

MANAGEMENT PROBLEMS AND OPPORTUNITIES

The following goals, objectives, and strategies help outline approaches, partners, and programs to assist citizens and agency personnel in conserving the aquatic resources of the Bourbeuse River watershed.

GOAL I: MAINTAIN AND IMPROVE WATER QUALITY IN THE BOURBEUSE RIVER WATERSHED SO ALL STREAMS ARE CAPABLE OF SUPPORTING HEALTHY NATIVE AQUATIC COMMUNITIES.

Status:

Water quality in the Bourbeuse River watershed is generally good, with some exceptions, and room for improvement. Sewage treatment plants for St. James, St. Clair, and Cuba have not always met water quality standards for their treated discharge. In general, non-point pollution in the form of sediment from erosion and organic wastes from livestock impairs water quality. In particular, organic wastes from livestock contribute to excessive algal production in watershed streams. Contaminant sampling for pesticide bioaccumulation in fish indicates that Bourbeuse River fish are safe for human consumption.

Objective 1.1: Streams within the watershed will meet state standards for water quality.

Strategy: Enforcement of existing water quality regulations and necessary revisions to these regulations will help reduce violations. Water quality problems must also be addressed through public awareness efforts and by encouraging good land use in riparian areas. The citizen activism present in the watershed through STREAM TEAMS and a variety of related organizations should be encouraged. Working with related agencies to promote public awareness and incentive programs, cooperating with citizen groups involved with water quality issues in the watershed, and helping to enforce water quality laws will be among the most efficient ways to achieve this objective.

* Enhance people's awareness of 1) water quality problems affecting aquatic biota, 2) viable solutions to these problems, and 3) their role in implementing these solutions. Media contacts, personal contacts, special events, and literature development and distribution can be used to reach people throughout the watershed.

* Review Section 404, NPDES, and other permits and either recommend denial or appropriate mitigation for those which are harmful to aquatic resources. Related activities will include cooperating with other state and federal agencies to investigate pollution events and fish kills, assisting with the enforcement of existing water quality, mining, landfill, and dam safety laws, and recommending appropriate measures to protect and enhance aquatic communities.

* Work with the Missouri Department of Health and MDNR to reduce contaminant levels in fish by collecting fish for contaminant analysis, advising the fishing public about fish tissue contaminant levels, and identifying and eliminating sources of contamination.

* Work with MDNR and the Missouri Department of Health to monitor water quality, improve water quality, and ensure compliance with discharge permits. With training, volunteer groups, such as

STREAM TEAMS, can assist with water quality monitoring and improvement. These volunteer groups are strong advocates for good water quality throughout the watershed. Further development of STREAM TEAMS should be encouraged. Related monitoring efforts, such as MDC's newly developing Resource and Assessment Monitoring Program which will track aquatic biota and habitat trends statewide, should also be encouraged and directed to strategic locations.

GOAL II. IMPROVE RIPARIAN AND AQUATIC HABITAT CONDITIONS IN THE BOURBEUSE RIVER WATERSHED TO MEET THE NEEDS OF NATIVE AQUATIC SPECIES.

Status: Stream habitat conditions within the Bourbeuse River and its tributaries are variable. The main stem has no channelized segments, and old mill dams located near Beaufort and Union provide channel grade control. A number of tributaries are impounded, with the largest impoundment being Indian Hills Lake (326 acres) in the Brush Creek hydrologic unit. In many streams the lack of adequate riparian corridors, excessive nutrient loading, streambank erosion, excessive runoff and erosion, and the effects of extensive instream gravel mining are among the problems observed. Grazing practices along many streams contribute to streambank instability, nutrient loading, and poor riparian corridor conditions. The Middle Bourbeuse and the Little Bourbeuse hydrologic units have the most need for improved watershed management based on the observed scarcity of streambank protection and intact riparian corridor.

Objective 2.1: Riparian landowners should be helped to understand the importance of good stream stewardship and where to obtain technical assistance for sound stream habitat improvement and good watershed management.

Strategy: Advertising and promoting stream programs, installing and maintaining demonstration projects, and providing educational opportunities to landowners will make them more aware of the reasons and techniques for protecting streams. Emphasizing economic advantages of stream improvements will encourage more landowners to participate.

* Work with MDC's Education Division to develop stream management related materials and present related courses for elementary and secondary school teachers.

* Establish and maintain stream management demonstration sites.

* Promote good stream stewardship through landowner workshops and stream demonstration site tours.

Objective 2.2: Maintain, expand, and restore riparian corridors, enhance watershed management, improve instream habitat, and reduce streambank erosion throughout the watershed.

Strategy: High quality aquatic habitat is the critical factor in maintaining and improving natural stream communities. Stream habitat conditions will be improved by cooperating with and providing technical assistance to private landowners, working with other local, state, and federal agencies to manage stream frontages on their properties, and installing stream improvement and habitat enhancement projects on MDC lands within the watershed. Monitoring habitat conditions and using regulatory avenues to reduce impacts from development projects should also help to identify problems and minimize impacts on the stream resource.

* Ensure that all MDC areas are examples of good stream and watershed management by including appropriate recommendations and prescriptions in area plans, implementing these practices in a timely

manner, and monitoring these practices throughout their life. These practices will include, but may not be limited to, riparian corridor re-establishment, riparian corridor management, and maintaining soil erosion levels at "T" (soil replacement level) or lower.

- * Provide technical recommendations to all landowners that request assistance and who are willing to reestablish and maintain an adequate riparian corridor.

- * Work with NRCS and SWCD boards to help them address watershed management concerns with their programs.

- * Improve landowner stewardship of streams by promoting and implementing cost share programs that include streambank stabilization, alternative watering provisions, and establishment and maintenance of quality riparian corridors within hydrologic units cooperatively selected by MDC, NRCS, and the SWCD boards.

- * Assist the US Army Corps of Engineers in their Section 404 regulatory activities, especially those pertaining to gravel mining and bridge replacements. Assistance shall be in the form of reporting unauthorized activity as well as participating in pre-application meetings and commenting as requested on 404 permit applications. Utilize contacts with landowners, contractors, developers, and municipal and county officials as opportunities to educate people about how to obtain gravel and control construction site erosion in ways that minimize damage to stream systems.

GOAL III: MAINTAIN DIVERSE AND ABUNDANT POPULATIONS OF NATIVE AQUATIC ORGANISMS WHILE ACCOMMODATING ANGLER DEMANDS FOR QUALITY FISHING.

Status: The Bourbeuse River watershed has a diverse assemblage of 90 fish species collected from 1941 through 1996. In historic fish collections, prior to the 1995-96 collections, fisheries biologists found 81 fish species. In the 1995-96 survey, nine additional fish species were added to the list; these included freshwater drum, highfin carpsucker, barred fantail darter, chestnut lamprey, smallmouth buffalo, bigmouth buffalo, warmouth, western redbfin shiner, and freckled madtom. However, some fish species found in earlier collections were not taken in the 1995-96 collections; these included least brook lamprey, goldeye, red shiner, pallid shiner, bigmouth shiner, suckermouth minnow, bullhead minnow, stippled darter, and orangespotted sunfish. The highfin carpsucker, state listed species, occurred at several locations within the watershed in the 1995-96 collections.

The Bourbeuse River is home to most of the popular sport fish found in Missouri. The river tends to be turbid, and because of the relatively low gradient, is slower moving than other Ozark streams. Most float anglers fish the Bourbeuse in the spring, before base flows limit their ability to move between access points. Smallmouth bass, largemouth bass, spotted bass, rock bass, channel catfish, flathead catfish, walleye, redhorse and suckers, longear sunfish, bluegill, black crappie, and white crappie are among the most popular species sought by anglers.

A total of 39 mussel species have been collected prior to 1977 in various surveys of the Bourbeuse River and three of its tributaries. Thirty-seven of the 39 species were collected in the 1977-78 survey, but *Cumberlandia monodonta* (a Missouri species of conservation concern) and *Cyclonaias tuberculata* were collected in previous surveys but not in the 1977-78 survey. In a more recent survey of the Bourbeuse River and two of its tributaries during 1995-97, 31 living and five dead species of mussels were collected. Habitat disturbances are the suspected cause of the decline in the number of mussel species present in the Bourbeuse River watershed.

Objective 3.1: Evaluate, maintain, and where feasible, improve sport fish populations, with primary emphasis on smallmouth bass, largemouth bass, spotted bass and rock bass.

Strategy: Assess the quality of populations of sport fishing management emphasis species and take steps to maintain or improve their populations through public education, regulations, habitat improvement, and other methods.

Objective 3.2: Maintain populations of native non-game fishes and aquatic invertebrates at or above present levels throughout the watershed.

Strategy: Assess the status of fish and invertebrate communities through systematic, periodic sampling. Techniques to maintain or improve non-game fish or invertebrate communities will depend on the community in decline and the causative agent.

* Develop standard sampling techniques for assessing fish and invertebrate communities, including the use of indicator species, and implement a monitoring program to track trends in species diversity and abundance.

* Maintain aquatic biodiversity and protect or enhance fish and invertebrate species diversity and abundance using regulations, stocking, habitat improvement, and related techniques.

GOAL IV. IMPROVE THE PUBLIC'S APPRECIATION FOR STREAM RESOURCES IN THE BOURBEUSE RIVER WATERSHED.

Status: Streams in the watershed are used extensively for fishing, and some floating, motor boating, and other recreational activities occur as well. Nine MDC stream access sites are located in the watershed. The public's understanding of the biological, social, and economic importance of streams in the Bourbeuse River watershed may be above average as evidenced by the defeat of the Meramec Dam proposal by referendum in 1978. The proposal included plans for damming the Bourbeuse River near Union. While landowner participation in Streams for the Future programs has been limited, public participation in the STREAM TEAM program has been good.

Objective 4.1: Increase the general public's awareness of stream recreational opportunities, local stream resources, and good watershed and stream management practices.

Strategy: The public will be made aware of stream related recreational opportunities and issues through media outlets, fair exhibits, and MDC publications. Increased appreciation of stream resources should follow enhanced public awareness and education. More concern about the quality of water and habitat within the watershed's streams should follow, and greater citizen involvement and advocacy in related environmental issues should result. Newspaper articles, presentations, and special events highlighting streams should help foster this awareness.

* Working with MDC's Education Division, use streams for aquatic education programs. Identify stream locations appropriate for educational field trips near participating schools.

* Provide a stream resource emphasis at public events such as the Washington Town and Country Fair and other local fairs.

* Promote the formation of STREAM TEAMS and STREAM TEAM associations within the watershed.