

## **Best Management Practices for Aquatic Species in Mississippi**

Most aquatic species are sensitive to changes in water quality; therefore, water quality protection measures benefit many listed species. Many existing water quality best management practices (BMPs) reduce or avoid negative impacts to listed species. Properly implemented BMPs could prevent excessive erosion, drainage alteration, and stream obstruction.

General water quality protection measures include preventing sediment from entering streams after soil disturbance, maintaining integrity of the streambed and banks, preventing trash and logging debris from entering streams, limiting pesticide applications in or near streams, avoiding chemical seepage into groundwater, restoring and protecting forested streamside management zones (SMZs), and revegetating denuded areas. The following BMPs should be implemented to reduce impacts to listed species.

Maintain sufficient streamside management zones (SMZs) and adhere to guidelines. Wider SMZs are recommended where listed species are found to protect water temperature, reduce runoff, and to trap sediment, chemicals, and nutrients. Based on most stream widths in Mississippi where listed species are found, a SMZ width of > 32–60 feet could be sufficient, although wider buffers are preferred depending on site conditions and slope, to protect most listed aquatic species.

In addition, and with emphasis to the general water quality protection measures listed above, the following may reduce or avoid impacts to listed aquatic species:

Avoid stream crossings. If unable to avoid bridge construction, opt for bridges which span the entire stream to avoid in-stream impacts to the substrate.

Avoid instream disturbance during spawning/breeding season (typically, April–May) where there are known records of listed species.

Avoid low water crossing and streambed disturbance in areas where species are known to occur.

Avoid creating dams and other water impoundment structures, including culverts, that alter substrate stability and composition, or inhibit fish passage. Avoid altering water depth in creeks and rivers that contain mussel habitat.

Leave instream gravel beds undisturbed.

Prohibit use of drop culverts or any structure that may obstruct fish passage in permanent streams. Where culverts are necessary, countersink at depth that would not obstruct water flow and fish passage or use bottomless box culverts or bridges.

Do not remove or disturb existing instream deadwood from streams. This deadwood provides important fish and turtle structure.

Do not disturb or alter existing sandbars, which can be important nesting sites for turtles, especially during nesting season (typically May – September).

Avoid introducing organic and inorganic debris into streams.

Avoid impoundment of streams and rivers.

Although prescribed fire is an important disturbance tool used to manage natural resources, intense fire, such as is common in site preparation burns, in SMZs could impact species and should be avoided. Ensure conditions are favorable to avoid high intensity fires within these zones.

Avoid rutting instream that could hinder fish passage or alter water flow.

Provide sufficient erosion control measures (i.e., scattered slash, revegetation, silt fences, hay bales, water bars, turnouts, etc.) across the project site when working near or upstream of a listed species to prevent sedimentation and degradation of water quality.