



Western Illinois University Bobcat Project Quarterly Report

1 October 2017 to 31 December 2017

Our study area consists of four counties (Hancock, McDonough, Schuyler, Fulton) in west-central Illinois and is characterized as an agriculturally-dominated matrix interspersed with mixed hardwood forests. Current funding for the project is provided by the Illinois Department of Natural Resources, Illinois Bobcat Foundation, Furbearers Unlimited, Illinois Humane, and Western Illinois University. Additional equipment support is provided by North Carolina State University, South Dakota State University, and USDA APHIS/Wildlife Services. Continued success of the project is dependent on the ongoing support of private landowners and trappers in the study area, and numerous volunteers helping with different aspects of the project. The lead project investigator is Dr. Chris Jacques (Phone: 309-298-2155; Email: CN-Jacques@wiu.edu) and the graduate student on the project is Ed Davis (Phone: 919-548-5196; Email: ED-Davis2@wiu.edu). Please contact us with questions or concerns about the project. **Please report any bobcat sightings or trapped bobcats in the four counties to Ed Davis (919) 548-5196 as soon as possible.**

DEFINITIONS:

Phase 1: This designation will refer to all work conducted from the initiation of the project (1 July 2015) until 30 June 2017.

Phase 2: This designation will refer to all work beginning 1 July 2017 to current day.

Numbering System: Bobcats on the WIU Bobcat Project are given an identification number for all record keeping and analysis. Capital letters (M = Male, F = Female) preceding the number indicate bobcat sex and the number following the letter corresponds to the chronological capture date of that sex of bobcat. Example: M4 refers to the fourth male bobcat captured on the project.

Camera Station: This will refer to a set of two trail cameras facing each other to capture both flanks of a bobcat. All cameras will be set up in this manner to assist with identification of unique bobcats.

Camera Surveys: This will refer to a block of time that camera stations were deployed in a set spatial array. CS = general camera surveys; CAS = camera alignment surveys; CDS = camera density surveys. They will all be followed by a number corresponding to the chronologic deployment of cameras for that survey type. For instance, CS4 = the fourth general camera survey conducted on the project.

Live Signal: A live signal refers to when a bobcat was heard with telemetry equipment on a non-mortality (normal) signal but no triangulated location was estimated.

Collar Types: We deploy very high frequency (VHF; 141 g) and global positioning system (GPS; 381g) radiocollars on captured bobcats; collar selection depends on weight of individuals

captured. Animals > 6.8 kg (~15 lbs) are fitted with GPS collars and individuals < 6.8 kg are fitted with VHF collars. Both types of radiocollars are equipped with mortality sensors.

CURRENT POPULATION STATUS

Population monitoring requires year-round to document weekly survival, deaths, bobcat abundance, and distribution of radio-collared bobcats across the study area by using telemetry equipment. At the end of this quarter, there were 14 VHF-collared bobcats being monitored weekly and 4 VHF-collared bobcats whose fate was unknown/missing. At the end of this quarter, there were 9 GPS-collared bobcats being monitored for survival and movement (Table 1).

The WIU Bobcat Project obtained 524 locations during this quarter (Table 2). These locations consist of triangulations, visuals, confirmed trail camera photos, and GPS locations.

CAPTURES

The WIU Bobcat Project captured and processed 13 bobcats this quarter, of which 12 were new (unmarked) individuals and fitted with GPS ($n = 10$) and VHF ($n = 2$) radio collars. One bobcat was recaptured and the radiocollar was not replaced (Table 3).

The WIU Bobcat Project thanks the local trappers within the study area who have helped capture bobcats this quarter.

MORTALITIES

The WIU Bobcat Project confirmed the death of four bobcats (F3, M1, F12, M13) during this quarter (Table 4).

SURVIVAL

Because of low numbers of bobcats captured and limited deaths during 2016 and 2017, we were unable to evaluate effects of year and sex on survival. Thus, we estimated a pooled (composite) survival rate (105 weeks) for radiocollared bobcats over the duration of our study (January 2016 to the end of this quarter [31 December 2017]) using the Kaplan-Meier procedure, which accommodated for staggered entry and exit times of marked bobcats during our analysis interval; the 105-week survival rate was 0.509 (95% CI = 0.366–0.652; Figure 1).

PRESENTATIONS

The WIU Bobcat Project provided one public presentation on 2 November 2017 to about ten people at an Environmentally Concerned Citizens meeting in Macomb, Illinois.

MEDIA RELATIONS

The WIU Bobcat Project did not provide any media relations during this quarter.

CAMERA TRAPPING

Deployment of CS4 began in December, 2017 and consists of two separate camera arrays of 55 camera stations per array. Camera stations are still being deployed at the end of this quarter (31 December 2017). These camera stations were placed as close to the center of 9 km² hexagons (Figure 2) as possible.

The WIU Bobcat Project thanks the private landowners who have allowed access to their properties for conducting camera surveys.

The WIU Bobcat Project continues to receive trail camera images of radiocollared and uncollared bobcats from private landowners and hunters within the study area. We can use these radiocollared bobcat images as locations for home range calculation if the coordinate, date, and time are provided. We appreciate receiving these photos.

GENERAL COMMENTS

During this quarter, we conducted routine survival monitoring and gained familiarity with home range use and movement patterns of current study animals, organized CS4 including communicating with private landowners, and fitted newly captured bobcats with radiocollars.

VOLUNTEER ASSISTANCE

During this quarter we thank Elizabeth Braaten and Andrew Bouton for volunteering their time on the WIU Bobcat Project.

Table 1. Western Illinois University Bobcat Project collar status of very high frequency (VHF) and global positioning system (GPS) radiocollared bobcats in west-central Illinois, October–December 2017.

Bobcat ID ^a	Collar type	Collar fate	Days since last location or live signal ^b
F10	GPS	Currently tracking	0
F11	GPS	Currently tracking	0
F13	GPS	Currently tracking	0
F15	GPS	Currently tracking	0
M14	GPS	Currently tracking	0
M15	GPS	Currently tracking	0
M16	GPS	Currently tracking	0
M18	GPS	Currently tracking	0
F9	VHF	Currently tracking	1
F8	VHF	Currently tracking	1
M10	VHF	Currently tracking	1
M8	VHF	Currently tracking	1
F4	VHF	Currently tracking	2
F7	VHF	Currently tracking	2
F14	VHF	Currently tracking	2
F16	VHF	Currently tracking	2
F5	VHF	Currently tracking	2
M6	VHF	Currently tracking	2
M17	GPS	Currently tracking	7
F1	VHF	Currently tracking	7
M4	VHF	Currently tracking	7
M9	VHF	Currently tracking	7
M11	VHF	Currently tracking	8
F2	VHF	Fate unknown	50
M12	VHF	Fate unknown	286
F6	VHF	Fate unknown	400
M7	VHF	Fate unknown	412

^a Bobcat ID = bobcat identification. For instance, F10 refers to female # 10 and M14 refers to male #14.

^b Days since 1 January 2018.

Table 2. Western Illinois University Bobcat Project number of triangulations, visuals, confirmed trail camera photos, and global positioning system (GPS) locations per bobcat per month for very high frequency and GPS radiocollared bobcats in west-central Illinois, October–December 2017.

Bobcat ID ^a	October	November	December	Quarterly total
F1	3	4	4	11
F10	0	14	27	41
F11	0	6	34	40
F12	0	6	14	20
F13	0	0	29	29
F14	0	0	5	5
F15	0	0	11	11
F16	0	0	2	2
F2	4	2	0	6
F3	6	5	0	11
F4	4	4	5	13
F5	5	4	6	15
F7	4	4	5	13
F8	4	4	4	12
F9	4	4	3	11
M1	4	4	2	10
M10	4	4	4	12
M11	4	4	4	12
M13	0	0	1	1
M14	0	16	31	47
M15	0	11	37	48
M16	0	10	36	46
M17	0	0	19	19
M18	0	0	31	31
M4	7	4	5	16
M6	4	4	4	12
M8	4	4	4	12
M9	9	5	4	18

^a Bobcat ID = bobcat identification. For instance, F1 refers to female # 1 and M1 refers to male #1.

Table 3. Western Illinois University Bobcat Project capture and handling events of bobcats in west-central Illinois, October–December 2017.

Date	Bobcat ID ^a	Sex	Estimated age	Capture status	Collar type ^b	Weight (kg)	Weight (lbs)	County of capture
19 November 2017	F10	Female	Adult	New capture	GPS	8.17	18 lb	Adams
20 November 2017	M14	Male	Adult	New capture	GPS	9.60	21 lb 3 oz	Adams
22 November 2017	M15	Male	Adult	New capture	GPS	10.89	24 lb	Hancock
25 November 2017	M16	Male	Adult	New capture	GPS	12.25	27 lb	Adams
25 November 2017	F11	Female	Adult	New capture	GPS	7.26	16 lb	Schuyler
27 November 2017	F12	Female	Adult	New capture	GPS	8.39	18 lb 8 oz	Hancock
8 December 2017	F13	Female	Adult	New capture	GPS	7.26	16 lb	Fulton
9 December 2017	M17	Male	Adult	New capture	GPS	10.21	22 lb 8 oz	Hancock
11 December 2017	F14	Female	Juvenile	New capture	VHF	4.54	10 lb	Schuyler
11 December 2017	F5	Female	Adult	Recapture	VHF	7.48	16 lb 8 oz	Schuyler
11 December 2017	M18	Male	Adult	New capture	GPS	11.11	24 lb 8 oz	Schuyler
21 December 2017	F15	Female	Adult	New capture	GPS	8.62	19 lb	Hancock
22 December 2017	F16	Female	Adult	New capture	VHF	6.58	14 lb 8 oz	Hancock

^a Bobcat ID = bobcat identification. For instance, F10 refers to female # 10 and M14 refers to male #14.

^b GPS = Global positioning system; VHF = Very high frequency.

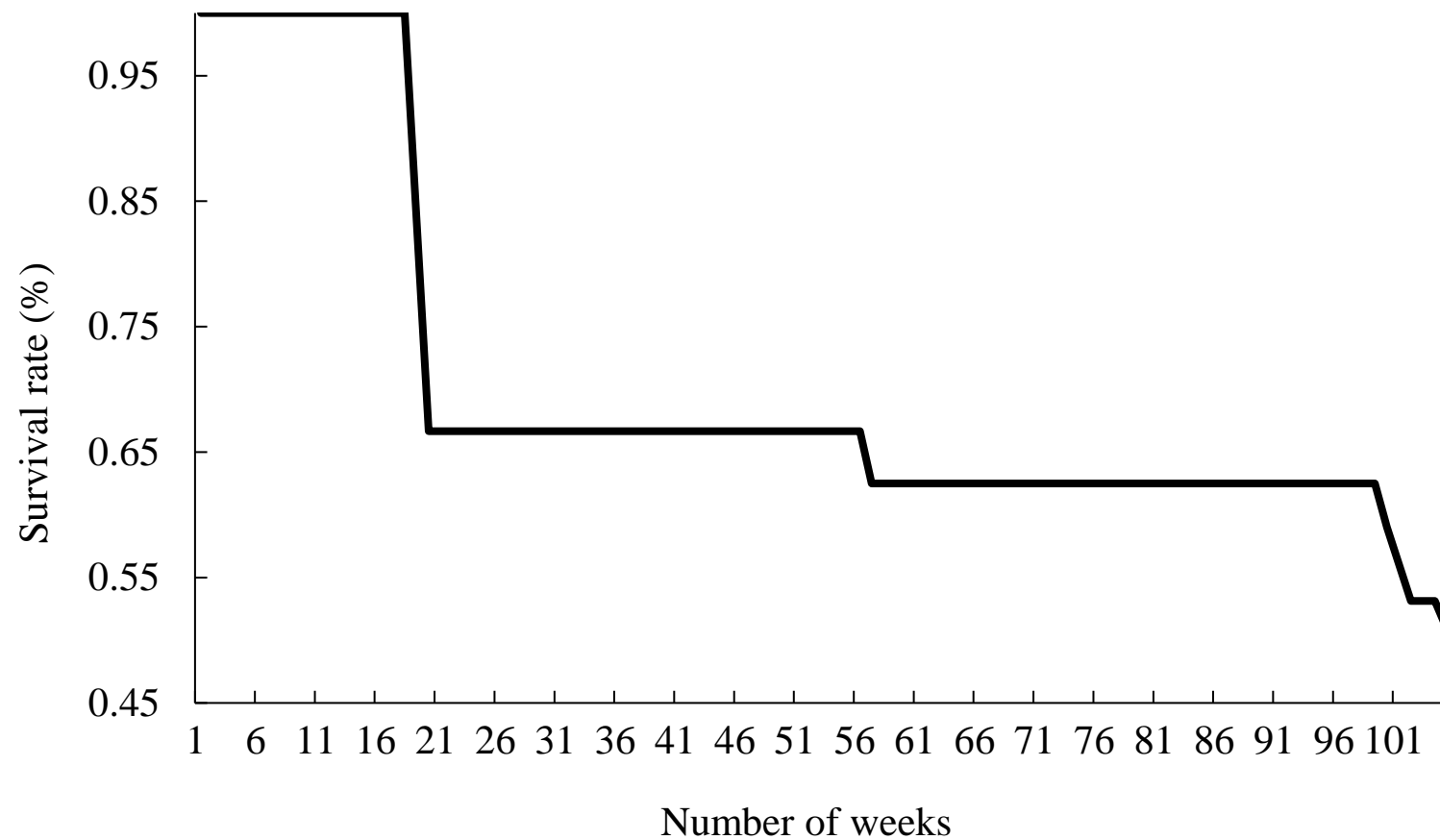


Figure 1. Western Illinois University Bobcat Project pooled survival rate using the Kaplan-Meier procedure modified for staggered entry for radiocollared bobcats in west-central Illinois, January 2016–November 2017.

Table 4. Western Illinois University Bobcat Project radiocollared bobcat mortalities that were recovered or confirmed in west-central Illinois, October–December 2017.

Estimated DOD ^a	Bobcat ID ^b	Sex	Collar type ^c	Mortality cause	County
28 November 2017	F3	Female	VHF	Vehicle collision	McDonough
6 December 2017	M1	Male	VHF	Harvest - illegal	Schuyler
12 December 2017	F12	Female	GPS	Vehicle collision	Hancock
31 December 2017	M13	Male	VHF	Harvest - legal	Macoupin

^a Estimated DOD = estimated date of death.

^b Bobcat ID = bobcat identification. For instance, F3 refers to female # 3 and M1 refers to male #1.

^c GPS = Global positioning system; VHF = Very high frequency.

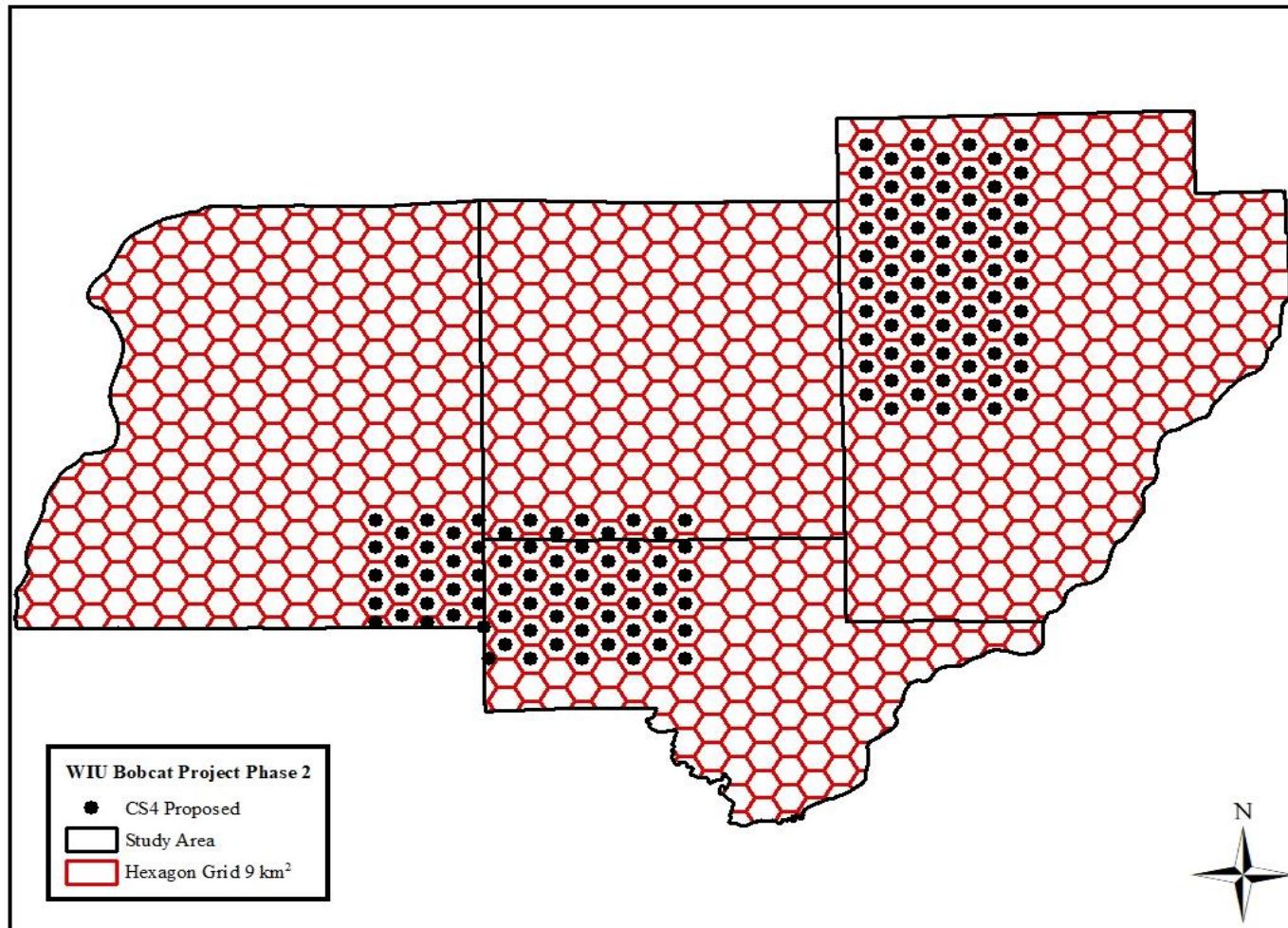


Figure 2. Western Illinois University Bobcat Project proposed CS4 camera station deployment locations (per hexagon) for bobcat detection and density estimation in west-central Illinois from December 2017–March 2018.