

**Blanding's Turtle (Emydoidea blandingii) Research
1988 Results/1989 Plans**

**Submitted to: Minnesota Department of Natural Resources
Nongame Wildlife Program**

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INTRODUCTION

This is a final report summarizing field work conducted on Blanding's turtles, a state threatened species. The objective of this study was to identify concentrations of Blanding's turtles in the northern metropolitan region. Increased pressure from development has resulted in loss of wetlands and nesting habitat, creating a need for establishing protection priorities.

METHODS

After obtaining Blanding's turtle records for the study area and identifying potential concentrations, several methods were used to locate Blanding's turtles in the field.

Blanding's Turtle Records

Prior to conducting field work, all previous Blanding's turtle records within the study area were obtained from the MN DNR and plotted on USGS topographic maps and county road maps. Records prior to 1988 provided basic information used to identify potential concentrations of Blanding's turtles. Sightings reported in 1988 substantiated the assumptions drawn from the previous records. DNR personnel received reports from individuals who saw Blanding's turtles in 1988. These reports were followed up by conducting field visits to each site (see report form).

Contacts were made with resource managers within the study area to familiarize them with the project and to request reports of future Blanding's turtle sightings. DNR posters requesting reports of Blanding's turtle sightings were posted in towns within the study area.

Visual Observations

Initial field work consisted of becoming familiar with the wetlands within this large study area. Wetlands which appeared to have suitable habitat for Blanding's turtles and/or had several records in the vicinity were observed with binoculars and spotting scope.

Road Surveys

During the peak of the nesting season, early to mid-June, 10 volunteers were recruited to conduct road surveys throughout the study area. Survey routes were designed by selecting roads near potential concentrations of Blanding's turtles.

Trapping

Hoop traps (Lagler, 1943) were obtained from MN DNR Fisheries offices in Brainerd, Little Falls, and Montrose. Traps consisted of 4 fiberglass hoops, approximately 1 m in diameter. Hoops were connected with nylon netting, and the throat of the trap was adjustable to allow for the capture of large turtles. The initial three traps had two leads each. Subsequent traps lacked leads, were equally as effective at trapping turtles, and were easier to work with in the field.

The traps were baited with frozen smelt, checked every other day, and rebaited if necessary. Frozen smelt were purchased at a local grocery store, cut up into small pieces and placed in plastic containers (i.e. tennis ball containers) which had been punctured several times. One container was placed in the rear portion of each hoop trap.

Traps were staked into place, with at least 15 cm of the tops of the hoops exposed to allow the captured turtles to obtain oxygen. Traps were typically removed from the wetland after 4 trap-nights.

Captured Blanding's turtles were aged by counting growth annuli on the plastron (Sexton, 1959), and sexed if at least 15 years old. In addition, turtles were weighed and measured (length and width of carapace). Turtles were marked prior to releasing them back in the wetland. Notches were filed into the margin of the carapace (Figure 1).

RESULTS AND DISCUSSION

Blanding's turtle reports

The MN DNR received approximately 150 reports from individuals who sighted Blanding's turtles within the study area. Sue Tracy, Nongame Wildlife Assistant, collected data from each person who reported a sighting. A small percentage of the sightings were verified.

Road surveys

Volunteers found six Blanding's turtles while travelling the survey routes during the nesting season. Six additional Blanding's turtles were discovered on roads and in wetlands during the field season (Appendix 1).

Trapping

Hoop traps provided the most productive technique for locating Blanding's turtles (Appendix 2). Trapping was conducted in Isanti and Anoka counties between 24 June - 19 July, and 18 August - 4 September. Although additional trapping was planned, the turtles did not respond to the bait during the later part of the summer and trapping efforts were terminated. Because Blanding's turtles will reduce their food intake prior to overwintering (Madeleine Linck, pers. com.), it is possible that they were already preparing for hibernation.

Out of 14 wetlands or ditches that were trapped in the two counties, 44 Blanding's turtles were captured at 5 sites. The majority of the turtles were captured from two wetlands in Isanti county, (23 turtles) and Management Area (17 turtles).

Results from the trapping efforts are summarized by age group in Table 1. The lack of response from turtles in the 0-4 age group is most likely due to the capture technique, not the absence of this age group in the population. According to Bruce Brecke (pers. comm), turtles in this age group have been found along edges of wetlands (in sedges), and may not spend a significant amount of time (if any) in open water. Individuals beyond the age of 25 are difficult to age accurately because the growth rings are not as pronounced. As Blanding's turtles age, the annuli are worn down until the shell is smooth. Individuals with smooth shells were assumed to be the older turtles in the population and were identified in a separate age group. No attempt was made to estimate age beyond 25 years.

FUTURE PLANS

Through reports of Blanding's turtle sightings and the trapping results of 1988, it appears as though Blanding's turtles are more abundant than originally thought. The threat to this species, however, will increase with time. As housing developments spread out beyond the current suburban boundaries, turtles are confronted with drainage of wetlands, and loss of nesting habitat. In addition, roads separate turtle activity centers and put travelling adult and hatchling turtles at risk. In addition to habitat changes, the Blanding's turtles are exposed to an increasing population of predators, including raccoons, skunks, foxes and dogs. For these reasons it is important to continue the identification of population concentrations and establish management practices for selected areas.

In 1989 priority trapping sites will consist of managed areas. By identifying concentrations of Blanding's turtles in wetlands which are at least partially protected, a minimal effort would be necessary to protect core populations. Once concentrations are identified, selected populations can be studied more intensely to identify uplands or additional wetlands used by the Blanding's turtles. Such field work may identify unprotected nesting sites or overwintering sites. Protection of such areas may be critical in avoiding the senescence of these populations.

Managed areas included in trapping plans for 1989:

<u>County</u>	<u>Managed Area</u>	<u>Wetlands</u>
Anoka	Bethel WMA	Smith Lake, Sand Lake
	Boot Lake SNA	Linwood Lake
	Carlos Avery WMA	Twin Lakes, Pools
	Cedar Creek NHA	Fish Lake, Beckman L.
	Lamprey Pass SNA	Mud Lake
Chisago	Wild River State Park	Amiks Pond
Isanti	Athens WMA	various wetlands
	Crooked Road WMA	Mud Lake
	Marget Lake WMA	Marget Lake
	Typo Lake WMA	Typo Lake
Ramsey	Twin Cities Arsenal	various wetlands
Sherburne	Sand Dunes State Forest	Lake Ann
	Sherburne NWR	various wetlands
Wash.	Warner Nature Center	various wetlands

In addition to trapping managed areas, there are other unprotected wetland complexes that appear to have the potential for Blanding's turtle concentrations. These areas will also be priority trap sites in 1989 and consist of:

<u>County</u>	<u>Township</u>	<u>Wetland</u>
Anoka	Oak Grove	Grass Lake, Hickey Lake
	Columbus	Crossways Lake, Randeau Lake
Stearns	Lynden, Fairhaven	Mund Lake
	St. Augusta	
Wright	Silver Creek	North Lake

ADDITIONAL RESEARCH

Habitat Fragmentation

The impact of habitat fragmentation is possibly the greatest threat to the Blanding's turtles in the metropolitan area. The development occurring within the metro area has both direct and indirect impacts on the populations. Turtle populations are reduced due to mortality on roads, collecting, and an increase in predation. Indirect impacts result from reduced nesting success which will alter the age structure of the population, resulting in few, if any juveniles.

One way to analyze the affect of habitat fragmentation would be to compare turtle populations in developed and undeveloped wetlands. The ratio of juvenile turtles in the population will be an indicator of the productivity of adults.

Food Studies

A food study would provide information regarding the diversity of food items consumed by Blanding's turtles in Minnesota. In addition, it would provide information on the interaction of various species within the wetland community. One interesting aspect of such a study would be the comparison of food habits and size of turtles. For example, the Weaver Dunes turtles in southeast Minnesota are noticeably smaller than the Blanding's in the north metro area. Perhaps this is related to food habits.

Details for the above mentioned studies will be discussed at a meeting scheduled by the MN DNR Nongame Wildlife Program.

BLANDING'S TURTLE REPORT

County _____ T _____ R _____ Sec _____ (1/4 1/4 if possible)

Observer _____ Date of sighting _____

(Name & _____ Date reported _____

Address) _____ Daytime telephone # _____

Poster Sent: _____ Yes _____ No

Observer status (check one): _____ General Public _____ Wildlife Professional
(give affiliation)
_____ Turtle Expert (i.e., someone who has field experience with Blanding's, such as
Linck, Moriarty, Brecke, etc.)

Number seen: _____ Sex (if known): _____ Size: _____
(Distinguish if shell length or total body length)

Have Blanding's been seen in this area before?

Turtle activity observed: Nesting? Yes or No

Observer's description of area:

Additional Comments by Observer:

Map Sent to Verify Location: _____
(with stamped, self-addressed envelope)

Documentation of Record (check one):

1. Verified with a specimen (i.e., dead turtle)
Deposition of specimen:
2. Verified with a photo
3. Sighting only; Reporter's description was as follows:
4. Turtle also observed by another person with turtle experience - who?

Report Taken By:

Field Visit

Field Verification Date: _____ Name: _____

Number Seen: _____ Sex: _____ Size: _____
(Distinguish if shell length or total body length)

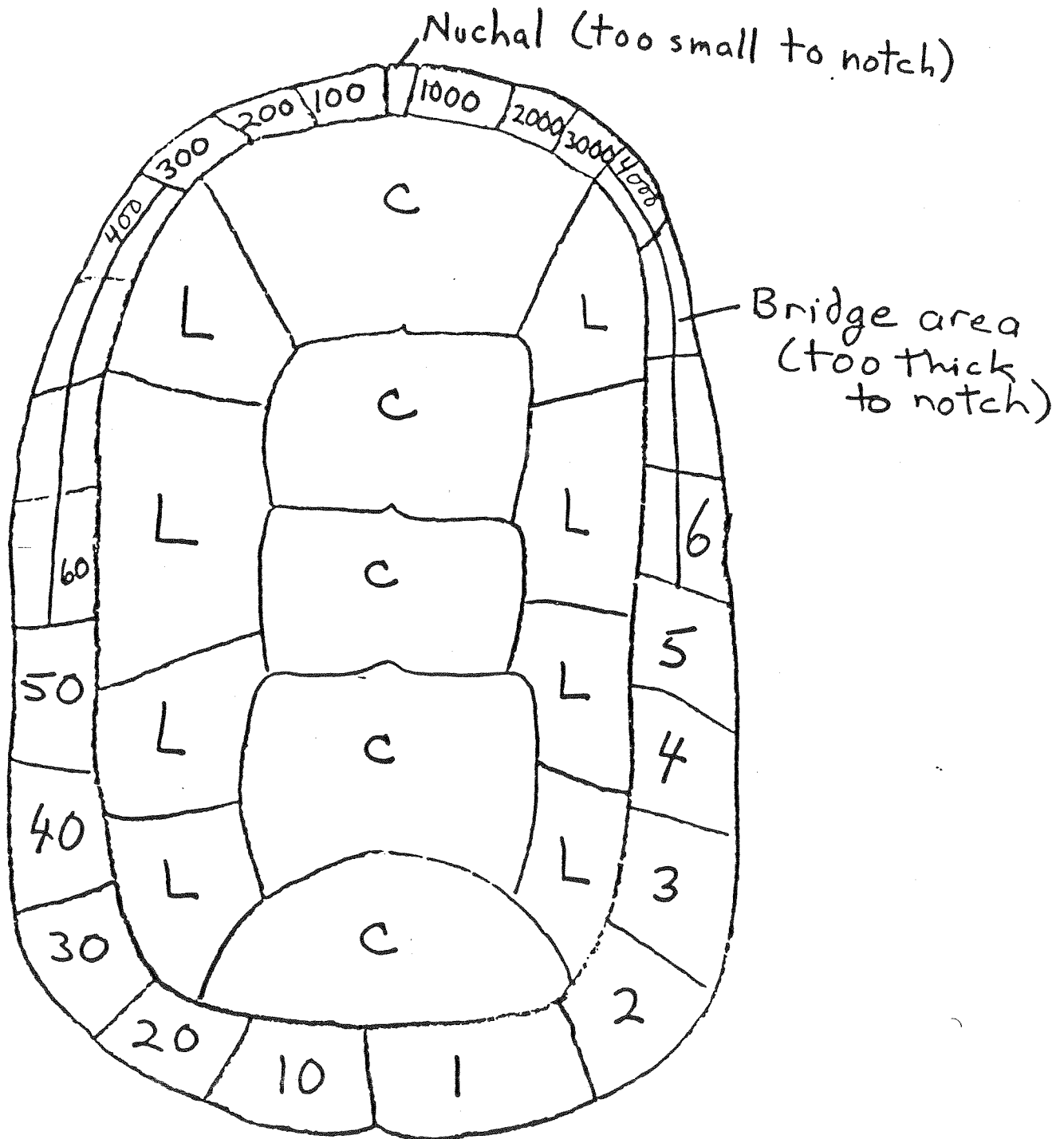
Map below and describe habitat in area where turtle was reported from. Indicate closest wetlands; sandy upland habitat; drainage ditches and travel ways; highways; houses; extent of development:

Additional Turtles Seen: _____

MAP:

Topo Map # _____

FIGURE 1. Method used to mark individual Blanding's turtles (as used by Terry E. Graham).



APPENDIX 1. Blanding's turtles sighted during the 1988 field season in the north metro study area.

Location information has been removed from this document to protect Blanding's turtle populations.

APPENDIX 2. Blanding's turtles captured in the north metro study area, Minnesota. 26 June - 4 September 1988.

<u>County</u>	<u>Wetland</u>	<u>Date</u>	<u>ID#</u>	<u>Sex*</u>	<u>Age**</u>	<u>L xW(mm) Carapace[^]</u>	<u>Weight (kg)^{^^}</u>
Isanti		26 June	01	J	08	179	-
			02	M	18	229	-
			03	M	20+	229	-
			40	M	14	229	-
			04	M	25+	242	-
			05	F	20+	229 x 153	-
			06	M	20	229	-
			07	J	12	200	-
			08	M	16	233 x 155	-
			10	M	25+	235	-
		28 June	11	F	20+	222 x 153	-
			12	M	17	233 x 145	-
			13	F	25	235 x 153	-
		30 June	12	M	25+	235 x 150	-
			13	F	25+	235 x 155	-
		2 July	14	F	25	no record	-
			15	M	25+	267 x 175	-
			16	M	20+	250 x 170	-
			17	F	17	222 x 145	-
			18	F	20	242 x 150	-
		6 July	09	M	S	235 x 155	-
			19	F	20	217 x 145	-
		11 July	20	M	26	255 x 163	-
			21	M	S	247 x 167	2.1
		19 July	22	J	14	185 x 127	0.8
			37	M	S	246 x 162	1.9
		17 July	23	J	12	177 x 120	0.7
			24	F	16	225 x 148	1.6
			25	F	20+	233 x 157	1.9
			26	M	S	257 x 174	2.3
			27	F	16	226 x 149	1.5
			28	M	20+	250 x 168	2.0
			29	M	18	244 x 159	1.8
			30	M	24	236 x 157	1.8
31	F		25+	246 x 163	1.1		
30	J		10	169 x 117	0.6		
33	F		S	230 x 153	1.7		
34	M		25+	233 x 158	1.7		

	17 July	35	M	S	253 x 169	2.1
	con't	36	M	20+	240 x 166	1.9
		37	M	25+	246 x 162	1.9
	19 July	32	J	5	145 x 104	0.4
	4 Sept.	39	M	20+	243 x 172	1.9
Anoka	20 Aug.	38	F	10	189 x 132	1.6

*M=Male, F=Female, J=Juvenile

**S=Smooth plastron, (unable to age).

^Carapace width was not recorded for turtles captured prior to 28 June unless they were recaptured.

^^Weight was not obtained for turtles captured prior to 11 July.