Researchers Find Sediments May Choke Lower Atchafalaya

The Atchafalaya Basin thrives on spring floods, according to researchers with the LSU Agricultural Experiment Station.

And researchers have found that the Basin would thrive longer if floodwaters carried fewer sediments.

"Spring floodwaters that wash over the Basin floor supply needed nutrients and dissolved oxygen. They also flush out accumulated organic matter," says Dr. C.F. Bryan, fisheries scientist with the Louisiana Cooperative Fishery Research Unit in the LSU School of Forestry and Wildlife Management.

But increasing amounts of sediment from higher velocities in the mainstem river, the result of past and proposed changes in flood plain management, threaten to isolate and 'choke' the lower Basin.

"There are, however, methods that would limit amounts of sediment entering the Lower Basin; methods that would not conflict with efforts to curb flooding," Bryan adds.

Bryan headed a team of Experiment Station scientists that recently completed a study of water quality and aquatic life in the Basin. The study, which involved 31 man-years of research time, was funded by the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service and the LSU Experiment Station.

The research was a cooperative effort of the LSU School of Forestry and Wildlife Management, the Louisiana Department of Wildlife and Fisheries, and the U.S. Fish and Wildlife Service. Funds were administered by the LSU Agricultural Experiment Station.

The researchers found that the annual spring floods are the key to sustaining aquatic life in the Lower Basin. Sheet flooding of the Basin floor washes away accumulated organic matter, aerates the water, and adds valuable nutrients.

But increasing amounts of sediment carried by the main channel to the Lower Basin would start a sequence of changes that would dramatically alter water quality and aquatic life in the Lower Basin, Bryan warns.

As sediments reach the Lower Basin, they would be deposited along the river channel — building up river banks and acting as natural levees.

"These natural levees would become so high as to create low-lying 'sumps' in many areas in the Lower Basin, isolated from all but the very high spring floods. Cut off from the normal spring floods, these areas would become increasingly stagnant," the scientist explains.

"Data from our study indicate that, without the refreshing flow of water over the swamp in the spring, large portions of the Lower Basin would tend to be depleted of oxygen (anoxic)."

Aquatic life in the Lower Basin would then become less diverse and less productive as it is the Upper Basin above Interstate 10, an area where levees cut off the bayous and lakes from revitalizing spring floods.

Researchers found that waters in the Lower Basin contained an estimated 55 percent more pounds of fish per acre than waters in the Upper Basin. Lower Basin waters also contained a higher percentage of commercial and sport fishes than Upper Basin waters.

While water in the Upper Basin had a standing fish crop of an estimated 600 pounds of fish per acre, water in the Lower Basin had a standing crop of almost 930 pounds of fish per acre.

The environment in the Upper Basin favored such fish as gizzard shad, carp and buffalo, whereas the Lower Basin comparatively had much higher pounds of catfishes, sunfishes and bass.

There were an estimated five to eight times more largemouth bass per acre in the Lower Basin than in the Upper Basin. The scientists also found that the Lower Basin contained an estimated 10 times more pounds of catfish per acre than the Upper Basin waters.

Bryan adds that the steeply sloped sides of the confined lakes and bayous in the Upper Basin have fewer spawning and nursery habitats for some species of fish.

Land-clearing and agricultural runoff in the Upper Basin have increased the amounts of nutrients in the water. These nutrients fostered excessive growths of the types of vegetation which are the primary foods of gizzard shad and carp.

"These changes in the Upper Basin are in large part due to the mainstem levees which have isolated these areas from spring flood waters. Flooding from the mainstem river, if permitted, could flush out the excessive nutrients and accumulated organic matter from these lakes and bayous," Bryan says.

He notes that farmers in the region could use the sediment removed from the collection areas — and water near the surface, relatively low in sediments, could enrich the Basin.