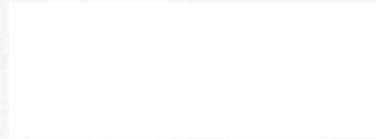


WOOD TURTLE NESTING SURVEY



BARNEY OLDFIELD

JUNE 1988

Please note that all location information has been removed from this document to protect the wood turtle populations

WOOD TURTLE NESTING SURVEY

Of the nine native turtle species found in Minnesota, the wood turtle (Clemmys insculpta) may well be the rarest and most vulnerable. The turtle is classified as threatened in Minnesota and is given full protection by law. Clemmys insculpta reaches the extreme western edge of its North American range in eastern Minnesota. The second largest population within the state is found [REDACTED]

[REDACTED]. A wood turtle nesting survey was conducted [REDACTED]

[REDACTED] A total of 9 wood turtle observations were made during this field survey.

METHODS

From June 1 - June 16, 1988 a total of 23 field hours was spent surveying 11 different potential turtle nesting sites along [REDACTED]

[REDACTED]. Site visits were conducted at various times of day on 8 different days. Certain sites were visited repeatedly while others were only surveyed once. Sites were surveyed on foot, and binoculars were used extensively to help locate basking and nesting turtles. Air temperatures and weather notes were recorded. When possible cloacal^a temperatures, measurements and weights were taken from nesting turtles.

SURVEY SITES

Refer to attached map.

The oxbow sites (OB1, OB2, OB3 and OB4) are all sand banks right along the rivers edge. These sand banks are formed where the river current slows on the inside curve of an oxbow. They are easily accessible to turtles and generally have sparse vegetation. This provides an ideal egg incubation environment.

Trail bank site is a steep turtle nesting area near the [redacted] adjacent to the southern edge of the [redacted]. This area was probably an old railroad cut. At the top of the hill is an extensive wild strawberry patch and several large oak trees.

[redacted] site is a sand bank on the north shore of the river downstream from trail bank site. This area has been used in previous years by snapping, softshell and wood turtles for nesting.

Two bridge sites (B1 and B2) were surveyed. B1 is an extensive sandbar [redacted], and B2 is a large sand bank near a county road bridge. Both of these sites are readily accessible to human activities.

The [redacted] area consists of three sites (LB1, LB2 and LB3) in close proximity to the [redacted]. A considerable amount of snapping and painted turtle nesting is found along the edges [redacted] between these three sites. LB1 is a steep sand bank that raises directly up from the rivers edge to a grass meadow. LB2 is a sand washout area right along [redacted]. Painted turtles have nested here in previous years. LB3 is a steep west facing sand bank alongside [redacted]. Residential housing is at the top.

FINDINGS

June 1

Site LB3

2 Clemmys insculpta nests
(predator destroyed)

June 3

Site OB3

1 Clemmys insculpta basking
(female)

June 6

Site OB2

2 Clemmys insculpta nesting

June 7

Site OB2

1 Clemmys insculpta
(sex undetermined)

Site LB1

1 Clemmys insculpta nest
(predator destroyed)

June 16

Site OB3

1 Clemmys insculpta basking
(sex undetermined)

Site LB1

1 Clemmys insculpta nesting

Refer to attached field notes for details.

DISCUSSION

During this survey all wood turtle activity was found at the oxbow and [redacted] (OB2, OB3, LB1 and LB3). The oxbow sites provided observations of 2 nesting turtles plus three additional turtle sightings. The [redacted] sites yielded one nesting turtle and three potential wood turtle nests. All of these nests had been destroyed by predators.

Site OB2 is a very important and relatively undisturbed nesting area. There is an abundance of quality nesting

beach plus considerable foraging and basking areas. This section of the river shows very little human intervention. There are no trails worn along the banks, and

users are unlikely to hike in through the coarse vegetation. Canoe use along

has generally been minimal due to a number of factors. Canoe rentals are not normally available for this section of river. There are no easily usable access points. This section of the river can be dangerous to unskilled canoers due to strainers, log jams and swift current through the oxbows. If in the future this area becomes heavily used by recreational canoers, then turtle nesting areas will be more at risk. Nest predation by small mammals was considerably less apparent in the oxbows as compared to the

sites and along the trail. Keeping human activities to a minimum should be an important consideration.

LB1 and LB2 are also important wood turtle nesting areas, but nest destruction by predators exceeds 90% and approaches 100%. has provided an open corridor for nest predators. Raccoon are common on the trail after dusk. Decreasing nest predator pressure should be a high priority.

Atatch:

- 1 site map
- 2 field notes

FIELD NOTES - JUNE 1988

June 1

Various turtle nesting areas were surveyed along the site (B1) was the first locality. 7:00 pm, AT - 28.6 C, clear, calm and humid. There were a number of turtle tracks onto and off the sandbar but no nesting activity could be located. site (LB1), the steep sandy bank on the edge of the river was surveyed beginning at 7:45 pm. AT - 24.6 C. At this site were 2 Graptemys geographica, 3 Chrysemys picta and 1 Apalone spiniferus nests. All nests had been predator destroyed and no intact eggs were found. LB2 (sand wash out along the) was surveyed around 8:00 pm. No turtle nesting activity was seen at LB2. Between LB2 and LB3 along the bike trail were at least 5 PD Chelydra serpentina nests and 1 PD Chrysemys picta nest. site 3 (LB3), steep sand bank along trail, there were 2 PD C. serpentina nests and 1 PD Clemmys insculpta nest. The potential C. insculpta nest had a total of 8 destroyed eggs. The eggs were elliptical and of the size or larger than G. geographica. Since G. geographica generally lays upwards of 20 and more eggs, it would seem highly probable that this was a C. insculpta nest. This nest was located about $\frac{1}{2}$ way up the hill and very close to where a PD C. insculpta nest was found during June of 1987. At the base of the hill along the bike trail on the river side was another potential PD C. insculpta nest. This nest had only 4 large elliptical egg shells. It is possible that a passerby along the trail may have displaced additional egg shells. It was not possible to be as certain about the species call for this nest since it was evidently incomplete. Nest predators such as raccoons and skunks are very unlikely to carry eggs any distance from the nest site. They generally eat the yolk and discard the shells while they are digging up the nest.

Field searching ended at 9:30 pm.

June 2

site (LB1), 6:00 pm, AT - 22.6 C, overcast and threatening rain. As I came to the top of the bank, 2 large A. spiniferus females scrambled and dove into the river. Later it was evident that at least one of them had started excavating a nest. One fresh PD C. serpentina nest was also found. Along the trail between LB1 and LB2 was PD C. serpentina nest with 22-25 egg shells. In the bottom of the nest were 8 intact eggs. They were removed to be incubated artificially. No nesting activity noted at LB2. As LB3 was approached at 7:15 pm a C. picta was found nesting alongside the bike trail. AT - 20.2 C, BT - 23.8 C, CL - 14.5 cm, PL - 13.6 cm, BM - 405 gm. She had excavated a chamber, but had not started egg deposition.

On the return trip back down the trail, a second C. picta was found nesting. She had came up since I had been through earlier and was located between LB1 and LB2 along the trail. It was 8:15 pm, overcast and calm, AT -20.2 C, BT - 21.8 C, CL - 15.5 cm, PL - 14.6 cm, BM - 510 gm. This turtle had just begun to dig as no nesting chamber had been formed. As I approached LB1 at 8:45 pm, there were three bicyclers ahead on the trail that I had seen a couple of times earlier that evening. A teenage girl stayed with her bike on the trail while a teenage boy and a middle age man biked to the overlook on the bank of LB1. The boy dropped his bike and went to the edge as if looking for turtles. They then saw me approaching and quickly jumped back on their bikes and left in a hurry. The man was carrying a large white sack hanging from his handlebars that looked like it had a number of turtles in it. They weren't about to wait around to see if I had any questions concerning their activities. They evidently were using the bike trail as a quick way to find turtles. I then sat at the top of the bank and watched for any turtle activity. Two adult G. geographica females approached the bank swimming as if they were going to come ashore. They chose not to and went on down river. At 9:20pm it was too dark to continue.

June 3

Beginning at 10:30 am the site (B1) was surveyed with no additional evidence of turtle nesting to be found. It was overcast, calm AT - 19.5 C. A hike into the site was next between 11:30am and 12:30, AT - 23.7 C. Along the river bank on the hike in I located 4 A. spiniferus basking. At the site there was no evidence of turtle nesting. In fact the sandbank was considerably smaller than years past and the sand on the surface was damp. Apparently the course of the river has changed enough to make this site unsuitable for turtle nesting. This site had been used by C. insculpta, C. serpentina and A. spiniferus in years past. Site B2 was surveyed next from 12:30 - 1:15 pm. This is the sandbank area near the bridge off of the county gravel road. One C. picta was observed basking. No turtle nesting activity could be located although there were considerable turtle tracks across the sand at various sites. Most tracks appeared to be from baskers and explorers. Between 2:00 - 2:30 pm site LB1 was surveyed. 1.2 G. geographica was seen basking along the river on logs and the river bank. One additional PD C. serpentina nest was found.

At 3:00 pm I traveled by pickup into the sand quarry next to the oxbow sites. AT - 25.8 C, clear and calm. I began hiking into the oxbow sites along the river banks. A quick survey of OB4 revealed very little activity or tracks. As I approached OB3 through the tall reed canary grass, I was able to identify 1.1 G. geographica, 1.0 C. serpentina and 0.1 C. insculpta basking on the logs in the log jam across the river. I then attempted to cross the river to catch the wood turtle. About $\frac{1}{2}$ way across the water got so deep that I had to start swimming. This alerted the turtle which was definitely a female, and she dove into the deep water. I went ahead and crossed and hung onto a log with

just my head above the water. In due time I decided to try to sneak up on the basking snapper which was only 9 - 10 m away. I was able to get up on the log and catch the turtle before it woke up. It was a large male with a CL of 39.4 cm (15.5") and weighed an estimated 13 - 15 kg (30 - 35 lbs). I then dropped this turtle into the water and found a shallow crossing upstream. I concluded field work at 4:30 pm.

June 6

7:15 pm, AT - 23.5 C, calm, clear and humid. A hike into the oxbow sites was next. A survey of OB3 revealed several sets of turtle tracks in the mud and up onto the sand bank. No evidence of nesting activity could be found. Also no turtles could be located on the logs across the river. Going farther up river and scouting site OB2 across the river a nesting C. insculpta could be seen on the open sandbank 3 - 4 m from the water. I again carefully entered the river and began crossing and ultimately ended up swimming as the water got over my head. As I came up onto the turtle she made no attempt to escape. Her carapace was covered with dry sand as she had been doing some exploratory digging although no nesting cavity had been dug. This animal was an attractive wood turtle with bright yellow coloration with an unpitted and undamaged shell. She had only 10 countable growth rings and appeared to be in good condition. CL - 18.4 cm, PL - 18.4 cm, BM - 1110 gm. I then walked up onto the sand bank and just over a small ridge out of sight from the river was another nesting C. insculpta. This animal was also pregnant, but was apparently just doing some exploratory digging as there was no nest cavity. This animal appeared a bit more weathered than the previous one. She had some deformed areas on the front edge of the carapace possibly due to an old injury. She had 12 countable growth rings, CL - 20.3 cm, PL - 21.5 cm, BM - 1360 gm. Both of these animals appeared to be relatively young females and were in good body condition. I recrossed the river and hiked out of the oxbow area. I then went down

a short distance to survey the trail bank site. This area always has a flurry of turtle activity during nesting season. It is located close to the river and is a steep bank close to the trail similar to LB3. Five or six PD C. serpentina nests were located at this site. At the top of the bank was a good patch of wild strawberries and some large old oak trees. The search was concluded at 8:45 pm and the AT was 20.6 C.

June 7

I arrived at oxbow sites at 8:15 am, AT - 17.0 C, humid and clear. While hiking into the sites I saw one A. spiniferus basking on the mud bank near the river edge. I was able to sneak right up on top of the turtle before she dove to the water. I hiked to an observation point across from OB2. As I was watching I observed one C. insculpta (sex undetermined) come out of the water and climb up onto the sand bank some distance upstream from where I was located. After another

one half hour of observation I decided to cross the river to evaluate and photograph OB2. I did not find the turtle seen earlier. Many areas of this bank was heavily tracked with turtles. No evidence of PD nests could be found, but obvious nesting activity was going on. I was not able to locate any nests. This area appears to be a really important nesting area for C. insculpta along the

I then recrossed the river and went back downstream to scope the basking areas amongst the log jams. I saw very little turtle activity. Initially I seen a couple of turtles drop into the water but did not get an ID on them. While hiking out I saw one male G. geographica basking near where

. By 11:20 am the AT had reached 27.4. At 11:30 about 50 m from the trail edge right in the middle of the dirt road near the sand quarry was a large G. geographica that had just finished nesting. She was in the process of packing the nest fill down after excreting cloacal fluids on it. AT - 29.0 C, BT - 28.7 C and this was surprizing considering that she was in the full sun and had been working there for some time. CL - 25 cm, PL - 23.5 cm, BM - 1790 gm after egg deposition. I then recovered 20 eggs from the nest. One was slightly damaged and had to be discarded. The adjusted total weight of the eggs was 239 gm.

I reached LB1 at 12:10. One large 0.1 G. geographica was basking on a log at the bottom of the bank. One large 0.1 A. spiniferus was swimming along the bank edge as if looking for a landing place. After several minutes she went on down river. I located one PD G. geographica nest, 3 PD A. spiniferus nests, and one PD (potential) C. insculpta nest. The potential C. insculpta nest was located near the top of the bank just under the grass edge. There were 9 or 10 large shredded elliptical egg shells. I then departed sites at 12:45 am.

That evening I arrived at the oxbow sites at 7:25 pm and hiked into OB2. I scoped the area for a short time and saw plenty of turtle tracks on the sand, but saw no turtles. I hiked along the bank on upstream to OB1. Hiking is slow going through all the nettles and undergrowth. OB1 is a north facing sand bank where the river oxbows begin. This area showed very few turtle tracks and no nesting activity could be located. This is a fairly large area and it is surprizing there isn't more turtle activity. At the start of the hike in, the weather was clear, calm and humid, AT - 24.6 C. I hiked back through the extensive undergrowth and finished up at about 9:00 pm with no additional turtle findings.

June 8

This evening was spent with Bob Djupstrom exploring the sites from 7:00 - 8:00 pm. AT - 15.2 C, cool and breezy with a cold front moving in. Spent about an hour looking at turtle nesting areas. LB1 revealed 3 PD C. serpentina and 1 PD G. geographica nests. LB2 showed nothing. LB3 had 2 PD C. picta and 1 PD C. serpentina nests. No intact eggs

were found. No turtles were seen this evening, and no additional field information was gathered concerning C. insculpta.

June 9

From 7:00 - 8:00 pm, a survey was conducted of sites B1 and B2. It was clear and calm. Other than considerable turtle tracks in some areas, no destroyed or intact nests could be located.

June 16

A hike into the oxbow sites beginning at 6:30 pm revealed 2 A. spiniferus basking on the log jam across from OB3. It was clear, calm and AT - 18.5 C. A short distance later one C. insculpta (sex undetermined) was seen entering the water. Two PD A. spiniferus nests were located at LB3. The river was not crossed that evening to check out LB2. I left the area at 8:00 pm.

I arrived at LB1 at 8:30 pm. One additional C. serpentina nest (destroyed) was located at the top of the bank. At 8:49 pm a nesting C. insculpta was located about a third of the way up the bank. She appeared to just have started digging a nest cavity. AT - 17.0 C, BT - 20.8 C, ST - 23.2 C, CL - 7.5 cm, PL - 7.5 cm, BM - 1005 gm. The carapace was heavily pitted and there was considerable healed damage to the front and rear edges of the carapace as if the turtle had been severely chewed on by a predator at some time in the past (probably as a juvenile turtle). When handled the turtle was extremely timid for a wood turtle. By 9:00 pm the field work was completed.

Legend

AT	air temperature
ST	surface temperature
BT	body temperature
CL	carapace length
PL	plastral length
BM	body mass
PD	predator destroyed