



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Pat Quinn, Governor
Marc Miller, Director

Authorization for Incidental Take and Implementing Agreement

Pursuant to the Illinois Endangered Species Protection Act (Act) (520 ILCS 10/5.5) and the regulations adopted to implement the Act (17 Ill. Adm. Code 1080), authorization is hereby granted to Frentress Lake Marine Center Inc. (hereinafter referred to as FLMC) for the incidental take of butterfly (*Ellipsaria lineolata*) and black sandshell (*Ligumia recta*) mussels. The Illinois Department of Natural Resources (hereinafter referred to as the Department) has determined that this taking is incidental to activities associated with dredging between Frentress Lake Marina and the main channel of the Mississippi River in Pool 12 at River Mile 575.5-576 in East Dubuque, Jo Daviess County, Illinois.

Procedural History

FLMC applied to the Department's Office of Water Resources for a permit to conduct maintenance dredging. Due to the possible presence of state listed mussels, the Department recommended a survey of the mussel community be conducted. At the request of FLMC, Environmental Research and Information Analysts, LLC conducted mussel surveys on September 3 and 4, 2013, and found the presence of both butterfly and black sandshell mussels. Environmental Research and Information Analysts, LLC and Jo Daviess County Soil and Water Conservation District prepared a conservation plan for FLMC per the Act. The conservation plan was submitted to the Department on April 17, 2014, as a request for authorization for the incidental take of the butterfly and black sandshell mussels. The conservation plan was found to contain all required elements on April 24, 2014. A draft public notice of the application for incidental take was received by the Department on April 29, 2014, and revised on May 1, 2014. The public notice period and public comments will be detailed under #6 of the Compliance section below.

Compliance with the Illinois Endangered Species Protection Act

The Act includes six criteria which must be satisfied for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each criterion are listed below.

1. The taking will not be the purpose of, but will be only incidental to, the carrying out of an otherwise lawful activity:

The stated and apparent purpose of this proposed action is dredging to remove sediment to maintain adequate depth for safe passage of boats between Frentress Lake and the side

channel of the Mississippi River at River Mile 575.5-576 in East Dubuque, Jo Daviess County, IL as described in the conservation plan. The Department concurs that the take of butterfly and black sandshell mussels that will result from relocation and dredging is not the purpose of FLMC's activities, but is incidental to the carrying out of an otherwise lawful activity.

2. The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking:

The conservation plan prepared by Environmental Research and Information Analysts, LLC and Jo Daviess County Soil and Water Conservation District on behalf of FLMC describes measures that will be taken to minimize the potential adverse effects of the project on butterfly and black sandshell mussels. The area to be dredged has been reduced to 38 meters by 400 meters (3.5 acres). In addition, 40-minute collection dives will take place in plots 5, 7, 8, 12, and 18 (where mussels have been located), to relocate them out of the impact area to suitable habitat in the Mississippi River within one river mile. It is the opinion of the Department that these measures, along with any additional terms and conditions listed in the Authorization section of this document will, to the maximum extent practicable, minimize and mitigate the impact caused by the potential taking.

3. The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided.

FLMC is committed to funding the dredging operation and all costs associated with the requirements for obtaining a permit to dredge, including the conservation plan. FLMC funded the mussel survey in 2013, which covered 20 plots within the proposed dredging area. FLMC is committed to providing funding for a dive team of mussel experts and the conservation plan developers to proceed with the conservation plan. The conservation plan developers will take responsibility for ensuring that the plan is implemented as proposed. The Department accepts this provision as assurance that adequate funding will be available to carry out the terms of the conservation plan.

4. Based on the best available scientific data, the Department has determined that the taking will not reduce the likelihood of survival or recovery of the endangered species or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois.

Black sandshell mussel

Black sandshell mussels have an elongate shell up to 8 inches in length, that is pointed or saber-shaped at the posterior end with a smooth, shiny, and dark green to brown or black surface. Mussels are long-lived animals that are dependant on host fish during the larval stage of their life cycle. Black sandshell host species include bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), sauger (*Stizostedion canadense*), and white crappie (*Pomoxis annularis*). Black sandshells live in medium to large rivers or raceways with fairly swift current and substrates of gravel or firm sand.

The black sandshell mussel is listed as a threatened species in Illinois because it has experienced a population decline in Illinois; occurring in 2005 in only 25% of the counties with historic records. It is a widespread species found in major river systems but uncommon throughout the State. Declines in habitat conditions are associated with management of the Mississippi River as a navigational canal, and with non-point source water pollution and sediment pollution. Dams, channelization, and dredging increase siltation, physically alter habitat conditions, and block the movement of fish hosts.

A mussel survey conducted for FLMC on September 3 and 4, 2013, found one live and two dead black sandshell in the 31,200 square meters surveyed at the project location. The sites where black sandshells were located were characterized as having low percentages of medium sand and nearly equal percentages of fine sand and silt + clay. Their presence in the survey area occurs in a substrate that is limited with regard to sediment grain size. Therefore, the presence of black sandshell mussels is expected to be low based on habitat characteristics.

The Illinois Natural Heritage Database includes 111 element occurrence records for the black sandshell mussel. Jo Daviess County contains 4 element occurrence records ranging from 1-27 individuals found. Black sandshells are found in 29 of 102 Illinois counties. According to the Department's data, black sandshells are inhabiting rivers with cobble, gravel, sand, boulders, mud, areas of silt, or hard-packed sand river bottoms. Statewide, the Department has issued 13 previous Incidental Take Authorizations for black sandshells, none of which have occurred in Jo Daviess County. The post-monitoring surveys received by the Department reflect that the species has recolonized those project areas successfully. Sampling of relocation sites also confirms presence of the species, however no marking protocols were established to confirm that the individuals present were relocated individuals.

Butterfly mussel

Butterfly mussels grow to 5 inches in length and have a yellow to yellowish-brown or yellowish-green shell with scattered broken brown rays that appear as spots, bars, wavy patterns or V-shapes. Host fish include freshwater drum (*Aplodinotus grunniens*), green sunfish (*Lepomis cyanellus*), and sauger (*Stizostedion canadense*). Butterfly mussels live in large rivers with fairly swift current and coarse sand and gravel substrate.

The butterfly mussel is listed as a threatened species in Illinois because it has been lost from much of its range. It has been recorded in the Kaskaskia, Illinois, Rock, Wabash, Ohio, and Mississippi Rivers but is currently extant in just the Mississippi and Ohio Rivers. It is widespread but only locally abundant. Declines in water quality due to agriculture runoff and industrial pollution as well as habitat alteration from dredging, impoundments, sand and gravel mining, and navigational improvements are thought to contribute to population declines.

A mussel survey conducted for FLMC on September 3 and 4, 2013, found one dead butterfly mussel in the 31,200 square meters surveyed at the project location. The single

butterfly mussel was collected from Plot 18, which had a considerable amount of medium sand in its habitat composition. Based on habitat preference analysis, a high percentage of the total mussel community within the survey area was found to inhabit sediment that contained a lesser percentage of this largest class size of particles. Therefore, the presence of butterfly mussels is expected to be low based on habitat characteristics.

The Illinois Natural Heritage Database includes 50 element occurrence records for the butterfly mussel in Illinois, 35 of which are believed to be extant. Jo Daviess County contains 3 element occurrence records ranging from 1-9 individuals found. Butterfly mussels are found in 14 of 102 Illinois counties. According to the Department's data, butterfly mussels are inhabiting large rivers and their side channels and pools with silt, sand, clay, gravel and/or rock substrate. Statewide, the Department has issued three previous Incidental Take Authorizations (ITA) for butterfly mussels, all within the Mississippi River but none of which have occurred in Jo Daviess County. Previous ITAs have required a reduction in the project area, mussel relocation and monitoring, low draft vessels with reduced speeds, and erosion and pollution control measures.

Based on the life history needs of the species, the number of known occurrences of the black sandshell and butterfly mussels in Illinois, an assessment of the potential effect of this project on individual mussels in the project footprint (dredge depth at 8-9 feet under average pool with highest mussel abundance found below this depth), and the conservation measures included in this authorization for incidental take with the understanding that vulnerability and recovery information on the species remains limited, and a high level of uncertainty remains with regard to the relative abundance of the species in the project area; the Department has concluded that the taking proposed herein will not reduce the likelihood of survival or recovery of the black sandshell or butterfly mussel in the wild within the State of Illinois, the biotic community of which the species are a part, or the habitat essential to the species' existence in Illinois.

5. Any measures required under Section 5.5(b)(6) of the Act will be performed.

Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and official FLMC signatures on this authorization indicate its commitment to performing those measures.

6. The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application.

Public notice of FLMC's request for authorization of incidental take was published in the Breeze Courier (official state newspaper) on May 7, 2014, and in the Galena Gazette (Jo Daviess County newspaper) on May 7 and 21, 2014. Public comments were accepted by the Department until June 20, 2014. No public comments were received.

Authorization

It is the determination of the Department that the measures that will be implemented by FLMC will adequately minimize and mitigate the anticipated taking of black sandshell and butterfly mussels incidental to dredging activities at Fretress Lake in Jo Daviess County, Illinois. Further the Department has concluded that the take authorized herein will not reduce the likelihood of survival or recovery of black sandshell or butterfly mussels in the wild within the State of Illinois, the biotic community of which the species are a part, or the habitat essential to the species' existence in Illinois.

All terms and conditions included in the aforementioned conservation plan submitted by FLMC to the Department are incorporated into this agreement by reference and are made a part thereof.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5] and the Administrative Rule for the Incidental Taking of Endangered and Threatened Species [Ill. Adm. Code 1080.40(b)], this authorization is issued subject to the following terms and conditions, which may include additions or modifications to the minimization and mitigation measures proposed by the applicant under #2 in the Compliance section above:

1. This authorization is effective upon the signature of the Department and shall remain in effect for a period of nine (9) years from the date of the Department signature, unless terminated by written agreement of both parties.

This authorization may be revoked pursuant to the Act and Ill. Adm. Code 1080.80(b) if the Department finds that FLMC has failed to comply with any of these terms and conditions or has been responsible for the taking of black sandshell or butterfly mussels beyond that which is incidental due to dredging activities at Fretress Lake in Jo Daviess County, Illinois.

2. The effective period of this authorization may be altered by mutual written agreement between FLMC and the Department. In this event, the Department shall notify the Illinois Endangered Species Protection Board of such alteration.

Any substantive changes, including but not limited to a change in the project footprint or a change in the State-listed species which could potentially be impacted, will require that a new conservation plan be submitted to the Department to initiate the review and public notice process as required by the Act.

3. This authorization is non-transferrable.
4. FLMC shall notify the Department upon commencement of the project.
5. All personnel working in the vicinity of the project shall receive educational materials regarding the sensitive ecological context of the project. Materials will include identification information on the potentially impacted species, protected status of the

species, and response protocol for when the species is encountered, living or dead. A copy of the educational materials shall be provided to the Department. The Department shall be informed of any sighting and provided location information within 48 hours of such sighting.

6. FLMC shall conduct, or cause to be conducted, a thorough search for freshwater mussels in plots 5, 7, 8, 12, and 18 during biologically suitable mussel relocation periods. This search shall be conducted no more than 45 days prior to project initiation. Those conducting the search must be qualified at accurate identification of freshwater mussel species and currently hold an Illinois Endangered Species Permit. All native freshwater mussels found during this search shall have zebra mussels removed from their shells and be relocated to suitable habitat identified by the applicant and pre-approved by the Department. All listed species shall be marked for monitoring purposes. A report including, but not limited to, the survey methodology utilized, the species and numbers of mussels located, the age and size of each individual sampled, and maps of the area searched and the relocation site shall be provided to the Department within 60 days of completion of the survey and relocation effort. **This agreement does not authorize the relocation of any other State-listed mussel species.**
7. FLMC shall conduct, or cause to be conducted, a thorough post-monitoring survey for freshwater mussels around the project area and relocation site in year five and year nine following completion of the project. For example, if the project is completed in 2014, this search for freshwater mussels shall be conducted in 2019 and 2023 when water levels and temperatures are suitable. A report including, but not limited to, the survey methodology utilized, the species and numbers of mussels located (noting any marked individuals), the age and size of each individual sampled, and a map of the species locations shall be provided to the Department within 60 days of completion of the survey.
8. Documentation, including maps, shall be submitted to:

Incidental Take Authorization Coordinator
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
(217)557-8243
ITACoordinator@illinois.gov

The Department's Endangered Species Program shall provide all reports required under this agreement to the Illinois Endangered Species Protection Board and to the Department's Natural Heritage Database.

9. Based on the FLMC's estimate of impacts to 3.5 acres of suitable habitat and the potential taking of black sandshell and butterfly mussels, the Department accepts the following as mitigation:

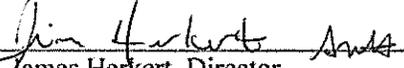
Mississippi River mussel habitat preference research was conducted concurrently with the project site surveys, including the nature of the associations of different species in the mussel community with different substrate characteristics. Data collection included sediment core samples for analysis of particle grain size, depth, velocity, pH, dissolved oxygen, and temperature. The quantitative information coupled with physico-chemical information will be compiled in a database to inform resource managers on identification of preferred suitable habitat, as well as guide future relocation and reintroduction efforts in the Mississippi River. The database shall be provided to the Department in support of ongoing mussel research, review, regulatory, relocation, and reintroduction efforts. The current status of the project research and analysis were recently presented at the 2014 annual meeting of the Mississippi River Research Consortium. Research project costs, including in-kind laboratory and staff assistance from the University of Dubuque, are estimated at \$16,000.

The FLMC with Environmental Research and Information Analysts, LLC and Jo Daviess County Soil and Water Conservation District shall continue to manage the habitat database with periodic updates provided to the Department. Data collection across all parameters described above will occur at six additional survey sites (Frentress plots 5, 7, 8, 12, 18, and the pre-approved mussel relocation site) in quadruplicate to further bolster and refine the mussel habitat preference analysis.

The research project will culminate in a published paper, including survey methodology, which will be provided to the Department. Replication of methodology may then be encouraged on other Mississippi River mussel survey efforts with the overall goal of expanding the State's knowledge of preferred suitable habitat.

10. The Department reserves the right of entry by its staff or representatives to inspect potential habitat and species management practices to assure compliance with these terms and conditions.
11. The officials identified below are authorized to execute this agreement. Execution indicates acceptance of all terms and conditions described in this document.
12. The execution of this agreement does not waive or excuse, in any way, the responsibilities of FLMC to comply with other Federal, State, or local regulations, including but not limited to obtaining any required permits for the execution of this project.

For the Illinois Department of Natural Resources:



Dr. James Herkert, Director
Office of Resource Conservation

9/22/14

Date Signed

For Frentress Lake Marine Center Inc.:



Tim Pétitgout, President
Frentress Lake Marine Center Inc.

Tim Pétitgout President

Please print name and official title

Sept. 17, 2014

Date Signed