Best Management Practices for Construction and Development Projects Freshwater Mussels

Purpose and Use

The information in this document is to be used to help avoid and minimize impacts resulting from typical construction practices. This document is intended to be used as a general guide to indicate the importance of mussels and their habitat. If more specific information is needed, please contact the Missouri Department of Conservation (MDC). Because project types and locations likely differ, the recommendations provided cannot ensure impacts may not result from the proposed action. MDC tracks natural communities, occurrences and locations of rare/sensitive species. However, a lack of an occurrence record does not mean a sensitive plant, animal or natural community is not present within or near the proposed project area. Additionally, because land use and habitat conditions can change, and animals can move, the existence of an occurrence record may not mean the species/habitat is still present. Therefore, depending on the project proposal, the current habitat conditions, and geographic location, additional project information and surveys may be necessary to understand potential impacts. Following the recommendations within this document does not complete an Endangered Species Act (ESA) consultation that may be necessary for potential impacts to species currently protected under the federal ESA; please contact the U.S. Fish and Wildlife Service (FWS) for more information.

Ecology

Mussels are relatively immobile animals that are vulnerable to pollutants, sediment, channel alterations, and other activities which may negatively impact their habitats. Mussels can be found in a variety of aquatic environments. A majority prefer permanently flowing water over a stable substrate. They are generally found buried in clean, silt-free substrates composed of sand, gravel, cobble, and boulder mixtures throughout many streams and rivers. Some mussel species are also found in oxbow lakes, backwaters, and side-channels of rivers which may include muddy habitats. Some species have narrow ranges and are restricted to a few rivers (and some to just a few locations). Other species are widespread and may be encountered throughout the state. For several rare/endangered species, Missouri's rivers are home to some of the best, last remaining populations.

Mussels obtain their food by siphoning and filtering surrounding materials from the water. One individual may filter several gallons of water per day to gather necessary nutrients. All of Missouri's mussel species depend on a vertebrate host, usually fish, to complete their life cycle. Because of this they begin life barely visible to the eye which also makes them extremely prone to impacts within their environment. However, if conditions remain suitable, mussels are known to live for extremely long periods, some for over 80 years or more.

Reasons for Decline

Direct and indirect alteration and degradation of stream habitats have contributed to the decline of many mussel species. Such practices include gravel mining, removal of trees and undergrowth along the streambank, nonpoint source pollution from agriculture and urban areas, dredging, channelization, dams and impoundments, work pads and coffer dams. These practices have reduced available habitat, increased stagnation and siltation, and possibly eliminated or reduced numbers of necessary fish hosts.

Specific Recommendations

Freshwater mussels can be negatively impacted at any time of the year by direct substrate disturbance, destabilization of the stream bank, sedimentation following substrate or bank disturbance, introduction of chemical or organic pollutants, or indirectly through impacts to the fish host. Following these recommendations does not ensure there will be no negative impacts on these species or their habitat, because every site and project differs. However, these recommendations identify practices that will help avoid and minimize some project impacts.

If historical records occur within or near the project area and a supplementary survey has indicated that mussels or suitable habitat is present, please contact the MDC and FWS for additional information. The following recommendations are provided and meant for all projects which may potentially impact mussels or their habitat.

- Have a mussel survey conducted in the project area by a trained biologist to identify habitat or mussel occurrences.
- No work should be conducted below the high bank of the waterway between dates shown in Figure 1 to allow for successful reproduction and recruitment of these species.
- Prevent/avoid activities that alter or destabilize stream bottoms or banks or introduce sediment, chemical or organic pollutants or impact fish hosts.
- Avoid crossing flowing water but, if unavoidable, minimize crossing distance perpendicular to the flow of water and use temporary crossings that do not restrict water flow.
- Dams and other water impoundment structures, including culverts and causeways, that alter

substrate stability and composition, or water depth should be avoided in creeks and rivers that contain mussel habitat.

- Maintain and reestablish forested riparian corridors at least 100-feet wide along streams to help reduce erosion and buffer potential land-use impacts.
- All equipment that enters the waterway should be washed and checked for juvenile zebra mussels before entering another body of water. This will help prevent the spread of this exotic Eurasian mussel species that can negatively affect native aquatic organisms and mussel species.
- Preconstruction notification must be provided to the District Engineer for any regulated activity in waters listed at: http://www.saw.usace.army.mil/Portals/59/docs/regulatory/regdocs/Permits/PCN1-4-2009interactive-reader-enabled2013-06.pdf The submitted preconstruction notification will be coordinated in accordance with General Condition 32(d) with the U.S. Fish and Wildlife Service as determined appropriate by the Corps.
- Refer to Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers. If your project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or www.modot.mo.gov/ehp/index.htm for additional information on recommendations.

Information Contacts

For species information:

Missouri Department of Conservation
Resource Science Division
P.O. Box 180
2901 W. Truman Blvd
Jefferson City, MO 65102-0180
Telephone: 573/751-4115

For species information and Endangered Species Act Coordination:

U.S. Fish and Wildlife Service
Ecological Services
101 Park Deville Drive, Suite A
Columbia, Missouri 65203-0007
Telephone: 573-234-2132

For Clean Water Act Coordination:

Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102-0176
Telephone: 573/751-1300, 800/361-4827

U.S. Army Corps of Engineers
Regulatory Branch
700 Federal Building
Kansas City, MO 64106-2896
Telephone: 816/983-3990

U.S. Environmental Protection Agency
Water, Wetlands, and Pesticides Division
901 North 5th Street
Kansas City, KS 66101
Telephone: 913/551-7307

Disclaimer

These Best Management Practices were prepared by the Missouri Department of Conservation with assistance from state and federal agencies, contractors and others to provide guidance to those people who wish to voluntarily act to protect wildlife and habitat. Following these recommendations does not ensure there will be no negative impacts on this species or its habitat, because every site and project differs. However, these recommendations identify practices that will help avoid and minimize some project impacts.

Compliance with these Best Management Practices is not required by the Missouri wildlife and forestry law nor by any regulation of the Missouri Conservation Commission. Other federal laws such as the Clean Water Act and the Endangered Species Act, and state or local laws need to be considered for construction and development projects and require permits and/or consultation with the appropriate agency. Following the recommendations provided in this document will help reduce and avoid project impacts to the species, but impacts may still occur. Please contact the appropriate agency for further coordination and to complete compliance requirements.

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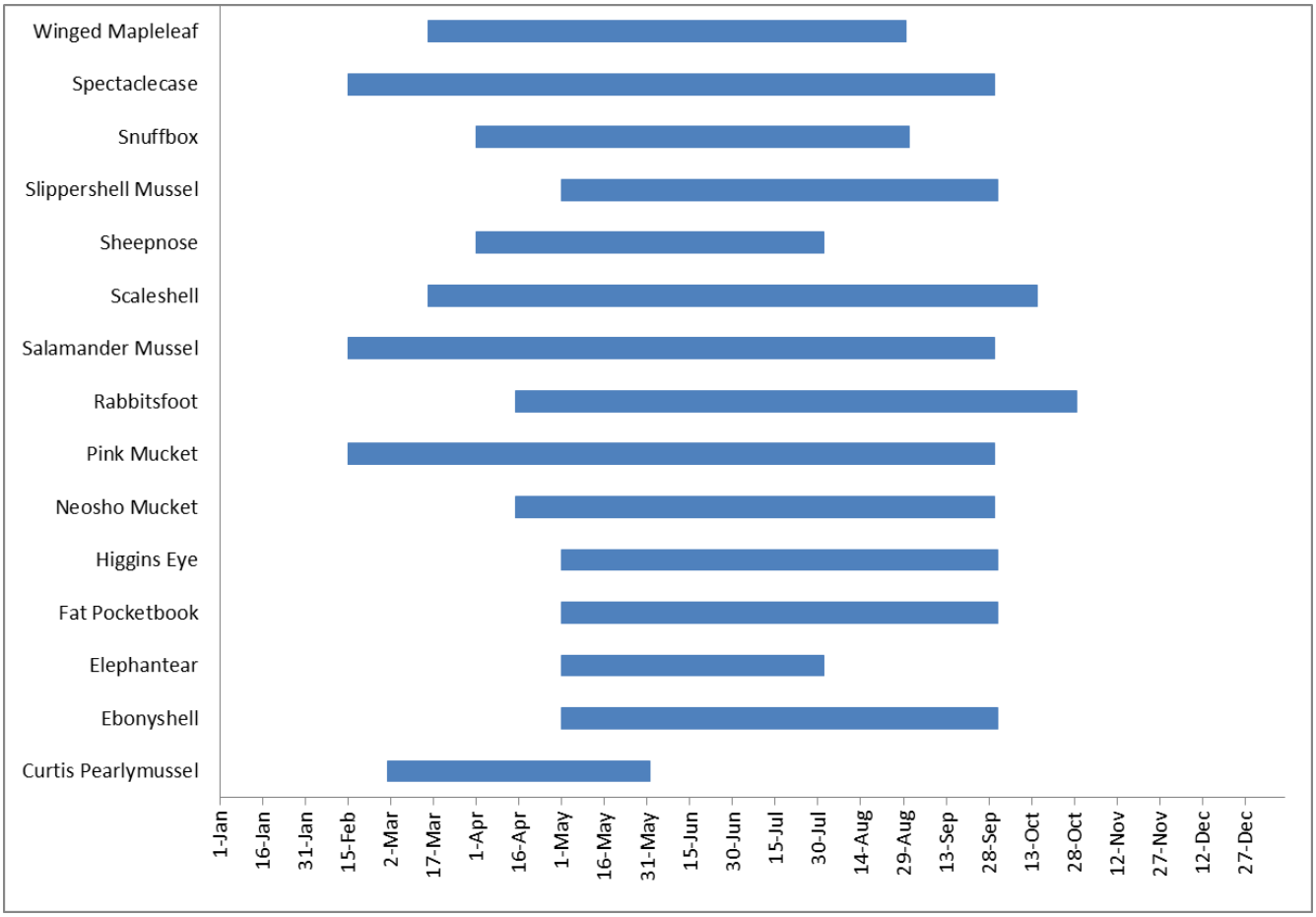

Figure 1. Mussel species avoidance period recommendations for construction activities planned below the high stream bank.