FINAL REPORT

A SURVEY OF THE AMPHIBIANS AND REPTILES IN SOUTHEASTERN MINNESOTA

submitted to

Minnesota Department of Natural Resources
Nongame Program

Minnesota Field Office
The Nature Conservancy

by

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The southeast corner of Minnesota has the highest diversity of herpetofuana in the state. Forty of the 47 species of amphibians and reptiles that occur in the state are indigenous to the southeast corner. Sixteen of the 17 species listed as endangered, threatened, or special concern in Minnesota are found in this region (Lang, et al. 1982). High diversity makes this region a high priority for herpetofauna research.

There have been a number of studies on specific species or sites within the region. Nehl (1982) studied the populations of cricket frogs (Acris crepitans) and pickerel frogs (Rana palustris). Softshell turtles (Trionyx sp.) have been studied by several researchers (Cochran 1977, James 1966). Minnesota's two threatened turtles, the wood (Clemmys insulpta) and Blanding's (Emydoidea blandingi), have been intensively studied (Ewert 1984, Pappas 1982). An intensive survey of The Nature Conservancy's Weaver Dunes is currently being conducted (P. Cochran, pers. comm.).

There have not been any studies to access the general distribution of amphibians and reptiles throughout the region. This study was set up to provide that information, especially for species listed as endangered, threatened, or special concern by the Minnesota DNR.

STUDY AREA

The region covered by this survey include Fillmore, Houston, Olmsted, Winona, eastern Mower, and southern Wabasha Counties (Figure 1.). The study area encompassed approximately 6,300 sq. km. The Root River is the major drainage within the region. The Zumbro and Whitewater Rivers drain about the northern third of the study area. The Richard J. Dorer Memorial Hardwood State Forest extends over most of the southeast corner of the state.

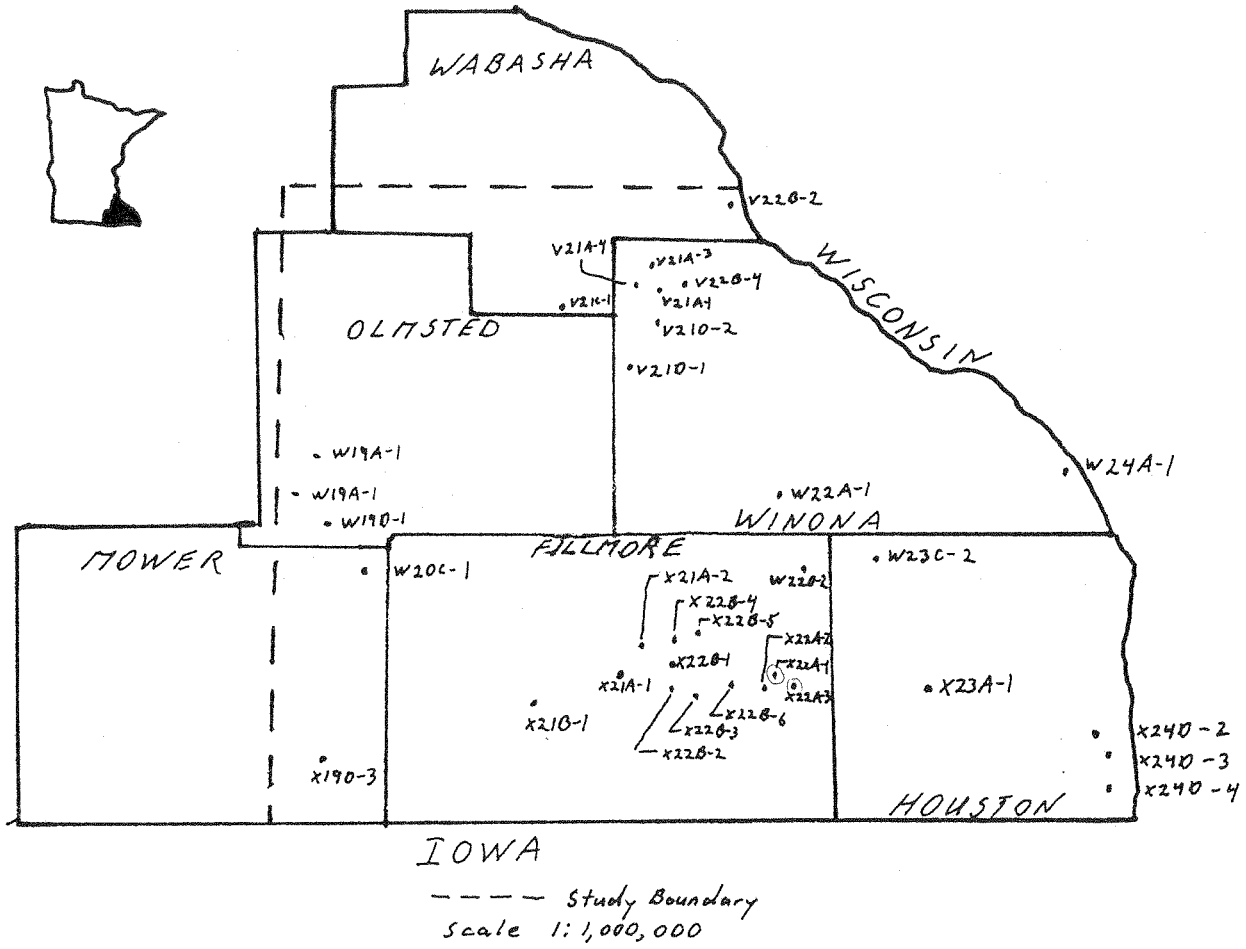

Figure 1. Study Area Boundary and Sites of the Southeast Minnesota Amphibian and Reptile Survey, 1985.

Southeast Minnesota is mainly covered with a maple, oak, and basswood forest. There are several areas of oak savannahs and prairies, but most of these two habitats have been converted to agriculture. There are extensive river bottom forests in Winona and Houston Counties (Marschner 1930).

The topography is highly dissected with many steep slopes and bluffs in the east. Western Fillmore and Mower Counties are flatter with more prairie. The eastern portion of the study area is in the " driftless zone". The driftless zone is also the pseudo-carolinian faunal region described by Roberts (1932), which has southern affinities. This is the warmest region of the state with a mean annual temperature of 65°C and 142 frost free days.(National Weather Service at Rochester, pers. comm.).

METHODS

A total of 32 sites in 6 counties (Figure 1., Appendix A) were visited during 4 trips (18-19 May, 15-16 June, 27-28 July, and 14-15 September 1985). Each site was visited by at least 4 surveyors. Twenty nine surveyors participated in the study (Appendix B) for a total of 752 person hours. Prior to field visits, sites were selected by reviewing U.S.G.S. 7.5' topographic maps. The DNR Wildlife Section, The Nature Conservancy, and private individuals with knowledge of the region were consulted for additional sites.

Each site was divided into various components and habitats. This allowed for adequate searching of the entire site. Piles of debris, rocks, and downed trees were especially targeted, since they tend to be areas of concentration for herps. Areas were searched using the techniques described in Conant (1975) and Karns (in press).

Additional sources of records and information were provided by the

staffs of Beaver Creek Valley, Forestville, O.L. Kipp, and Whitewater State Parks. Regional Wildlife Biologists also provided information.

Specimens collected on these trips have been deposited with Dr. Philip Regal of the Bell Museum of Natural History and will be cataloged into their research collection. Photos of specimens and habitats are included in this report (Appendix C).

RESULTS

Amphibians

A total of 8 species of amphibians (Table 1.) were located during the study. Three species which had been previously reported were not found. These were spring peeper (Hyla crucifer), chorus frog (Pseudacris triseriatus), and cricket frog (Acris crepitans).

The amphibian distributions had been previously reported for most of the counties (Lang 1982). Only 2 new county records were documented. A tiger salamander (Ambystoma tigrinum) was found in Fillmore County. This was the only salamander found during the survey, though there were reports from several local residents of their presence. In Winona County, a wood frog (Rana sylvatica) was collected. This was the first record for the county. The wood frog is uncommon in this part of Minnesota (Breckenridge 1944).

Leopard frogs (Rana pipiens) and American toads (Bufo americanus) were the most abundant amphibians. They were found on 44% and 54% of the sites, respectively, with many individuals per site. Many sites were not suitable for amphibians. During June, Bufo tadpoles were abundant at most aquatic sites. Bullfrogs (Rana catesbeiana) were found at 2 sites in southern Houston County. Pickerel frogs (Rana palustris) and green frogs (Rana clamitans) were found over most of the study area. Unidentified tadpoles were collected at several locations. These will be identified at the Bell Museum of Natural History.

Table 1. Species found during the Southeast Minnesota Amphibian and Reptile Survey, 1985, by County and Site.

County	Site[1]	Species
Fillmore	MHS-X21A-1	Bufo americanus[2] unidentified tadpoles[3]
	MHS-X21A-2	Rana sp. Elaphe vulpina[2]
	MHS-X21B-1	Ambystoma tigrinum[3,4] Bufo americanus[2] Rana pipiens Chelydra serpentina[4,5a] Chrysemys picta[2,4] Crotalus horridus Lampropeltis triangulum[5a] Storeria occipitomaculata[2,3]
	MHS-X22A-1	Bufo americanus Eumeces fasciatus[4] Storeria occipitomaculata[2] Thamnophis sirtalis
	MHS-X22A-2	Storeria occipitomaculata[3]
	MHS-X22A-3	Bufo americanus[2] Rana clamitans Rana pipiens Rana tadpoles[3] Eumeces fasciatus[2,3,4]
	MHS-X22B-1	Bufo americanus[2,3] Hyla sp. Rana clamitans[2,3] Rana pipiens Chrysemys picta[4] Thamnophis sirtalis[3]
	MHS-X22B-2	Thamnophis sirtalis[2,3]
	MHS-X22B-3	Bufo americanus[2]
	MHS-X22B-4	Bufo americanus Rana pipiens unidentified tadpoles[3]
	MHS-X22B-5	-------
	MHS-X22B-6	Bufo americanus Rana pipiens

Table 1. continued

County	Site[1]	Species
Houston	MHS-W23C-2	Rana clamitans
		Chelydra serpentina
	MHS-X23A-1	Bufo americanus
		Rana clamitans
		Rana palustris[2]
		Rana pipiens
		Eumeces fasciatus[2,3,4]
		Crotalus horridus[5b]
		Thamnophis sirtalis
	MHS-X24D-2	Bufo americanus[2,3]
		Elaphe vulpina[2]
		Lampropeltis triangulum[2]
		Thamnophis sirtalis[2]
	MHS-X24D-3	Bufo americanus[3]
		Rana catesbeiana[2,3]
		Rana clamitans[2]
		Rana palustris
		Rana pipiens[3]
		Chelydra serpentina[3]
		Chrysemys picta[3]
		Graptemys geographica[3]
		Elaphe vulpina[2]
		Nerodia sipedon
		Thamnophis sirtalis[2]
	MHS-X24D-4	Rana catesbeiana[2]
		Rana clamitans[2]
		Rana palustris[2]
		Chrysemys picta[2]
	Road Stops	Hyla sp.[3]
		Nerodia sipedon
Mower	MHS-W20C-1	-------
	MHS-X19D-3	Bufo americanus[2,3]
		Rana clamitans[2]
		Rana pipiens[3]
		Chrysemys picta[3,4]
		Elaphe vulpina[4,5c]
		Opheodrys vernalis[5c]
		Storeria occipitomaculata[2,3]

Table 1. continued

County	Site[1]	Species
Olmsted	MHS-W19A-1	Thamnophis sirtalis[2]
	MHS-W19A-2	Bufo americanus[2] Rana clamitans[3] Rana pipiens Rana tadpoles[3] Thamnophis sirtalis[3]
	MHS-W19D-1	Bufo americanus[2] Rana pipiens[3] Emydoidea blandingi[2,4]
Wabasha	MHS-V21C-1	-------
	MHS-V22B-2[6]	Rana pipiens Chrysemys picta Emydoidea blandingi Graptemys sp. Heterodon platyrhinos
Winona	MHS-V21A-1	Chrysemys picta
	MHS-V21A-3	Bufo americanus[3] Rana clamitans[3] Rana sylvatica[3,4] Chelydra serpentina Chrysemys picta
	MHS-V21A-4	Bufo americanus Rana clamitans Rana pipiens unidentified tadpoles[3] Chrysemys picta Thamnophis sirtalis
	MHS-V21D-1	Bufo americanus[2] Hyla sp.[5d] Rana palustris[2] Chrysemys picta Crotalus horridus[5d] Heterodon nasicus[5d] Heterodon platyrhinos[5d] Lampropeltis triangulum[5d] Nerodia sipedon[2] Thamnophis sirtalis[2]
	MHS-V21D-2	Bufo americanus[3] Hyla sp.

Table 1. continued

County	Site[1]	Species
Winona	MHS-V21D-2 cont.	Rana clamitans[3] Rana pipiens[3] Chelydra serpentina
	MHS-V22B-4	Rana pipiens Thamnophis sirtalis
	MHS-W24A-1	-------

[1] Site name, locality, and date of visit are in Appendix A.

[2] Specimen was photographed, See Appendix C.

[3] Specimen was collected and deposited at the Bell Museum.

[4] Specimen represents a county record.

[5] Personal communication a: Mark White, Forestville S.P.
b: Larry Buchholtz, Beaver Creek Valley S.P.
c: Jack Heather, Regional Wildlife Manager
d: Dave Palmquist, Whitewater S.P.

[6] Additional species reported in P. Cochran's report to TNC.

Reptiles

A total of 14 species of reptiles were found or reported from the study sites (Table 1.). Another 2 species (massasauga, Sistrurus catenatus, and six-lined racerunner, Cnemodophorus sexlineatus) were reported from the area, but not located on one of the 32 sites. Several species, including black rat snake (Elaphe obsoleta), blue racer (Coluber constrictor), bull-snake (Pituophis melanoleucus), and softshell turtles (Trionyx sp.) were not located though they had been previously reported. Two map turtles (Graptemys sp.) were also not found, but they are restricted to the Mississippi River and rarely range far from the main channels.

The reptiles in this region, especially the larger snakes are secretive and the number of records are low. There were 5 species for which new county records were reported from study sites.

Snapping turtles (Chelydra serpentina) and painted turtles (Chrysemys picta) were reported from Fillmore County. There was also a specimen of a painted turtle taken in Mower County. These are all new county records (Lang 1982a). The painted turtle was one of the most common reptiles in the region with representation on 33% of the sites (Table 1.). The only species that was more abundant was the common garter snake (Thamnophis sirtalis) which was found on 35% of the sites with several individuals per site.

The fox snake (Elaphe vulpina) and red-bellied snake (Storeria occipitomaculata) were both new county records for Mower County. There is a report of six-lined racerunners from Fillmore County. A specimen was deposited at the Bell Museum (W. Smith, pers. comm.), but there is no entry in the collection catalog.

A Blanding's turtle, threatened in Minnesota (Lang, et al. 1982), was

located on a state WMA in Olmsted County. This was a county record. Only one individual was found, but there appeared to be a 25 ha area of suitable habitat. Half of the marshy area is on adjacent private pasture. The one specimen found was marked (Appendix C) and released.

Five-lined skinks (Eumeces fasciatus), endangered in Minnesota (Lang et al. 1982), were collected in Fillmore and Houston Counties. There was also an unconfirmed report from Winona County (J. Cole, pers. comm.). The Fillmore County specimen was a confirmation of a 1984 photograph of a skink from the Cabbage Rock area (MHS-X22A-1). The Houston County site and Winona County report add to the distribution in this region. All three sites where skinks were seen or collected had significant rock outcrops. The two Fillmore County sites were at the base of south-facing bluffs. The Houston County site was an open ridge which had recently been cleaned of brush. There were bluffs within 1 km of the capture site.

DISCUSSION

The herpetofuana diversity of Southeast Minnesota is greater than any other section of the state (Lang 1982a, Moriarty 1985). This can be attributed to the high diversity of habitats, especially the Mississippi backwaters and the bluffs of the drfftless zone. These two are also the safest of the habitats in that they are difficult to convert to agriculture. These two habitats are obligate habitat to 10 of the species found in the region and preferred habitat for another 7 species. The possible border entrants, glass lizard (Ophisaurus attenuatus), and stinkpot (Sternotherus odoratus), would probably be found in these habitats, based on their habitat in Wisconsin (Vogt 1981).

The lack of sightings of the small hylid frogs may be due to improperly timed visits. These frogs breed in early spring (Vogt 1981) and then become

quite secretive. This is the second year that cricket frogs have not been found during general surveys (Moriarty 1985).

The 3 snakes and 4 turtles which were not located during the study are thought to have viable populations. The snakes tend to be secretive and relatively uncommon over their range in Minnesota. An effort should be made to have all sightings of these species reported to the DNR. The turtles tend to stay in the larger rivers and were not properly surveyed during this survey. As long as the river banks remain undeveloped the populations should stay constant. Development of the river banks would decrease nesting sites and increase predation by concentrating nesting. The current holdings of the state and federal government under various state parks, management areas, forests, and wildlife refuges should help protect the river habitats with proper management.

The discovery of five-lined skinks in this region raises the question of their status in the state. The isolation of the Minnesota River population (Lang 1982b) should be questioned. There are areas of appropiate habitat, south-facing bluffs and rock outcrops, between the southeastern localities and Granite Falls. These areas should be carefully searched. Also, the rock faces of the Taylors Falls area, Chisago County, should also be searched for skinks. Vogt (1981) reported this species from along the St. Croix River in Polk County, Wisconsin, which is adjacent to Taylor Falls.

Under the current status, the new populations should be protected. The Beaver Creek Valley State Park (MHS-X23A-1) and Cabbage Rock (MHS-X22A-1) localities are currently state property and should be relatively easy to protect. The Hanson Bluff (MHS-X22A-3) site is owned by Cyrus and Marion Hanson of Choice, Minnesota, who were quite interested in the

skinks and may be willing to register their property. Their site is heavily grazed by cattle, but this has not appeared to degrade the site for skinks.

I feel that after searching the Root, Whitewater, and Minnesota River bluff the known population and range will be increased. Current localities of prairie skinks (Eumeces septentrionalis) within these habitats may be misidentified five-lined skinks. This is more than likely in the case of Breckenridge's (1944) prairie skink sight record from Houston County. Following more intensive study, the status of the five-lined skink may merit review.

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Appendix A. Names and localities of sites visited during the Southeast Minnesota Amphibian and Reptile Survey, 1985.

Fillmore County

MHS-W22D-2[5]
Magelssen Bluff Park
T104N R8W Sec 14

MHS-X21A-1[2]
South Fork of Root River at Preston
T102N R10W Sec 5 ¼SE

MHS-X21A-2[2]
Preston RR Bed
T103N R10W Sec 23 ¼NE¼NW

MHS-X21B-1[2,5]
Forestville State Park
T102N R12W Sec 24

MHS-X22A-1[5]
Cabbage Rocks
T102N R8W Sec 8 ½N½NW

MHS-X22A-2[2]
Creek Headwaters
T102N R8W Sec 7 ½W¼NW

MHS-X22A-3[5]
Hanson Bluff
T102N R8W Sec ~~8~~ 3 ¼SW¼SW

MHS-X22B-1[2]
State Fish Hatchery
T103N R10W Sec 26 ¼NE

MHS-X22B-2[2]
Co. Rd. 12 Roadcut
T102N R10W Sec 12 ¼SE¼NW

MHS-X22B-3[2,5]
Co. Rd. 12 Quarry
T102N R9W Sec 7 ¼SE¼NE

MHS-X22B-4[2]
Root River Sandbars
T103N R10W Sec 7 & 18

MHS-X22B-5[5]
Lost Lake Game Refuge
T103N R10W Sec 13 ½S¼SW

Appendix A. continued.

Fillmore County (continued)

MHS-X22B-6[5]
Pot Farm
T102N R9W Sec 2

Houston County

MHS-W23C-2[3]
Money Creek at Rte. 76
T104N R7W Sec 2 ¼SE

MHS-X23A-1[3]
Beaver Creek Valley State Park
T102N R6W Sec 8

MHS-X24D-2[3]
Reno Wayside Park
T102N R4W Sec 26 ½W¼SE

MHS-X24D-3[3]
Reno RR Tracks
T102N R4W Sec 35 ½E

MHS-X24D-4[3]
Millstone Landing
T101N R4W Sec 23 ¼SE¼NE

Mower County

MHS-W20C-1[2]
Racine Prairie SNA
T104N R14W Sec 14

MHS-X19D-3[2]
Chartney WMA
T101N R14W Sec 5 ½E

Olmsted County

MHS-W19A-1[1]
Suess WMA
T105N R15W Sec 22 ½W¼NE

MHS-W19A-2[1]
Keller WMA
T105N R15W Sec 1 ¼NW

MHS-W19D-1[1]
Schumann WMA
T104N R14W Sec 3 ½S¼sw

Appendix A. continued.

Wabasha County

MHS-V21C-1[1]
Carley State Park
T108N R11W Sec 32

MHS-V22B-2[4]
Weaver Dunes
T109N R9W Sec 18

Winona County

MHS-V21A-1[1]
Beaver Swamps
T108N R10W Sec 15

MHS-V21A-3[1]
Whitewater WMA Ponds
T108N R10W Sec 10

MHS-V21A-4[1]
Beaver Creek Ponds
T108N R10W Sec 16

MHS-V21D-1[1]
Whitewater State Park
T107N R10W Sec 20 ¼SE

MHS-V21D-2[1]
Rte. 74 Swamp
T108N R10W Sec 27

MHS-V22B-4[1]
Bluffs
T108N R10W Sec 13

MHS-W24A-1[3]
O.L. Kipp State Park
T101N R14W Sec 5 ½E

[1] 18-19 May 1985

[2] 15-16 June 1985

[3] 27-28 July 1985

[4] 3 August 1985

[5] 14-15 September 1985

Appendix B. Participants in the Southeast Minnesota Amphibian and Reptile Survey, 1985.

Name	18-19 May	15-16 June	27-28 July	14-15 September
Craig Aberly	X			
Bruce Cutler		X		X
Matt Cutler		X		X
Bob Duerr	X			
Pete Duerr	X			
Joan Galli				X
Ben Gerholdt		X	X	
Gabe Gerholdt			X	
Jim Gerholdt				X
Matt Gerholdt		X	X	X
Pam Gerholdt		X	X	
Delvin Jones	X	X		X
Kent Jones				X
Cheryl Keyler				X
Dan Keyler				X
Trevor Keyler				X
Greg Kvanbek	X		X	
Glenn Lewis	X			
Joe Matzke	X		X	
Denise Meltzer	X			
John Meltzer	X			
JoAnne Moriarty	X			X
John Moriarty	X	X	X	X
Barney Oldfield		X	X	X
Casey Oldfield		X	X	X
Sherilyn Oldfield		X		
Ann Porwoll			X	
Paul Spencer	X	X	X	
Wes Thomas			X	
Trip Totals	12	11	12	14

Appendix C. Photographs of specimens and habitats from the Southeast Minnesota Amphibian and Reptile Survey, 1985.