

# **IDOT Conservation Plan for the Kidneyshell (*Ptychobranchnus fasciolaris*) and Snuffbox Mussels (*Epioblasma triquetra*) inhabiting the Embarras River in the Vicinity of the Proposed IL 133 Bridge 1.5 Miles West of Oakland, IL, in Coles and Douglas Counties**

## **1. Description of the impact likely to result from the proposed taking**

### **A. Legal description of the project area**

The project construction area is located 1.5 miles west of Oakland, Illinois. The area of impact is under the existing bridge. The new bridge will be located on existing alignment. The legal description of the project area is taken from the Oakland, IL, US Geological Survey 7.5-minute topographic quadrangle map. The bridge is located at the 3<sup>rd</sup> Principal Meridian, Township 14 North, Range 10 East, West ½ of Section 14 in Coles County and Township 14 North, Range 10 East, East ½ of Section 15 in Douglas County.



Looking south at IL 133 bridge from under abandoned railroad bridge. Photo taken July 16, 2012.

### **B. Biological Data**

The project crosses the Embarras River. The river is a Natural Areas Inventory Site (Embarras River-Camargo INAI Site) at the project location, extending several miles both upstream and downstream. The significant features of the Natural Area are the presence of snuffbox (*Epioblasma triquetra*, endangered at the federal and state levels) and the kidneyshell mussels (*Ptychobranchnus fasciolaris*, Illinois state-endangered) and the fact that the IL 133 Bridge is documented as one of the most species-rich mussel locations in the Midwest. The Illinois Natural History Survey (INHS) sampled this site most recently on July 9, 2012. Prior to the 2012 mussel survey, this site had been sampled fifteen times from 1956 through 2008, with five collections made from 2001

through 2008. Twenty-six species have been documented at the project site over the years.

Both species inhabit medium to large rivers in clear, gravel riffles. The stream width of the Embarras River in the project area in 2012 was approximately fifteen yards and depths ranged from 0.1 to more than three feet. The substrate at the project site was predominantly sandy gravel and cobble with small pockets of mud or silted rip-rap. There was some woody debris. The stream was not flowing at the time of the mussel survey. However, the survey was conducted during a severe drought. The banks sloped gradually and were mostly lined with trees or herbaceous vegetation.

When the INHS sampled this site on July 9, 2012, they surveyed from approximately one hundred yards upstream (north) of the IL 133 bridge to approximately fifty yards downstream (south) of the bridge. Twenty-two species of mussels were found, nineteen of which were represented by live mussels and two by dead or relict shell only. Three individuals of the snuffbox and eighteen individuals of the kidneyshell were found in this survey. Two snuffbox were found upstream and one downstream of the bridge. Fourteen kidneyshell were found upstream and four downstream of the bridge. The remaining species were fairly common species of central Illinois streams.

#### **Kidneyshell (*Ptychobranthus fasciolaris*) Biological Data**

The kidneyshell was historically found in the Wabash River and its tributaries in Illinois. However, it is now restricted to the Embarras and Vermilion Rivers with sporadic distribution. This species has been collected at the project site eight times: 1956 (N=2 live); 1956 (N=10 live); 1986 (N=1 live); 1988 (N=1 live); 1992 (N=3 live); 2001 (N=2 live); 2002 (N=6 live); 2005 (N=7 live); and 2008 (N=6 live).



Kidneyshell mussel (*Ptychobranthus fasciolaris*) Photo by Kevin Cummings

#### **Snuffbox (*Epioblasma triquetra*) Biological Data**

The snuffbox was previously distributed in the larger streams in Illinois. Now it is found only in a small stretch of the Embarras River in Douglas and Coles Counties and is considered one of the rarest freshwater mussels in Illinois. This species has been collected at the IL 133 bridge ten times: 1956 (N=2 live); 1986 (N=2 live); 1988 (N=7 fresh-dead); 1990 (N=3 live); 1992 (N=3 live); 1994 (N=2 fresh-dead); 2001 (N=1 live); 2002 (N=2 live); 2005 (N=1 live); and 2008 (N=4 live). According to Jeremy Tiemann, malacologist at INHS, a snuffbox was also found in the project area in 2013.



Snuffbox mussel (*Epioblasma triquetra*) Photo by Kevin Cummings

**C. Description of activities that will result in take.**

The existing bridge will first be removed and the new bridge then built on existing alignment. There is likely to be instream work in the Embarras River to remove the existing bridge and possible instream work for riprap placement for the new bridge. The existing bridge has four piers, one at the edge of water on each bank. The new bridge will have two spans supported by one pier that will not be in the river. The new pier will be thirty feet east of the river and fifteen feet east of the existing east pier at the edge of the river.

**D. Explanation of the anticipated adverse effects on the listed species.**

If not relocated, mussels would likely be buried or otherwise crushed or killed by construction activities. The potential adverse impacts would result from the removal of the old piers and superstructure. The new pier will not be in the river. Riprap will be placed at the banks on both east and west sides to protect the banks from erosion. The removal of the existing bridge and construction of the new bridge may be accomplished through use of a causeway, haul road, or temporary construction bridge. Explosives may be used to remove the existing piers.

**2. Measures the applicant will take to minimize and mitigate that impact.**

**A. Plans to minimize the area affected by the proposed action, the number of individuals of an endangered or threatened species that will be taken, and the amount of habitat affected.**

The area of the instream work zone has been minimized to reduce the impact to the mussel habitat. The total project area within the Embarras River is approximately 0.35 acres. The amount of habitat affected is equal to the area required to complete the instream portion of the work.

**B. Plans for management of the area affected by the proposed action that will allow continued use of the area by the species.**

During construction, adjacent land areas will contain erosion and sediment control features. The Department's erosion and sediment control policy will be followed and will be in compliance with the U.S. Army Corps of Engineers Section 404 permit, the water quality certification policies of Illinois EPA, and the requirements within the NPDES construction permit. It is expected, that after the instream work has been completed, the area will be available for re-colonization by all species of mussels.

**C. Description of all measures to be implemented to minimize or mitigate the effects of the proposed action on the endangered or threatened species.**

To minimize and mitigate the effects of the project on the kidneyshell and snuffbox mussels it is planned to relocate all individuals of these species and all other species from the project area before construction begins. The relocation area will be to an area with suitable stable substrates, similar unionid assemblages, and low to no zebra mussel infestations. The relocation area or areas will be determined by INHS before construction and approved by IDNR and USFWS. The temporary holding of mussels will be in containers that allow the animals to remain moist and uncrowded. All mussel relocation protocols will be followed. The relocation will occur between May 1 and November 1 of any given year and will be done as to avoid extreme temperatures.

**D. Plans for monitoring the effects of the measures implemented.**

INHS will conduct mussel surveys two and four years after construction is completed under the new bridge and at the relocation site. Their reports will be forwarded to IDNR and USFWS.

**E. Adaptive management practices that will be used to deal with changed or unforeseen circumstances that affect the effectiveness of measures instituted to minimize or mitigate the effects of the proposed action on endangered or threatened species.**

Mussel relocation is dependent on the flow and volume of water in the river at that time. If the flow is swift and/or the water levels are high the relocation will not take place. Mussel relocation will occur only when water levels are low and current conditions are moderate or low.

Potential mussel relocation beds will be carefully screened to assure that habitat is suitable for transplanted mussels and that risks of external threats to the relocation beds (siltation, chemical spills) are minimized. The relocation will be done according to accepted standards to minimize mussel mortality.

**F. Verification that funding to support mitigation activities will be available for the life of conservation plan.**

IDOT has a contractual obligation with INHS. The INHS will be in charge of the mussel relocation and monitoring surveys.

**3. Alternative actions that would not result in the take.**

The three alternatives for this project and the reasoning why the third alternative was chosen are listed below:

**A. Alternative 1: No build.**

The only alternative that would not result in the take of listed freshwater mussels is the “no action” alternative, which means that the bridge would not be replaced. The bridge is structurally deficient. It was originally built in 1932 and rehabilitated in 1963. It needs to be replaced in a timely manner in order to ensure safety to the motoring public. Closing the bridge permanently would require a thirty-nine mile detour to the nearest bridges both north and south of the existing bridge. This would result in unacceptable delays in case of emergencies as well as to the commerce of the area.

**B. Alternative 2: Five span bridge replacement.**

The five span option would utilize two river piers of the four total piers, located just inside the existing piers at the water’s edge. The new piers would be located in the deepest parts of the river in the channel. This was the preferred due to the cost, but due to environmental concerns, a third alternative was developed.

**C. Alternative 3: Two span bridge replacement.**

The two span option would utilize one pier located outside the river but results in a substantial grade raise and greater cost of construction. Due to the existing narrow bridge width and the extent of the superstructure deterioration, it will be necessary to close the bridge during construction. This option minimizes the impacts to the stream and to the mussels. The two span option is now the preferred alternative.

**4. Data and information to assure that the proposed taking will not reduce the likelihood of the survival of the species.**

Suitable habitat exists both upstream and downstream of the bridge site. Due to the small area affected by construction of the new bridge and the relocation of the mussels from areas to be affected by construction activities, it is expected that these two species will continue to exist in this reach of the Embarras River.

**A. Copies of any federal authorizations for taking already issued to the applicant.**

A Biological Assessment is in preparation for the federally endangered snuffbox mussel. It will be provided to IDNR along with the Biological Opinion once it is issued.

**B. For projects that will result in the taking of endangered or threatened species of plants, copies of expressed written permission of the landowner.**

Not applicable for the snuffbox and kidneyshell mussels.

**5. Attachments**

**A. Location Map**

B. INHS 2012 mussel survey