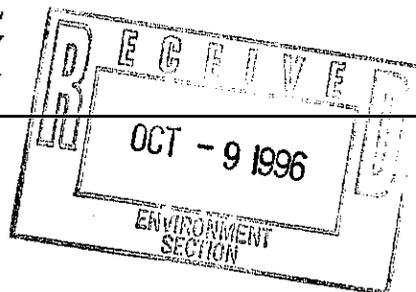




ILLINOIS
NATURAL
HISTORY
SURVEY



MEMORANDUM

TO: Charles Perino
Illinois Department of Transportation (IDOT)
Bureau of Design and Environment
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FROM: Christopher A. Phillips, Further Studies Coordinator/Herpetologist *Cap*
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DATE: 8 October 1996

SUBJECT: Amphibian and Reptile Survey
North Chicago Wetland Mitigation Site
Lake County, Illinois

INTRODUCTION

The Illinois Department of Transportation (IDOT) is considering a parcel of land southwest of the US Route 41/ Illinois Route 137 intersection for a wetland mitigation site. A memo dated 1 March 1995 from Charles Perino of IDOT to Chris Phillips of INHS requested surveys for plants, macroinvertebrates, fishes, amphibians and reptiles, and birds be conducted at this site. This is the final report on amphibians and reptiles of the project area. The Illinois Natural History Survey previously conducted a wetland survey (Olson et al., 1991) of this site.

The approach that I have used in this study is to 1) compile a list of the species likely to occur in the project area (see below and Map 1, Appendix II), 2) search for historical records of sensitive species (endangered, threatened, or watch list in Illinois or candidate for federal listing) from the general project area, and 3) conduct fieldwork designed to determine which species (with emphasis on listed species) currently inhabit the project corridor and to identify unusually diverse herpetological communities (i.e. areas of special concern, see below) at the site. Nomenclature follows Collins (1990) unless noted.

PROJECT AREA

The location of the project corridor is shown in Map 1, Appendix II. The legal location of the project corridor, taken from the Libertyville, Ill 7.5' U.S. Geological Survey topographic quadrangle, is:

ILLINOIS, Lake County. 3rd Principal Meridian: Township 44 North, Range 12 East, west half of Section 7.

SPECIES OF THE PROJECT AREA

Table 1. Amphibians and reptiles likely to occur at the North Chicago Mitigation Site, Lake County, Illinois based on species ranges from Smith (1961) & Conant & Collins (1991).

<u>Amphibians (n=10)</u>	
blue-spotted salamander§	<i>Ambystoma laterale</i>
tiger salamander*	<i>Ambystoma tigrinum</i>
four-toed salamander ST	<i>Hemidactylium scutatum</i>
American toad§	<i>Bufo americanus</i>
gray treefrog§	<i>Hyla versicolor/ chrysocelis</i>
spring peeper*	<i>Pseudacris crucifer</i>
western chorus frog§	<i>Pseudacris triseriata</i>
green frog	<i>Rana clamitans</i>
northern leopard frog§	<i>Rana pipiens</i>
bullfrog§	<i>Rana catesbeiana</i>
<u>Reptiles (n=15)</u>	
snapping turtle§	<i>Chelydra serpentina</i>
painted turtle§	<i>Chrysemys picta</i>
spiny softshell*	<i>Apalone spinifera</i>
smooth green snake§	<i>Opheodrys vernalis</i>
eastern hognose snake	<i>Heterodon platirhinos</i>
fox snake*	<i>Elaphe vulpina</i>
milk snake*	<i>Lampropeltis triangulum</i>
plains garter snake§	<i>Thamnophis radix</i>
common garter snake§	<i>Thamnophis sirtalis</i>
western ribbon snake§	<i>Thamnophis proximus</i>
redbelly snake	<i>Storeria occipitomaculata</i>
brown snake*	<i>Storeria dekayi</i>
queen snake*	<i>Regina septemvittata</i>
northern water snake§	<i>Nerodia sipedon</i>
eastern massasauga SE	<i>Sistrurus catenatus</i>

§ occurrence in the project area documented by surveys in this study or historical records

* occurrence in the project area likely based on habitat suitability

^ listed as *Rana utricularia* in Conant & Collins (1991)

SE Illinois endangered

ST Illinois threatened

HABITAT REQUIREMENTS & HISTORICAL RECORDS FOR LISTED SPECIES

Table 1 lists the reptiles and amphibians whose ranges include the project area (see Map 1, Appendix II). Of the species in Table 1, only the four-toed salamander and the eastern massasauga

are listed as endangered or threatened in Illinois. Historical records for the listed species were taken from the following sources: 1) specimens from museum, university, and private collections (referred to as vouchered records; see Appendix I for a list of the collections that were searched), 2) unvouchered records from the literature, 3) unvouchered records taken from reliable biologists and naturalists, and 4) the Illinois Department of Natural Resources Natural Heritage Database (NHD). **There are no records for any listed amphibian or reptile species at the North Chicago Mitigation Site.**

Four-toed salamander--This primarily terrestrial salamander is associated with undisturbed forests containing seeps or bogs. Recently, however, Illinois specimens have been taken in wooded ravines near rocky, spring-fed creeks (Thurow, 1981). The activity period in northern Illinois is probably late March to October. Females congregate near woodland ponds (or creeks) in March and April for egg laying and brooding. Nests are situated so that the larvae fall directly into the water when the eggs hatch. The most common nest sites are in sphagnum mats, but grass hummocks, leaf litter, rotten logs, and undercut stream banks are also used (Pfungsten and Downs, 1989; R. Brandon, SIUC, pers. com.).

Massasauga--This venomous snake prefers wet prairie areas with heavy grass cover or floodplain forest adjacent to open fields. The activity period in northern Illinois is probably mid-April to October. In some parts of their range, massasaugas move from moist prairie conditions to drier habitats in the spring (Seigel, 1983). Massasaugas are often found in association with crayfish burrows which they use for shelter and hibernation (Maple and Orr, 1968). They may also overwinter in mammal burrows, old tree stumps, and rock crevices. They apparently do not hibernate with other snake species.

FIELD SURVEYS

Methods

Field surveys for amphibians and reptiles are usually conducted in a single effort because of the similarities of the two groups. They are both secretive in their habits and being ectothermic, they are generally active under a narrower temperature range than birds and mammals. However, there are also a number of differences between amphibians and reptiles that make combined surveys very difficult. Amphibians are restricted to moist conditions because they exchange gasses through their skin and lay eggs that usually must be submerged in water. Most amphibians also have an aquatic larval stage that may last several months to a year. Reptiles, on the other hand, are less restricted by available moisture and may go weeks without direct contact with water. All these factors combine to make amphibians and reptiles one of the most difficult vertebrate groups to survey, especially in a single effort.

The North Chicago Mitigation Site was visited on 25 April 1995, 5 July 1995, 4 October 1995 and 19 September 1996 and unconstrained (not timed) visual encounter surveys were performed over the entire site. Visual encounter surveys (VES) involve searching appropriate habitat (mainly turning cover items such as logs, rocks, and miscellaneous debris) and recording all species encountered. In addition, aquatic habitats were dip-netted or seined and basking turtles were surveyed with binoculars.

Results

Four amphibian and three reptile species were encountered in the project area during my field surveys. Table 2 is a list of the species encountered and an indication of their abundance. **No listed amphibians or reptiles were encountered during the survey of North Chicago Mitigation Site.**

Table 2. Amphibians and reptiles encountered during field surveys of the North Chicago Mitigation Site.

blue-spotted salamander	<i>Ambystoma laterale</i>	near wetland #10	n=1
American toad	<i>Bufo americanus</i>	throughout site	n=11
western chorus frog	<i>Pseudacris triseriata</i>	throughout site	n=50-100
northern leopard frog	<i>Rana pipiens</i>	throughout site	n=50-100
plains garter snake	<i>Thamnophis radix</i>	near wetland #19	n=1
smooth green snake	<i>Opheodrys vernalis</i>	in sedge meadow	n=1
		hatched eggs	n=2
painted turtle	<i>Chrysemys picta</i>	in wetlands #9 & 13	n=2

DISCUSSION

Site Quality

This site provides a variety of habitat types important to the life cycles of amphibians and reptiles. Many amphibians rely on fishless bodies of water for successful breeding. Most of the wetlands at this site are ephemeral and therefore provide this important habitat component. The wetlands also provide foraging areas for many amphibians and some reptiles (such as turtles and aquatic snakes). The southern end of the site has more permanent water and these wetlands may provide hibernacula for leopard frogs and painted turtles, two of several species at the site that overwinter under water. The site also provides foraging habitat for the more terrestrial species such as toads and smooth green snakes. The sedge meadows and mesic prairies of the site provide this component. Finally, terrestrial nesting habitat for species such as the smooth green snake and the painted turtle are also available in the drier prairies of the site.

Although the site is not large by landscape standards, it provides all of the critical life cycle requirements for at least 10, (and possibly as many as 20) species of amphibians and reptiles.

Listed Species

Four-toed salamander--In lentic habitats this salamander is almost always associated with vernal ponds containing sphagnum moss. No wetlands of this type are known from the site. The nearest record for this species is "3 miles west of Deerfield", approximately 16 km (10 miles) south of the Mitigation Site, collected in 1927. It is unlikely that the four-toed salamander exists at the North Chicago Wetland Mitigation Site.

Massasauga--The complex mosaic of marshes, sedge meadows, and wet prairies found at the site provides ideal habitat for this species. The nearest records are from "south of Deerfield", approximately 16 km (10 miles) south of the Mitigation Site, collected in 1959. Brown (1993) concluded that the occurrence of viable populations of timber rattlesnakes is almost always known by local residents. This would also be true for other rattlesnakes. The North Chicago site is surrounded on all sides by residential, commercial, and industrial developments yet there have been no reports of rattlesnakes in this area. It is unlikely that the massasauga occurs at the North Chicago Mitigation Site.

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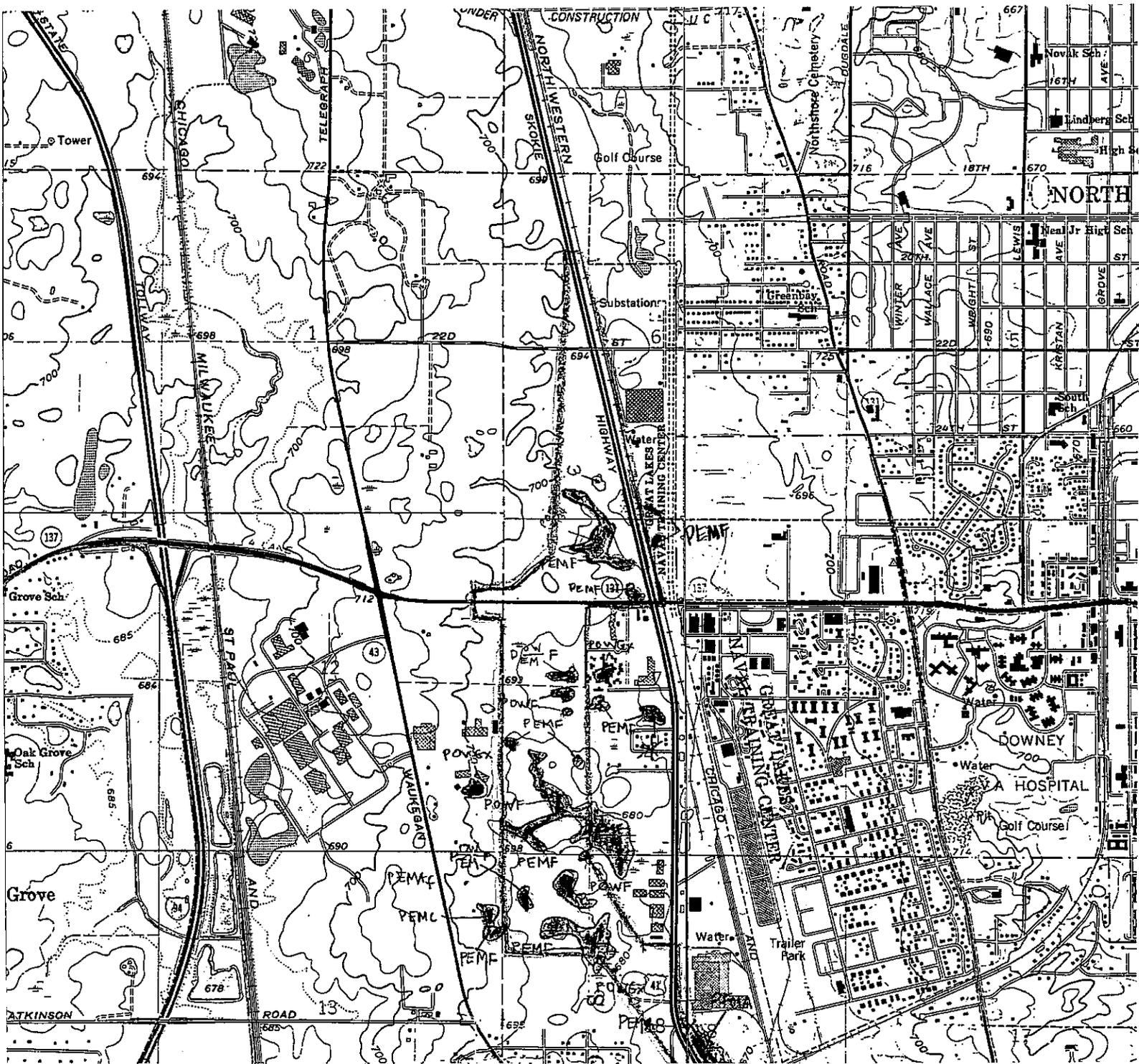
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Appendix 1. List of Museum Holdings Searched.

Collection	Acronym
Academy of Natural Sciences, Philadelphia	ANSP
American Museum of Natural History	AMNH
Auburn University Museum	AUM
Burpee Museum of Natural History	BMNH
California Academy of Sciences	CAS
Carnegie Museum	CM
Chicago Academy of Sciences	CA
Field Museum of Natural History	FMNH
Florida Museum of Natural History	UF
H.D. Walley Collection	HDW
Los Angeles County Museum of Natural History	LACM
Louisiana State University	LSUS
Milwaukee Public Museum	MPM
Museum of Comparative Zoology	MCZ
National Museum of Natural History	USNM
Nebraska State Museum	UN
Principia College	PC
S.A. Minton Collection	SAM
Southern Illinois University-Carbondale	SIUC
Texas Cooperative Wildlife Collection	TCWC
Tulane University Museum of Natural History	TU
University of Illinois Museum of Natural History	UIMNH
University of Kansas Museum of Natural History	KU
University of Michigan Museum of Zoology	UMMZ
University of Wisconsin-Stevens Point	UWSP

Appendix II. Maps.



Map 1. Location of the North Chicago Mitigation Site, Lake County, Illinois