.D. Dissertation, Southern Illinois University, Carbondale, IL, 82 pp.

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Carter, T.C., and G.A. Feldhamer. 2005b. Roost Tree Use by Maternity Colonies of Indiana Bats and Northern Long-Eared Bats in Southern Illinois. Forest Ecology and Management 219:259-268.

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Feldhamer, G.A., T.C. Carter, and B.J. Steffen. 2006. Monitoring Indiana bat maternity colonies in southern Illinois. US Forest Service-Shawnee National Forest, Project: Project Number: 06-PA-11090800-018. Annual Report. Southern Illinois University, Carbondale, IL 6 pp.

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Table 1. Total Bat Captures at Bluff Lake and Union County Conservation Area, Union County, IL., 2 June 2008 through 10 June 2008.

Date	Species	Sex	Age	Repro. Status	4-Arm (mm)	Wt. (gr.)	Specific Location
6/2/2008	*Lasiurus borealis*	M	ADULT	SCROTAL	39	11	net site 1
6/2/2008	*Perimyotis subflavus*	F	ADULT	PREG.	34	7.8	net site 1
6/2/2008	*Myotis septentrionalis*	M			36		net site 1
6/2/2008	*Perimyotis subflavus*	F	ADULT	PREG.	32	8	net site 2
6/2/2008	*Eptesicus fuscus*	F	ADULT	PREG.	49	30	net site 2
6/2/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	33	9.2	net site 2
6/2/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	36	9.5	net site 2
6/2/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	34	8.5	net site 2
6/2/2008	*Nycticeius humeralis*	F	ADULT	PREG.	36	16	net site 2
6/2/2008	*Myotis septentrionalis*	F	ADULT	PREG.	34	10	net site 2
6/2/2008	*Myotis septentrionalis*	F	ADULT	PREG.	37.5	11	net site 2
6/2/2008	*Perimyotis subflavus*	F	ADULT	PREG.	32	7.5	net site 2
6/2/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	35	10.2	net site 2
6/4/2008	*Perimyotis subflavus*	M	ADULT	SCROTAL	35	6	net site 2
6/4/2008	*Myotis sodalis*	F	ADULT	PREG.	39	10	net site 2
6/4/2008	*Perimyotis subflavus*						net site 2
6/4/2008	*Nycticeius humeralis*	F	ADULT	PREG.	34	10.3	net site 2
6/4/2008	*Eptesicus fuscus*	F	ADULT	PREG.	49	28	net site 2
6/4/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	35	11	net site 2
6/4/2008	*Eptesicus fuscus*	F	ADULT	PREG.	48	27	net site 2
6/5/2008	*Myotis sodalis*	F	ADULT	PREG.	38	9.3	net site 3
6/5/2008	*Myotis lucifugus*	F	ADULT	LAC.	36	8.25	net site 3
6/5/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	33	9	net site 3
6/5/2008	*Myotis septentrionalis*	M	JUV	N/R	35	7.3	net site 3
6/5/2008	*Perimyotis subflavus*	F	ADULT	PREG.			net site 3

6/6/2008	*Perimyotis subflavus*	M	JUV	N/R	30		net site 3
6/6/2008	*Myotis septentrionalis*	M	ADULT	SCROTAL	37	6.8	net site 3
6/7/2008	*Myotis sodalis*	M	ADULT	SCROTAL	40	7.3	net site 4
6/7/2008	*Perimyotis subflavus*	F	ADULT	PREG.	32	8.2	net site 4
6/7/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	34	9.25	net site 4
6/7/2008	*Perimyotis subflavus*	F	ADULT	PREG.	32	7.8	net site 4
6/7/2008	*Nycticeius humeralis*	M	ADULT	SCROTAL	32	8.4	net site 4
6/8/2008	*Myotis lucifugus*	F	ADULT	LAC.	36	7	net site 5
6/8/2008	*Eptesicus fuscus*	F	ADULT	PREG.	47	24.8	net site 5
6/8/2008	*Perimyotis subflavus*	F	ADULT	PREG.	35	8.25	net site 5
6/10/2008	*Myotis lucifugus*		JUV	N/R			Bat House
6/10/2008	*Myotis lucifugus*		JUV	N/R			Bat House
6/10/2008	*Myotis lucifugus*	F	ADULT	LAC.			Bat House
6/10/2008	*Myotis lucifugus*	F	ADULT	LAC.			Bat House
6/10/2008	*Myotis lucifugus*	F	ADULT	LAC.			Bat House
6/10/2008	*Myotis sodalis*	F	ADULT	LAC.	38	7.2	Bat House
6/10/2008	*Myotis sodalis*	F	ADULT	LAC.	37	7.2	Bat House
6/10/2008	*Myotis lucifugus*	F	ADULT	LAC.	39	7.9	Bat House
6/10/2008	*Myotis sodalis*	F	ADULT	LAC.	37	6.8	Bat House
6/10/2008	*Myotis lucifugus*	F	JUV	N/R	39	9	Bat House
6/10/2008	*Myotis lucifugus*	F	ADULT	LAC.	37	7.5	Bat House
6/10/2008	*Myotis lucifugus*	F	ADULT	PREG.	37	10.5	Bat House
6/10/2008	*Myotis lucifugus*	F	ADULT	PREG.	39	9	Bat House

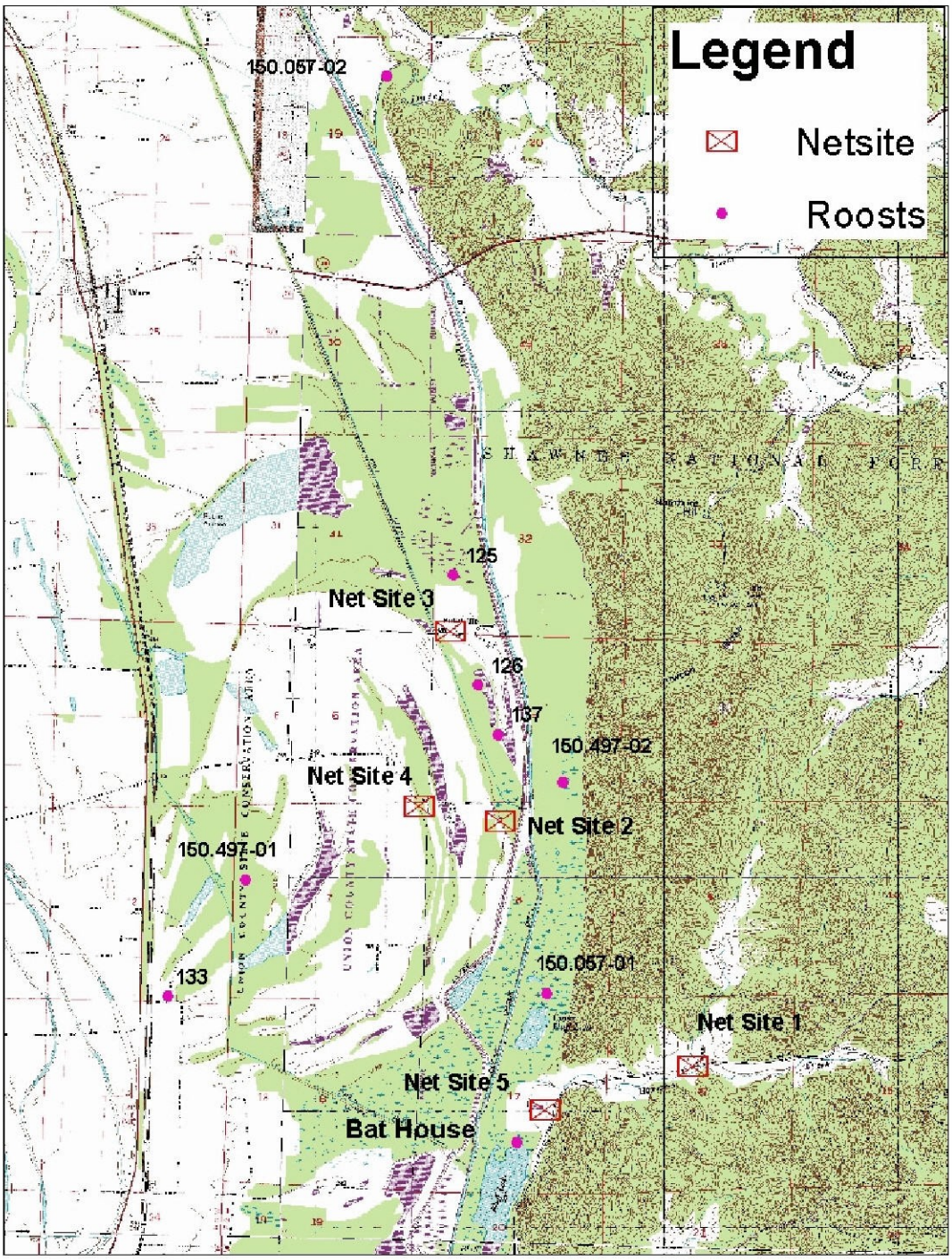

Figure 1. Indiana bat roosts and net sites at Bluff Lake and Union County Conservation Area, Union County, IL.