



ILLINOIS NATURAL HISTORY SURVEY

T E C H N I C A L R E P O R T

Survey and Assessment of Threatened and Endangered
Freshwater Mussels, Fishes, Amphibians, and Reptiles
Of the I-90 Tollway Improvement Corridor from
IL Rte 47 to I-39

Jeremy S. Tiemann
Andrew R. Kuhns
Christopher A. Phillips

Division of Biodiversity and Ecological Entomology
Section for Biotic Surveys and Monitoring

Illinois Toll Highway Authority

ITHA 2007-02970 (YR3)

INHS Technical Report 2007(53)
Date of issue: 31 December 2007

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INTRODUCTION

The Illinois Natural History Survey (INHS) was contracted by the Illinois State Toll Highway Authority in 2007 to conduct threatened and endangered species surveys within the corridor of Interstate 90 from IL Rte 47 to I-39 in McHenry, Boone, and Winnebago counties, Illinois. A search was conducted of the Illinois Natural Heritage Database for all threatened and endangered freshwater mussel, fish, amphibian, and reptile locations falling within a 1.6 km buffer zone of the I-90 corridor. This search resulted in the location of three potential sites within the corridor harboring state-listed freshwater mussels and fishes, but no localities for amphibians or reptiles were documented within the 1.6 km buffer zone. Sites were plotted onto aerial photographs to determine exact locations within the corridor. Three sites, all within the Coon Creek basin of the Kishwaukee River drainage, were selected to survey for suitable habitat and/or continued presences of the species.

SITE 1 = EOID 3310 (IOWA DATER *ETHEOSTOMA EXILE*) – COON CREEK @ COON CREEK ROAD BRIDGE

Project location (Figure 1; Plate 1) – Coon Creek, 6 mi S Marengo, Coon Creek Road Bridge, McHenry County, Illinois (Third Principal Meridian: Township 43N, Range 5E, Section 35 NE). The specific locality information for this site is taken from TopoZone.Com using a point centered on the Coon Creek Road bridge: latitude 42.1671° North, longitude 088.6174° West.

Background – The INHS has records of two surveys (1995 and 2005) being conducted in Coon Creek at the Coon Creek Road bridge prior to this 2007 survey (INHS Fish Collection, Champaign). At least 45 species of fishes have occurred in the Coon Creek basin, of which 21 species have been reported from the Coon Creek Road bridge site (INHS Fish Collection, Champaign). Most of the fishes are common inhabitants of northeastern Illinois streams (Smith 1979). The state-endangered Iowa darter *Etheostoma exile*, which was reported by G. Seegert at this site, was not among these records. However, it is not surprising that the species was reported from Coon Creek because the stream contains some areas of suitable habitats (e.g., pools over a mud bottom with detritus). The Iowa darter, once widespread throughout northern Illinois, is now found only in a few locations in the state (Smith 1979). The species is threatened by habitat degradation, including removal of aquatic vegetation and siltation (Smith 1979).

Methods – INHS personnel J.S. Tiemann, A.R. Kuhns, and J.D. Griesbaum seined for fishes on 27 July 2007 for 1 hour from 25 m downstream of the Coon Creek Road bridge to 75 m upstream of the bridge. All available habitats were sampled, but particular emphasis was placed on areas that appeared likely to support *E. exile*. Fishes were collected with a standard 10' minnow seine. Voucher specimens of most species collected were fixed in 10% formalin and returned for deposition in the INHS Fish Collection, Champaign.

Results and Discussion – Stream width varied from 5-10 m, depth ranged from 0.1-2.0 m, and flow was minimal. Substrate was firm sand with small patches of gravel/pebble and minimal clay/silt; some woody debris and aquatic vegetation were present. Both banks were lined with trees and/or tall grasses. Surrounding land use was predominantly agriculture.

The survey for fishes in Coon Creek at the Coon Creek Road bridge yielded 34 species (Table 1). None of the individuals collected are listed, and all are common throughout northeastern Illinois streams. Even though *E. exile* was not found, suitable habitat was present. Fishes have been shown to exhibit spatial and temporal variation (e.g., Gillette et al. 2005); therefore, it cannot be ruled out that *E. exile* inhabits the area. Because *E. exile* is greatly

affected by siltation, efforts should be taken to prevent the loss of habitat, including all measures designed to limit silt inflow into Coon Creek at all points along the corridor.

**Site 2 = EOID 6248 (SPIKE *ELLIPTIO DILATATA*)
– Coon Creek @ Grange Road Bridge**

Project location (Figure 2; Plate 2) – Coon Creek, 4 mi SW Marengo, Grange Road bridge, McHenry County, Illinois (Third Principal Meridian: Township 43N, Range 5E, Sections 17/18). The specific locality information for this site is taken from TopoZone.Com using a point centered on the Grange Road Bridge: latitude 42.2081° North, longitude 088.6875° West.

Background – The INHS did not have records of any freshwater mussel surveys in Coon Creek of the Kishwaukee River basin prior to this 2007 survey, but the INHS did have records of shell being picked-up at two sites during prior fish surveys (INHS Mollusk Collection, Champaign). The results of these incidental encounters yield seven species, including the state-threatened slippershell mussel *Alasmodonta viridis* (INHS Mollusk Collection, Champaign). However, the state-threatened spike *Elliptio dilatata*, which was reported by C. Howard just south of the intersection of Grange Road and Blissdale Road, was not among these records. Nevertheless, it is not surprising that the species was reported from Coon Creek because the stream contains ample amounts of suitable substrates (e.g., small streams with sand and gravel). The spike, once widespread throughout Illinois, is now found only in a few locations in the state (Tiemann et al. 2007). As with most aquatic species, *E. dilatata* is threatened by habitat degradation, including siltation (Cummings and Mayer 1997).

Methods – INHS personnel J.S. Tiemann, A.R. Kuhns, and J.D. Griesbaum searched for freshwater mussels on 27 July 2007 by hand-groping for 3 person-hours from underneath the Granger Road bridge to 250 m upstream. Landowner permission could not be obtained for the original site (just south of the intersection of Grange Road and Blissdale Road); therefore, the site was moved 1.5 mi to the west and conducted at the Granger Road bridge. All available habitats were sampled, but particular emphasis was placed on areas that appeared likely to support *E. dilatata*. The habitat at the Granger Road bridge was similar to the habitat description given by C. Howard (a sand/gravel run). Shells of all species found were deposited in the INHS Mollusk Collection, Champaign.

Results and Discussion – Stream width varied from 5-10 m, depth ranged from 0.1-2.0 m, and flow was minimal. Substrate was firm sand with gravel/pebble and minimal clay/silt. Both banks were lined with trees and/or tall grasses. Surrounding land use was predominantly agriculture.

The survey for freshwater mussels in Coon Creek at the Granger Road bridge yielded 12 species, 8 of which were live (Table 2). None of the live individuals collected are listed and all are common throughout northeastern Illinois streams (Cummings and Mayer 1992). Relict valves of *A. viridis* were found throughout the area in patches of sand, which is the preferred habitat for this species (Cummings and Mayer 1992). Even though no live *E. dilatata* were found, suitable habitat was present. Because freshwater mussels are often isolated, the power to detect them is low; therefore, it cannot be ruled out that *E. dilatata* inhabits the area. Because *E. dilatata* is greatly affected by siltation, efforts should be taken to prevent the loss of habitat, including all measures designed to limit silt inflow into Coon Creek at all points along the corridor.

**SITE 3 = EOID 6457 (BLACKNOSE SHINER *NOTROPIS HETEROLEPIS*)
– COON CREEK @ US HWY 20 BRIDGE**

Project location (Figure 3; No Plate) – Coon Creek, 3 mi E Belvidere, US Hwy 20 bridge, Boone County, Illinois (Third Principal Meridian: Township 44N, Range 4E, Section 33 SW). The specific locality information for this site is taken from TopoZone.Com using a point centered on the US Hwy 20 Road bridge: latitude 42.2469° North, longitude 088.7810° West.

Background – The INHS has records of one survey (1965) being conducted in Coon Creek at the US Hwy 20 bridge prior to this 2007 survey (INHS Fish Collection, Champaign). As stated above, at least 45 species of fishes have occurred in the Coon Creek basin; 15 of these species have been reported from US Hwy 20 bridge site (INHS Fish Collection, Champaign). Most of the fishes are common inhabitants of northeastern Illinois streams (Smith 1979). One exception is the state-endangered blacknose shiner (*Notropis heterolepis*), which was reported by B. Muench at this site. It is not surprising that *N. heterolepis* was reported from Coon Creek because the stream contains some areas of suitable habitats (e.g., clear, sand-bottom streams with vegetation). The blacknose shiner, once widespread throughout northern Illinois, is now found only in a few locations in the state (Page and Retzer 2002). The species is threatened by habitat degradation, including removal of aquatic vegetation, and siltation (Page and Retzer 2002).

Methods – INHS personnel J.S. Tiemann, A.R. Kuhns, and J.D. Griesbaum collected fishes on 27 July 2007 underneath the US Hwy 20 bridge to 300 m upstream. All available habitats were sampled, but particular emphasis was placed on areas that appeared likely to support *N. heterolepis*. Fishes were collected with a Model 15-D POW backpack electroshocker for 30 minutes and with a standard 10' minnow seine for 30 min. All fishes were released at the site when sampling concluded.

Results and Discussion – Stream width varied from 5-10 m, depth ranged from 0.1-2.0 m, and flow was minimal. Substrate was loose sand with small patches of gravel/pebble and/or clay/silt; some woody debris but no aquatic vegetation was present. Both banks were lined with trees and/or tall grasses. Surrounding land use was predominantly agriculture with some urbanization/industrialization in the area.

The survey for fishes in Coon Creek at the Coon Creek Road bridge yielded 24 species (Table 3). None of the individuals collected are listed and all are common throughout northeastern Illinois streams. Even though *N. heterolepis* was not found, suitable habitat is present. Fishes have been shown to exhibit spatial and temporal variation (e.g., Gillette et al. 2005); therefore, it cannot be ruled out that *N. heterolepis* is not the area. Because *N. heterolepis* is greatly affected by siltation, efforts should be taken to prevent the loss of habitat, including all measures designed to limit silt inflow into Coon Creek at all points along the corridor.

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Table 1. Fishes collected during the 2007 Toll Highway study at Site 1 (EOID 3110 [Iowa darter *Etheostoma exile*] – Coon Creek, 6 mi S Marengo, Coon Creek Road Bridge, McHenry County, Illinois – 25 July 2007). Methods for this site were 1 hour seining from 25 m downstream of the bridge to 75 m upstream of the bridge. Abundance values were determined by the following criteria: abundant (A) = >10 individuals collected, common (C) = 5-10 individuals collected, and uncommon (U) = <5 individuals collected.

Family	Common name	Scientific name	Abundance
Cyprinidae	Central stoneroller	<i>Campostoma anomalum</i>	A
	Spotfin shiner	<i>Cyprinella spiloptera</i>	A
	Common shiner	<i>Luxilus cornutus</i>	C
	Redfin shiner	<i>Lythrurus umbratilis</i>	A
	Golden shiner	<i>Notemigonus crysoleucas</i>	U
	Hornyhead chub	<i>Nocomis biguttatus</i>	C
	Bigmouth shiner	<i>Notropis dorsalis</i>	C
	Sand shiner	<i>Notropis stramineus</i>	A
	Carmine shiner	<i>Notropis percobromus</i>	C
	Southern redbelly dace	<i>Phoxinus erthrogaster</i>	U
	Bluntnose minnow	<i>Pimephales notatus</i>	A
	Blacknose dace	<i>Rhinichthys atratulus</i>	U
	Creek chub	<i>Semotilus atromaculatus</i>	A
Catostomidae	Quillback	<i>Caprodes cyprinus</i>	U
	White sucker	<i>Catostomus commersonii</i>	U
	Northern hogsucker	<i>Hypentelium nigricans</i>	C
	Shorthead redhorse	<i>Moxostoma macrolepidotum</i>	U
Ictaluridae	Yellow bullhead	<i>Ameiurus natalis</i>	C
	Channel catfish	<i>Ictalurus punctatus</i>	U
	Tadpole madtom	<i>Noturus gyrinus</i>	U
Esocidae	Northern pike	<i>Esox lucius</i>	U
Fundulidae	Blackstripe topminnow	<i>Fundulus notatus</i>	A
Gasterosteidae	Brook stickleback	<i>Culaea inconstans</i>	A
Centrarchidae	Rock bass	<i>Ambloplites rupestris</i>	C
	Green sunfish	<i>Lepomis cyanellus</i>	U
	Orangespotted sunfish	<i>Lepomis humilis</i>	U
	Bluegill	<i>Lepomis macrochirus</i>	U
	Longear sunfish	<i>Lepomis megalotis</i>	U
	Smallmouth bass	<i>Micropterus dolomieu</i>	U
	Black crappie	<i>Pomoxis nigromaculatus</i>	U
Percidae	Rainbow darter	<i>Etheostoma caeruleum</i>	U
	Least darter	<i>Etheostoma microperca</i>	C
	Johnny darter	<i>Etheostoma nigrum</i>	A
	Banded darter	<i>Etheostoma zonale</i>	U

Table 2. Freshwater mussels (Family Unionidae) collected during the 2007 Toll Highway study at

Site 2 (EOID 6248 [Spike *Elliptio dilatata*] – Coon Creek, 4 mi SW Marengo, Grange Road bridge, McHenry County, Illinois – 25 July 2007). Methods for this site were hand-groping for 3 person-hours from the bridge to 250 m upstream. Abundance values were determined by the following criteria: abundant (A) = >10 live individuals collected, common (C) = 5-10 live individuals collected, uncommon (U) = <5 live individuals collected, and relict (R) = species found only as relict valve. ST = Illinois State Threatened.

Sub-family	Common name	Scientific name	Abundance
Anodontinae	Elktoe	<i>Alasmidonta marginata</i>	U
	Slippershell	<i>Alasmidonta viridis</i> ST	R
	Cylindrical papershell	<i>Anodontoides ferussacianus</i>	R
	White heelsplitter	<i>Lasmigona complanata</i>	A
	Creek heelsplitter	<i>Lasmigona compressa</i>	R
	Flutedshell	<i>Lasmigona costata</i>	C
	Giant floater	<i>Pyganodon grandis</i>	R
	Creeper	<i>Strophitus undulatus</i>	A
	Ambleminae	Threeridge	<i>Amblema plicata</i>
Wabash pigtoe		<i>Fusconaia flava</i>	U
Lampsilinae	Plain pocketbook	<i>Lampsilis cardium</i>	A
	Fat mucket	<i>Lampsilis siliquoidea</i>	U

Table 3. Fishes collected during the 2007 Toll Highway study at Site 3 (EOID 6457 [Blacknose shiner *Notropis heterolepis*] – Coon Creek, 3 mi E Belvidere, US Hwy 20 bridge, Boone County, Illinois – 25 July 2007). Methods for this site were 30 min of backpack electroshocking and 30 min seining from the bridge to 300 m upstream. Abundance values were determined by the following criteria: abundant (A) = >10 individuals collected, common (C) = 5-10 individuals collected, and uncommon (U) = <5 individuals collected.

Family	Common name	Scientific name	Abundance
Cyprinidae	Central stoneroller	<i>Campostoma anomalum</i>	A
	Spotfin shiner	<i>Cyprinella spiloptera</i>	C
	Common shiner	<i>Luxilus cornutus</i>	U
	Redfin shiner	<i>Lythrurus umbratilis</i>	C
	Golden shiner	<i>Notemigonus crysoleucas</i>	U
	Hornyhead chub	<i>Nocomis biguttatus</i>	U
	Sand shiner	<i>Notropis stramineus</i>	C
	Carmine shiner	<i>Notropis percobromus</i>	U
	Suckermouth minnow	<i>Phenacobius mirabilis</i>	U
	Bluntnose minnow	<i>Pimephales notatus</i>	A
	Creek chub	<i>Semotilus atromaculatus</i>	C
	Catostomidae	White sucker	<i>Catostomus commersonii</i>
Northern hogsucker		<i>Hypentelium nigricans</i>	U
Shorthead redhorse		<i>Moxostoma macrolepidotum</i>	U
Ictaluridae	Yellow bullhead	<i>Ameiurus natalis</i>	U
	Stonecat	<i>Noturus flavus</i>	U
Esocidae	Grass pickerel	<i>Esox americanus</i>	U
Fundulidae	Blackstripe topminnow	<i>Fundulus notatus</i>	C
	Green sunfish	<i>Lepomis cyanellus</i>	C
Centrarchidae	Bluegill	<i>Lepomis macrochirus</i>	U
	Smallmouth bass	<i>Micropterus dolomieu</i>	U
	Rainbow darter	<i>Etheostoma caeruleum</i>	C
Percidae	Johnny darter	<i>Etheostoma nigrum</i>	A
	Banded darter	<i>Etheostoma zonale</i>	U

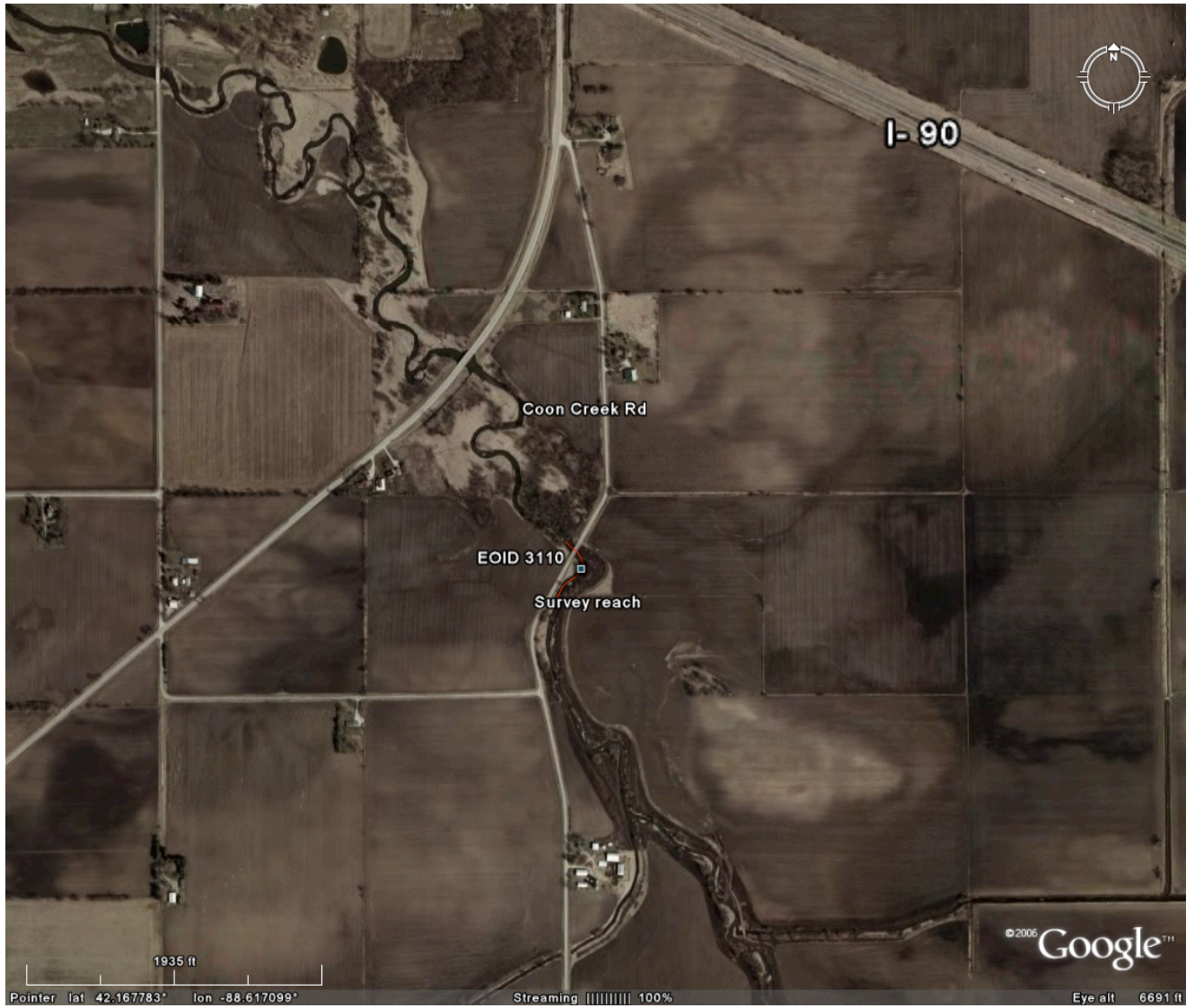


Figure 1. Sampling location of Site 1 (EOID 3110 – Iowa dater *Etheostoma exile*): Coon Creek, 6 mi S Marengo, Coon Creek Road Bridge, McHenry County, Illinois.



Figure 2. Sampling location of Site 2 (EOID 6248 – Spike *Elliptio dilatata*): Coon Creek, 4 mi SW Marengo, Grange Road bridge, McHenry County, Illinois.



Figure 3. Sampling location of Site 3 (EOID 6457 – Blacknose shiner *Notropis heterolepis*): Coon Creek, 3 mi E Belvidere, US Hwy 20 bridge, Boone County, Illinois.



Plate 1. Facing downstream at Site 1 (EOID 3110 – Iowa dater *Etheostoma exile*): Coon Creek, 6 mi S Marengo, Coon Creek Road Bridge, McHenry County, Illinois. ©Photo taken on 25 July 2007 by J.S. Tiemann.



Plate 2. Facing upstream at Site 2 (EOID 6248 – Spike *Elliptio dilatata*): Coon Creek, 4 mi SW Marengo, Grange Road bridge, McHenry County, Illinois. ©Photo taken on 25 July 2007 by A.R. Kuhns.