

PROGRESS REPORT

POPULATION STUDY OF THE EASTERN WOODRAT
(*Neotoma floridana*) IN PINE HILLS, UNION COUNTY, ILLINOIS

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INTRODUCTION

Live-trapping of woodrats (*Neotoma floridana*) at Pine Hills was initiated in September 1992, with 27 Tomahawk traps set for 2 days. Fifteen individual woodrats were captured, ear-tagged with individually-numbered metal tags, and released. These included 2 adult males and 13 females; 5 of the females were considered to be subadults based on body weight (see Table 1). A simple Lincoln Index resulted in a density estimate with an upper confidence level of 28 individuals. This estimate was considered very conservative based on the limited number of trap nights and limited area within Pine Hills that was sampled.

ACCOMPLISHED TO DATE

Since the baseline trapping conducted in September 1992, two additional trapping periods have been conducted. The same sites were monitored as in September, with additional sites included (see Table 2 below). The number of traps placed each night was increased from 27 to 41.

Table 2

Nest Sites¹ and Location² for July and August 1993 Trapping Periods

Nest Site	Location	Nest Site	Location
15 (1)	0.55	172b (1)	1.65
186 (2)	0.55	211 (1)	1.70
183 (2)	0.60	175 (1)	1.70
41 (2)	1.00	176 (1)	1.72
48 (2)	1.20	176S1(1)	1.85
134 (1)	1.25	176S2(1)	1.85
194 (2)	1.30	167 (2)	2.20
53 (2)	1.42	214 (1)	2.30
178 (2)	1.49	191 (1)	2.30
58 (1)	1.55	170 (1)	2.30
174a (1)	1.60	126 (2)	2.60
174b (1)	1.60	77a-c(3)	Otter Pond
172 (1)	1.65	87a-c(3)	Otter Pond

1 - Nest site numbers correspond to those previously established during nest site surveys by IDOC personnel

2 - Indicates milage from intersection of bluff road and north levee road

Trapping Period 8-10 July 1993

There were 47 captures involving 22 individual woodrats during this period (Table 3). Of the 22 individuals trapped, 4 were also taken in September 1992. These four were females; two adults and two subadults. Neither adult male from September was seen in July. As in September, the sex ratio again favored females (6 M: 16 F). As expected, however, the age structure was shifted towards younger individuals. The percentage of juvenile (n=2) and subadult (n=5) animals captured was fairly high - 7 of 22 (about 32%). Also, almost all the females judged to be adults (>200 g body weight) had swollen nipples and the fur was absent from around their nipples, indicative of recent lactation and nursing. Thus, reproduction in the preceeding months appeared to be good.

Trapping Period 20-22 August 1993

There were 46 captures involving 23 individual woodrats during this period (Table 4). Of these, 7 were originally tagged in July, and 3 remained from September 1992. The sex ratio was 7 M: 15 F (1 individual = sex unknown). Four woodrats during this period were juveniles (including the smallest one trapped to date - 123 g body weight), and 6 were subadults. Reproductive activity appeared to be continuing based on the physical criteria noted above. As in July, a good percentage of individuals (43%) was juvenile or subadults. As seen in Table 5 below, for the combined July-August trapping periods, 66% of 38 individuals captured were adults.

Table 5.
Age Structure and Sex Ratio of 38 Individuals
Captured July and August 1993

	<u>Male</u>	<u>?</u>	<u>Female</u>
Juvenile	4		3
Subadults	1	1	4
Adults	8		17

Population Estimates

Given the capture/recapture data from Tables 3 and 4, a mean Lincoln Index yielded the following density estimators and associated 95% confidence intervals. The upper

limit of each interval is given as this probably is the most realistic indicator of woodrat numbers

July Trapping Period - Estimated number was 25.6 ± 6.4 for an upper estimate of 38 individuals

August Trapping Period - Estimated number was 28.2 ± 1.5 for an upper estimate of about 30 individuals.

This analysis was repeated for the combined data from the two trapping periods, and included the four individuals known alive on the study area from September 1992. This produced an estimate of 35.7 individuals ± 6.0 , for an upper estimate of 42 woodrats.

Radiotelemetry

Radiotelemetry units (Holohil Systems) were placed on woodrats during the August trapping period. We concentrated on juveniles and subadults in an effort to monitor potential autumn dispersal. To date, three individuals are under collar. Unfortunately, several collars have been lost as the technique has been worked out.

<u>Age & Sex</u>	<u>Ear Tag Number</u>	<u>Site</u>	<u>Frequency</u>	<u>Remarks</u>
adult female	21-22	15	151.137	firmly attached slipped in 2 days
subadult male	31-32	134	151.099	recovered lost collar
subadult female	83-84	194	151.199	not crimped, probably lost
subadult female	85-86	53	150.949	OK
juvenile female	81-82	183	150.829	OK
juvenile male	105-106	41	151.177	OK
subadult female	71-72	87c	150.807	not crimped, probably lost

Site Fidelity

As expected, individuals had very restricted trap-revealed movement patterns. Considering the four individuals tagged in September 1992 that were recaptured in July 1993, all were at the same location. Likewise, many individuals were taken all three days of trapping in either July and/or August, and were always at the same site (Tables 3 and 4).

TO BE ACCOMPLISHED DURING NEXT QUARTER

Livetrapping and tagging will continue on a monthly basis to determine a) seasonal changes in density and age structure of the population; b) quantify percentage of

females breeding and general reproductive potential of the population; c) estimate survival rate of juveniles throughout the year, especially males; d) determine seasonal changes, if any, in nest site use and trap-revealed movement patterns. Additional radiocollars will also be placed on individuals in September and October to augment trap data on movement patterns, but mainly to document dispersal patterns and mortality of subadults, and extent of habitat use away from the bluff area.

Table 1. Nest site location, tag numbers, sex, and body weight of eastern woodrats live-trapped in Pine Hills, Union County, 19-20 September 1992. A (*) indicates nest site was considered to be active.

<u>Date</u>	<u>Section and (Nest Site)</u>	<u>New or Recapture</u>	<u>Ear Tag #'s</u>	<u>Sex</u>	<u>Weight (grams)</u>	<u>Remarks</u>
19 Sept. '92	16 (41) *	New	R=1 L=-	F	205	subadult
19 Sept. '92	16 (48) *	New	R=4 L=3	F	180	subadult
19 Sept. '92	16 (134b)	New	R=5 L=6	F	221	S. of 134a
19 Sept. '92	16 (134a)	New	R=7 L=8	F	265	Adult
19 Sept. '92	16 (53) *	New	R=9 L=10	M	303	Adult
19 Sept. '92	16 (174a)	New	R=11 L=12	F	282	Adult
19 Sept. '92	16 (174b)	New	R=13 L=14	F	273	Adult
19 Sept. '92	16 (178)	New	R=15 L=16	F	260	Adult
19 Sept. '92	21 (167) *	New	R=17 L=18	M	293	Adult
19 Sept. '92	28 (77)	New	R=19 L=20	F	270	Adult
20 Sept. '92	9 (186) *	New	R=21 L=22	F	190	subadult
20 Sept. '92	9 (148) *	New	R=23 L=24	F	237	Adult
20 Sept. '92	16 (41)	Recapture	R=1 L=-	F		same site as first capture
20 Sept. '92	16 (48)	Recapture	R=4 L=3			same site as first capture
20 Sept. '92	16 (134b)	Recapture	R=5 L=6	F		same site as first capture
20 Sept. '92	16 (53)	Recapture	R=9 L=10	M		50m S. of first capture
20 Sept. '92	16 (58)	New	R=25 L=26	F	150	subadult
20 Sept. '92	16 (174a)	Recapture	R=11 L=12	F		same site as first capture
20 Sept. '92	21 (167) *	New	R=27 L=28	F	258	Adult. Male #17-18 caught on this site on Day 1
20 Sept. '92	21 (126) *	New	R=29 L=30	F	172	subadult
20 Sept. '92	28 (77)	Recapture	R=19 L=20	F		same site as first capture

Table 3. Results from July trapping period at Pine Hills, Union County

Date	Nest site	New/Recapture	Ear tag #'s	Sex	wt (g)	Remarks
July 8, 1993	41N	Recapture	1, torn	F		fur absent around nipples, lactating
July 8, 1993	48N	New	31, 32	M	178	juvenile
July 8, 1993	194N	New	33, 34	M	178	juvenile
July 8, 1993	58S	New	63, torn	M	268	
July 8, 1993	128N	New	37, 38	M	288	
July 8, 1993	176 S1	New	39, none	F	228	
July 8, 1993	176 S2	New	41, none	F	268	lost entire tail sheath
July 8, 1993	167	Recapture	27, 28	F	268	fur absent around nipples, lactating
July 8, 1993	191	New	43, 44	F	188	nipples small but evident
July 8, 1993	126	New	45, 46	F	190	lactating
July 8, 1993	87A	Recapture	19, torn	F	293	fur absent around nipples
July 8, 1993	87C	New	47, 48	M	150	non-scrotal
July 9, 1993	15	New	49, 50	f	228	left eye smaller, damaged; swollen vulva
July 9, 1993	186	Recapture	21, 22	F	218	fur absent around nipples, small but evident
July 9, 1993	183S	New	51, 52	F	208	hair absent around nipples
July 9, 1993	41	New	53, 54	F	248	swollen vulva
July 9, 1993	48	New	57, 58	F	288	lactating, in trap with 59, 60
July 9, 1993	48	New	59, 60	M	368	scrotal male, in trap with 57, 58
July 9, 1993	134	Recapture	31, 32			
July 9, 1993	194	Recapture	33, 34	M		
July 9, 1993	53	Recapture	63, L torn	M	248	ripped left ear
July 9, 1993	178	Recapture	37, 38	M		tail sheath missing
July 9, 1993	176	New	65, 66	F	248	nipples exposed
July 9, 1993	176 S1	Recapture	39, L torn	F	248	tail sheath missing
July 9, 1993	176 S2	New	67, 68	M	328	scrotal
July 9, 1993	167	Recapture	27, 28	F		
July 9, 1993	191	New	69, 70	F	268	swollen vulva
July 9, 1993	126	Recapture	45, 46	F		
July 9, 1993	187C	Recapture	47, 48	M		
July 10, 1993	183S	Recapture	51, 52	F		
July 10, 1993	41	Recapture	1, L none	F	277	
July 10, 1993	48	Recapture	57, 58	F		

Table 3. Continued

July 10, 1993	134	New	73, 74	F	247	lactating
July 10, 1993	194	Recapture	33, 34	M		
July 10, 1993	53	Recapture	63, L torn	M		
July 10, 1993	178	Recapture	37, 38	M		tail sheath missing
July 10, 1993	178	New	75, 76	M	257	scrotal
July 10, 1993	174B	New	77, 78	M	277	non-scrotal
July 10, 1993	172B	New	79, 80	M	287	scrotal
July 10, 1993	176	Recapture	65, 66	F		
July 10, 1993	176 S1	Recapture	39, L torn			
July 10, 1993	176 S2	Recapture	67, 68	M		scrotal
July 10, 1993	167	Recapture	27, 28	F		
July 10, 1993	191	Recapture	43, 44			
July 10, 1993	126	Recapture	45, 46	F		
July 10, 1993	77A	Recapture	19, L torn			
July 10, 1993	87C	New	71, 72	F	137	juvenile

Table 4. Results from August 1994 trapping period at P Hills, Union County

Date	Nest Site	New/Recapture	Ear Tag #	Sex	Wt (g)	Remarks
August 20, 1993	15	Recapture	21, 22	F	250	fur absent around nipples, nipples enlarged
August 20, 1993	183	New	81, 82	F	150	
August 20, 1993	41	Recapture	1, 100	F	258	lactating
August 20, 1993	134	Recapture	31, 32	M	215	
August 20, 1993	194	New	83, 84	F	194	151.199 collar not crimped
August 20, 1993	53	New	85, 86	F	190	150.949 collar
August 20, 1993	178	Recapture	37, 38	M	250	short tail
August 20, 1993	174A	New	91, 92	M	175	scrotal
August 20, 1993	174B	Recapture	77, 78	M	260	
August 20, 1993	58	New	89, 90	?	155	
August 20, 1993	175	New	93, 94	F	160	
August 20, 1993	176	Recapture	65, 66	F	220	hair absent around nipples
August 20, 1993	176 S2	Recapture	39, L torn	F	225	lactating?, short tail
August 20, 1993	167	Recapture	27, 28	F	290	lactating
August 20, 1993	170	New	95, 96	F	245	hair absent around nipples
August 20, 1993	126	Recapture	45, 46	F	220	hair absent around nipples
August 20, 1993	77	Recapture	19, L torn	F	293	evident nipples
August 20, 1993	87C	Recapture	71, 72	F	197	
August 21, 1993	15	Recapture	21, 22	F		151.137 collar
August 21, 1993	183	Recapture	81, 82	F		
August 21, 1993	183	New	97, 98	M	255	
August 21, 1993	134	Recapture	31, 32	M	215	
August 21, 1993	194	Recapture	73, 74	F		lactating
August 21, 1993	53	Recapture	85, 86	F		collar
August 21, 1993	178	Recapture	37, 38	M	250	short tail
August 21, 1993	58	New	101102	F	240	lactating
August 21, 1993	172B	New	103, 104	F	230	hair missing around nipples
August 21, 1993	175	Recapture	93, 94	F		
August 21, 1993	176	Recapture	65, 66	F		
August 21, 1993	176 S1	Recapture	39, L torn	F		
August 21, 1993	176 S2	Recapture	41, L torn	F	267	hair missing around nipples, short tail
August 21, 1993	167	Recapture	27, 28	F		

August 22, 1993	15	Recapture	21, 22	F		Collar missing, no signal, 151.137
August 22, 1993	183	Recapture	81, 82	F		150.829 collar
August 22, 1993	41	New	105, 106	M	123	151.177 collar
August 22, 1993	134	Recapture	31, 32	M		
August 22, 1993	53	Recapture	85, 86	F		
August 22, 1993	178	Recapture	37, 38	M		short tail
August 22, 1993	172	Recapture	77, 78	M		
August 22, 1993	172B	Recapture	79, 80	M	263	molting, molt line just above hind legs, bot fly
August 22, 1993	175	Recapture	93, 94	F		
August 22, 1993	176	Recapture	65, 66	F		
August 22, 1993	176 S1	Recapture	39, L torn	F		short tail
August 22, 1993	176 S2	New	107, 108	M	330	
August 22, 1993	167	Recapture	27, 28	F		
August 22, 1993	87C	Recapture	71, 72	F		150.807 collar, not crimped