



**ILLINOIS NATURAL  
HISTORY SURVEY**  
PRAIRIE RESEARCH INSTITUTE

**SURVEY FOR THE MUDPUPPY (*NECTURUS MACULOSUS*)  
IN LAKE MICHIGAN NEAR FULLERTON THEATER**



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## Introduction

The Chicago Shoreline Storm Damage Reduction Project was authorized in the Water Resources Development Act of 1996, Section 101 (a)(12). The City of Chicago and the Chicago Park District are the local sponsors for this project. The purpose of the project is to prevent storm erosion of parklands and reduce flooding of Lake Shore Drive. Project limits for construction will be limited to the lakefront area near the Fullerton Theater and the first beach cell to the south (**Figure 1**). As part of the project, the existing rubble mound is to be replaced with new stone, which consists of various sized chunks of quarried limestone. The existing rubble mound potentially provides habitat for the Mudpuppy *Necturus maculosus*.

*Necturus maculosus*, is a large (up to 19" in length, but averages 12"), fully aquatic salamander distinguished from other salamanders in Illinois by having four toes on the hind feet and large bushy gills. A dark line that bisects the eye terminates at the external gills and the species often has dark blotches on its sides and tail (Petranka 1998). Their range extends from southern Quebec to northern Alabama, Mississippi, and Georgia. They inhabit a multitude of habitats including muddy canals, large fast-flowing rivers, and large cool water lakes (Petranka 1998). In Illinois, they primarily inhabit lakes, ponds, rivers, and large creeks with clear water, but can survive in alternative habitat if rocky areas are available for reproduction (Phillips et al. 1999). The species is most active in October and November when breeding occurs, although a second breeding bout may occur in late winter and early spring. Females deposit eggs in nests under rocks, logs and other cover objects in May and June (Petranka 1998). Eggs hatch in one to two months and the larvae do not reach reproductive age for five years. Mudpuppies are predatory and prey consists of mostly invertebrates (annelids, insects, mollusks, and crayfish) but may also include amphibians and fish. Mudpuppies are primarily nocturnal. During the day they shelter under rocks, logs, bank undercuts, and other cover objects. They predominantly forage for food at night but may forage during the day in weedy and muddy habitats (Petranka 1998). Mudpuppies appear to be most active at cooler water temperatures with most captures occurring at water temperatures around 40° Fahrenheit.

In 2010, the Mudpuppy was added to the list of threatened and endangered species in Illinois due to a decrease in recent observations of the species in the state (Illinois Endangered Species Protection Board 2011; Mankowski 2010, 2012). Further, the Mudpuppy is the only known glochidial host of the Salamander Mussel, *Simpsonaias ambigua* (Mollusca, Unionidae). Glochidia are the microscopic larval stage of freshwater mussels that parasitize the gills of fish or, in the case of *S. ambigua*, Mudpuppies for a time prior to dropping to the substrate where they begin taking the form of a typical mussel. The Salamander Mussel is an endangered species in Illinois and a candidate for federal listing by the United States Fish and Wildlife Service. Thus, conserving *N. maculosus* may aid in the conservation of *S. ambigua*.

Mudpuppies are known to occur in Lake Michigan. The specimen collected closest to the Chicago Shoreline Storm Damage Reduction Project was collected from Montrose Beach by Wren in 1942 (Chicago Academy of Sciences 10871). More recently, a specimen was collected from the Chicago Harbor by Veraldi and Morris in 1999 (INHS 115252). In order to proceed with the Chicago Shoreline Storm Damage Reduction Project, the Illinois Department of Natural Resources has required a survey of this area for *N. maculosus*.

## **Materials and Methods**

We used rigid metal funnel traps (18"x12"x8" and 18"x8"x8") baited with canned cat food and/or sardines in oil. Eighteen traps were set along the shoreline on 29 April 2013 at approximately 1400 hrs (**Table 1; Figure 2**). The traps were then checked at approximately 900 hrs during the next three days, and removed on 02 May 2013. Extreme wave action on 02 May 2013 caused nine of the traps to become wedged in the rocks and we were unable to retrieve the traps.

## **Results**

The nine traps that were wedged in the rocks could not be recovered and are therefore considered "zero sample nights". We totaled 45 sample nights of effort. We captured one White Sucker *Catostomus commersonii* (a native fish) and 15 Round Gobies *Neogobius melanostomus* (an introduced, invasive fish). Both fishes are common in the Illinois portion of Lake Michigan. No Mudpuppies were encountered.

## **Literature Cited**

- Illinois Endangered Species Protection Board. 2011. Checklist of Endangered and Threatened Animals and Plants of Illinois. 18 pp.
- Mankowski, A., editor. 2010. Endangered and Threatened Species of Illinois: Status and Distribution, Volume 4 – 2009 and 2010 Changes to the Illinois List of Endangered and Threatened Species. Illinois Endangered Species Protection Board, Springfield, Illinois. iii + 38 pp.
- Mankowski, A. 2012. The Illinois Endangered Species Protection Act at Forty: a review of the Act's provisions and the Illinois List of Endangered and Threatened Species. Illinois Endangered Species Protection Board, Springfield, IL. 152 pp. Published online at: <http://www.dnr.illinois.gov/ESPB/Pages/default.aspx>.
- Petranka, J.W. 1998. Salamanders of the United States and Canada. Smithsonian Press. Washington, D.C. 587 pp.
- Phillips, C.A., R.A. Brandon, and E.O. Moll. 1999. Field Guide to Amphibians and Reptiles of Illinois. Illinois Natural History Survey Manual 8: 1-282.

**Table 1.** Coordinates of traps set between 29 April and 02 May 2013. Coordinates recorded as decimal degrees in Map Datum NAD 83.

<b>Trap #</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Sample Nights</b>
<b>1</b>	41.9242	-87.6301	2
<b>2</b>	41.9251	-87.6302	3
<b>3</b>	41.9252	-87.6302	2
<b>4</b>	41.9255	-87.6303	2
<b>5</b>	41.9257	-87.6303	3
<b>6</b>	41.9261	-87.6300	2
<b>7</b>	41.9261	-87.6300	2
<b>8</b>	41.9262	-87.6296	2
<b>9</b>	41.9264	-87.6296	2
<b>10</b>	41.9266	-87.6296	2
<b>11</b>	41.9267	-87.6296	3
<b>12</b>	41.9269	-87.6297	3
<b>13</b>	41.9271	-87.6298	3
<b>14</b>	41.9272	-87.6299	3
<b>15</b>	41.9275	-87.6302	3
<b>16</b>	41.9277	-87.6303	2
<b>17</b>	41.9278	-87.6304	3
<b>18</b>	41.9280	-87.6305	3
<b>Total</b>			<b>45</b>

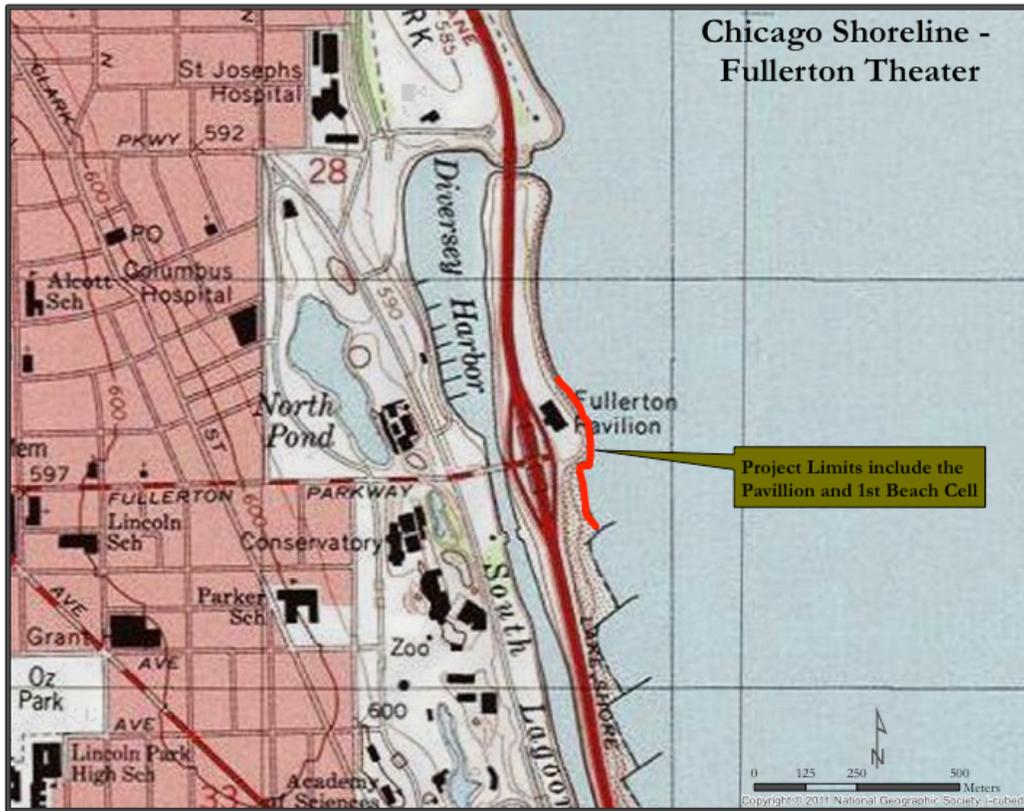


Figure 1. Map of project limits for mudpuppy (*Necturus maculosus*) surveys.



**Figure 2.** Overview of project location showing placement of baited traps deployed for *N. maculosus* between 29 April and 02 May 2013 by C.A. Phillips, A.R. Kuhns and J.S. Tiemann.