Ohio Biological Survey Notes 7: 16-20, 2017.

A Survey of the Turtles of Mentor Marsh, Lake County, Ohio

Timothy O. Matson[1]*, Dana Smith[2], and Samantha Skerlec[3]

[1]Department of Vertebrate Zoology, Cleveland Museum of Natural History, Cleveland , OH 44106; [2]Biology Department, Denison University, Granville, OH 43023; [3]Biology Department, John Carroll University, University Heights, OH 44118; *corresponding author: tmatson@cmnh.org

Abstract: Turtle trapping records and observations from 1979–2016 were compiled to survey the turtles of Mentor Marsh, Lake County, Ohio. Six species of turtles were previously known to occur in Mentor Marsh prior to 2016. Two species of turtles known from the marsh since the 1930s, *Emydoidea blandingii* and *Clemmys gutatta*, were not observed or trapped. *Sternotherus odoratus* (Eastern Musk Turtle) was recorded for the first time from Mentor Marsh and is a new Grand River drainage system record.

Keywords: Mentor Marsh, salt intrusions, *Emydoidea blandingii*, *Clemmys gutatta*, *Sternotherus odoratus*

Introduction

Mentor Marsh is a large coastal wetland positioned at the mouth of the old Grand River at Lake Erie in Lake County, Ohio. It became a national natural landmark in 1966 and was dedicated as Ohio's first state nature preserve in 1971. Ownership of the marshlands is shared by the state of Ohio, the City of Mentor, the Cleveland Museum of Natural History, and by private land owners. The marsh occupies the old Grand River channel and its floodplain (Bolsenga and Herdendorf 1993) and includes nearly 868 acres (361 hectares; Fineran 2003) on the Lake Erie Plains (Brockman 2002; White 1980). The marsh is about 6.9 km (4.3 miles) long and approaches 0.8 km (0.5 miles) in width at the widest points and has a perimeter of approximately 20 km (12.5 miles). Two tributary streams flow into the marsh from the south: Marsh Creek enters into the western basin, and Black Brook enters into the eastern basin (Figure 1).

The Grand River formerly meandered northward over the lake plain of low relief to within 0.5 km of Lake Erie before turning westward paralleling the shoreline of the lake. It entered Lake Erie at what is now Mentor Harbor (also referred to as Mentor Marina/Mentor Lagoons). At some time following the formation of modern Lake Erie (approximately 4000 years BCE) and before 1796 when the marsh was first surveyed (Holley 1796; Pease 1796), an event occurred where the river breached through its north bank and connected with the lake at Fairport Harbor. Water flow to the west of the cut-off was diminished, and over time, a diverse mosaic of wetland communities became established in the relict Grand River channel while swamp forests developed upon its flood plain (Bolsenga and Herdendorf 1993).

Available riverine and wetland habitats have been conducive to support several species of turtles. Records and distribution maps of Conant (1951) and Zemko (1974) included four species of turtles for Mentor Marsh. The records included *Chelydra serpentina (*Snapping Turtle), *Chrysemys picta marginata* (Midland Painted Turtle), *Emydoidea blandingii* (Blanding's Turtle), and *Clemmys guttata* (Spotted Turtle). Two of these species are of particular interest: the Blanding's Turtle and the Spotted Turtle have been designated as threatened by the Ohio Department of Natural Resources Division of Wildlife (2016). The first records for these two species from Mentor Marsh include *Clemmys guttata*, collected on 11 July 1931 by Roger Conant and Cecil Murphy (American Museum of Natural History reptile number 120799, formerly Toledo Zoological Society number 541), and *Emydoidea blandingii*, collected on 11 July 1931 by Cecil Murphy (AMNH 120821, formerly TZS 542). Both of these specimens were collected on the "West end of Mentor Marsh." It remains unclear whether the "West end of Mentor Marsh" refers to the eastern portion of the western basin (Figure 1) or to the western portion nearer the mouth of Mentor Harbor. While at the edge of Mentor Marsh (presumably on this date), Conant in 1982 related his observations of seeing numerous yellow spots at the water's surface. Binoculars enabled them to identify the spots as yellow throats of Blanding's Turtle. Conant wrote, "We had never seen so many in one place." A second *Emydoidea blandingii* was collected on 16 June 1932 by Lawrence E. Hicks (Ohio State University Museum reptile number 877, formerly Hicks R420-1) at "Black Run Swamp." Black Run Swamp probably refers to the southeastern portion of the marsh, where Black Brook enters the marsh and becomes broadly

distributary, having no central channel (Isard 1966; Bernstein 1981; Whipple 1999). During the 1930s, the eastern part of the marsh was relatively open with cattails and nightshades, while buttonbush and alders formed dense stands of shrub growth. By 1951, the succession of swamp forest plant community had mostly replaced the open cattail-nightshade marsh community (Isard 1966; Whipple 1999).

In 1959, intrusion of salt (sodium chloride) from the salt dump of salt mining tailings very near Black Brook in the southeastern corner of Mentor Marsh greatly elevated the salt concentration in the marsh and caused a die-off of native vegetation in the marsh and swamp forests (Isard 1966, 1967; NOACA 1983). Salt has persisted in the system and continues to pollute the marsh and has led to the establishment, proliferation, and vegetative dominance of *Phragmites australis* (common reed grass). This perturbation of the marsh in concert with human development and resultant fires have altered the marsh landscape (Bernstein 1981; Fineran 2003; Isard 1967; Whipple 1999) to the point that it may no longer support Blanding's and/or Spotted Turtles. Purposes of the project were to survey the turtles of Mentor Marsh and, more specifically, to search for the continued presence of Blanding's and Spotted Turtles.

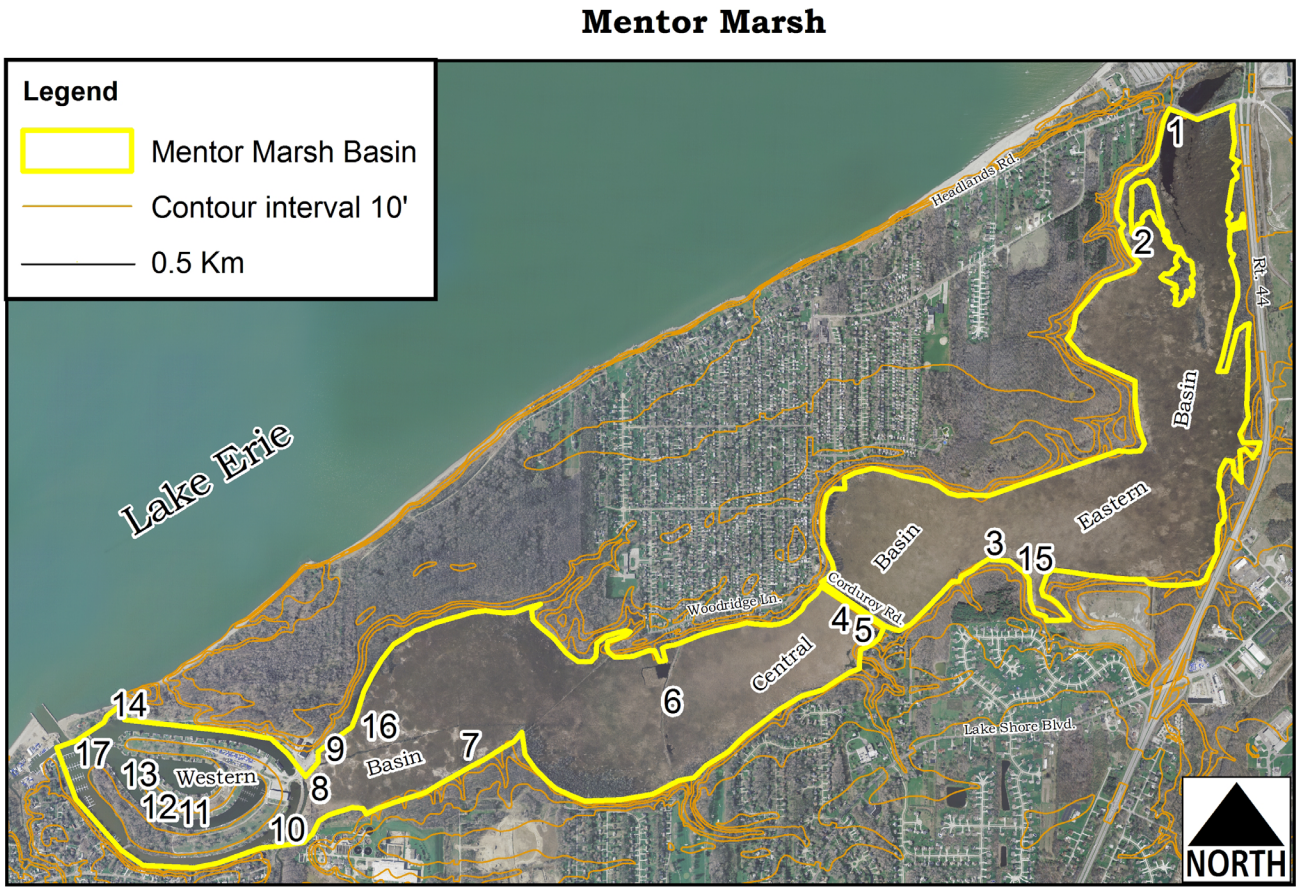

Figure 1. Map of the Mentor Marsh area showing the basin outline and site locations.

Methods

Recent surveys and records of visual observations of the turtles of Mentor Marsh have been ongoing since 1979, when one of us (TOM) began vertebrate surveys of fishes, amphibians, reptiles, and mammals of the marsh. Turtle captures were also recorded marsh-wide during seining operations and during the deployment of turtle traps and fyke nets while conducting a fish survey for the Northeast Ohio Areawide Coordinating Agency (NOACA) in 1981 and 1982 (Matson 1983). A survey specifically for turtles was conducted during the summer of 2016 and was focused on the Mentor Harbor, Marsh Creek, and Becker Pond areas (Figure 1; sites 7–14) on the western end of the marsh and on the Shipman Pond area (sites 1–2) at the eastern end. Figure 1 diagrammatically represents where sites in the marsh were located; names of those sites and their respective geographical coordinates are presented in Table 1. These two areas of the marsh were selected because they are

the areas approximating where earlier records of *Emydoidea blandingii* and *Clemmys guttata* occurred and where suitable habitat may still occur. The section south of Shipman Pond (Figure 1, site 2) was trapped for small mammals during 1979; one *Clemmys guttata* was captured in a pitfall trap on 25 July 1979 and was released at the site of capture (Matson, unpublished data). All specimens collected, salvaged, or photo-vouchered were deposited in the herpetology and ichthyology collections of the Cleveland Museum of Natural History.

Seines used in the surveys had lengths of 6, 12, and 25 feet with 3/16-inch mesh; all had depths of 4 feet. Fyke nets had 3-foot hoops and two 25-foot wings with one-inch mesh. Turtle traps had hoop diameters of 2.5, 3, and 4 feet, all with one-inch square mesh.

Scientific and common names used in this publication are those in Crother (2012).

Table 1. Site locations in Mentor Marsh where turtle traps were positioned or observations of turtles were recorded over the period 1979–2016. Site 15 is approximate for 1932 Black Brook site.

Site Number	Site Name	Latitude (N)	Longitude (W)
1	Shipman Pond	41°45’08”	81°17’31”
2	Shipman Pond SW	41°44’37”	81°17’47”
3	Kervin North	41°44’08”	81°18’08”
4	Corduroy Road	41°43;58”	81°18’35”
5	SW Corduroy Road	41°43’55”	81°18’30”
6	Wake Robin Trail	41°43’45”	81°19’05”
7	Becker Pond	41°43’34”	81°19’48”
8	Marsh Creek Bridge	41°43’28”	81°20’18”
9	Canal zone	41°43’27”	81°20’16”
10	Dock E East	41°43’24”	81°20’23”
11	Dock D/1	41°43’25”	81°20’40”
12	Dock D/2	41°43’27”	81°20’47”
13	Dock D/Tip	41°43’31”	81°20’50”
14	Dock A	41°43’41”	81°20’53”
15	Blackbrook Mouth[2]	41°44’	81°17’
16	Spetz site	41°43’37”	81°20’16”
17	Near mouth of Mentor Harbor	41°43’37”	81°20’59.1”

[2]available data do not pemit greater coordinate accuracy.

Results

During the 2016 trap survey, 74 trap-nights were accumulated (all turtle traps). From 1980–1982, 18 trap-nights using turtle hoop nets and fyke nets were deployed to capture both turtles and fish. Fyke nets were very effective in capturing turtles at some sites. For example, on 1 May 1982 two fyke nets placed at site 1, Shipman Pond, captured 12 *Chelydra serpentina* and 71 *Chrysemys picta marginata*.

Four species of turtles were trapped during 2016 (Table 2). *Trachemys scripta elegans* (Red-eared Slider) was first recorded for the marsh by James Spetz in May 2011 at a site in the western basin north of site 9 (CMNH 14202, James Spetz photo; Figure 1, site 16). We trapped five adult individuals and observed one juvenile in Mentor Harbor of the western basin (Table 2; 1 turtle vouchered, CMNH 14543). This species was also sighted at site 6 on 12 October 2016 (CMNH 14544; Nanette Patrick photo) and in the eastern basin at site 1 on 22 June 2016 (Owen Lockhart, pers. comm.).

Sternotherus odoratus (Eastern Musk Turtle; 1 individual) was recorded for the first time from Mentor Marsh on 15 July 2016 at site 10 (CMNH 14545); two additional musk turtles were trapped on 4 August, one each at sites 8 and 9.

Chelydra serpentina and *Chrysemys picta marginata* were widely distributed throughout the marsh (Figure 1 and Table 2).

The first documented record of *Graptemys geographica* (Eastern Map Turtle; 1 individual) in Mentor Marsh was captured in a fyke net at site 8 and released in August 1981 (Matson, unpublished data). On 1 July 2014, a specimen was trapped in Mentor Harbor (CMNH 14330; James Spetz photo). Map turtles were observed near the mouth of Mentor Harbor in 2015 near site 17 (CMNH 14530; Jake Kudna photo). No map turtles were trapped or observed during our 2016 survey.

There have been no additional records for *Emydoidea blandingii* since the 1930s or for *Clemmys guttata* since 1979.

Table 2. Species of turtles recorded from Mentor Marsh, Lake County, Ohio, and the sites at which they were detected. [2]indicates that the species is threatened within the state of Ohio (ODNR Division of Wildlife 2016).

Species Name / Site Numbers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Family Chelydridae																	
Chelydra serpentina Snapping Turtle	•			•	•	•	•	•		•	•	•	•	•			
Family Kinosternidae																	
Sternotherus odoratus Eastern Musk Turtle								•	•	•							
Family Emydidae																	
Chrysemys picta marginata Midland Painted Turtle	•	•		•	•		•	•	•	•				•			
Clemmys guttata[2] Spotted Turtle		•															
Emydoidea blandingii[2] Blanding's Turtle															•		•
Graptemys geographica Northern Map Turtle								•									
Trachemys scripta elegans Red-eared Slider	•									•	•			•		•	

Discussion

Chrysemys picta marginata and *Chelydra serpentina* are widespread and common throughout the marsh. They have also colonized several mitigation ponds that were constructed in 2000 and 2001 above the marsh basin on the north and south sides of the marsh. *Sternotherus odoratus* was successfully trapped only in the western basin. Other areas within the marsh appear to provide suitable habitat to support this species and more extensive trapping may reveal its presence. The occurrences of *Sternotherus* within Mentor Marsh are the first records for this species in the Grand River drainage system.

The occurrence of *Trachemys scripta elegans* in the western basin, along Wake Robin Trail in the central basin, and at Shipman Pond in the eastern basin was predictable. All three areas are frequented by people. The western basin marina is used extensively for recreation (sites 10–14), and the Marsh Creek and canal (sites 8–9) are used by canoeists and kayakers for outdoor education and recreation experiences. A boardwalk is available for public access at Wake Robin Trail (site 6), and Shipman Pond (site 1) is commonly used by fishermen and birdwatchers. These areas are closely proximate to roads whereby unwanted captive turtles could be released. Sliders have been released at numerous locales in northeastern Ohio; their populations and distribution are expanding, and it is probable that their numbers will increase in Mentor Marsh. These capture records are the first documented occurrences of *Trachemys* in the Grand River drainage system.

The addition of new turtle species to the herpetofauna of Mentor Marsh was anticipated. Since the marsh is the old Grand River channel and floodplain, the species of turtles inhabiting the current Grand River are indicators of the species predictably present in the marsh. The Eastern Spiny Softshell Turtle (*Apalone spinifera*) is common and widespread in the Grand River but has not yet been documented in Mentor Marsh.

Management practices now used in Mentor Marsh in attempts to reduce the standing crop and distribution of *Phragmite*s and to restore native plant biodiversity may lead to population increases in all turtle species. If still surviving in the marsh, the Spotted Turtle may be the species that would benefit most from habitat restoration.

Acknowledgements

We thank the Kirtlandia Society, an associate society of the Cleveland Museum of Natural History, for supporting undergraduate student research assistants (Samantha Skerlec) and for many years in support of this and other projects. We also thank Lucy Weller for her continued financial support of research assistants (Dana Smith) through the Summer on the Cuyahoga Program.

Literature Cited

Bernstein, N.P. 1981. Vegetational history of Mentor Marsh. Ohio Journal of Science. 81(3): 105-108.

Brockman, C.S. 2002. Physiographic regions of Ohio. Ohio Department of Natural Resources, Division of Geological Survey. 2 p.

Conant, R. 1951. Reptiles of Ohio. The American Midland Naturalist. University of Notre Dame Press, Notre Dame, Indiana. 284 p.

Conant, R. 1982. Herpetology in Ohio: fifty years ago. Special Publication of the Toledo Herpetological Society. 64 p.

Crother, B.I. (ed.). 2012. Standard common and current scientific names for North American amphibians, turtles, reptiles, and crocodilians. Seventh Edition. Herpetological Circular 39: 1-92.

Fineran, S.A. 2003. Assessing spatial and temporal vegetative dynamics at Mentor Marsh, 1976–2000 A.D. Dissertation, The Ohio State University. 467 p.

Holley, J.M. 1796. J. Milton Holley's Diary: Cleaveland to Connecticut. Oct 1796. Western Reserve Historical Society. Cleveland, Ohio.

Isard, L.G. 1966. The Vegetation of Mentor Marsh, A Preliminary Survey. The Cleveland Museum of Natural History, Cleveland, Ohio.

Isard L.G. 1967. Biotic Survey of Mentor Marsh. The Cleveland Museum of Natural History, Cleveland, Ohio.

Matson, T.O. 1983. An inventory of the species of fish occurring in Mentor Marsh. *In* Mentor Marsh, Lake County, Ohio Historical data and current baseline conditions. Final report, Technical appendix A49. Northeast Ohio Areawide Coordinating Agency.

NOACA. 1983. Mentor Marsh, Lake County, Ohio Historical data and current baseline conditions. Final report, Technical appendix A49. Northeast Ohio Areawide Coordinating Agency.

ODNRDW. 2016. Ohio's listed species Wildlife that are considered to be endangered, threatened, species of concern, special interest, extirpated, or extinct in Ohio. Publication 5356.

Pease, S. 1796. Seth Pease Field Notes: 1796. Western Reserve Historical Society. Cleveland, Ohio.

Whipple, J.C. 1999. Geological and environmental assessment of Mentor Marsh. Master's Thesis. University of Akron. Akron, Ohio.

White, G.W. 1980. Glacial geology of Lake County, Ohio. Ohio Department of Natural Resources, Division of Geological Survey, Report of Investigations No. 117, Columbus, Ohio.

Zemko, R.G. 1974. The occurrence and distribution of turtles in Ohio. M.S. thesis, Miami University, Oxford, OH. 98 p.