

Silt: A problem turned solution?

If successful, a dredging project could have huge benefits for people who enjoy the outdoors.

BY BOB IVERSON

It may now be possible to take the material that has been killing the Illinois River and use it to breathe new life into waterways and other areas of the state.

Silt has been choking the Illinois River for a century. The river and backwaters have become much shallower with reduced value for recreational boating and fishing. The Department of Natural Resources currently is investigating dredging sediment from the Illinois River and using it for habitat development or landscaping soil. This project would have huge benefits for anyone who appreciates nature and enjoys fishing, hunting or boating.

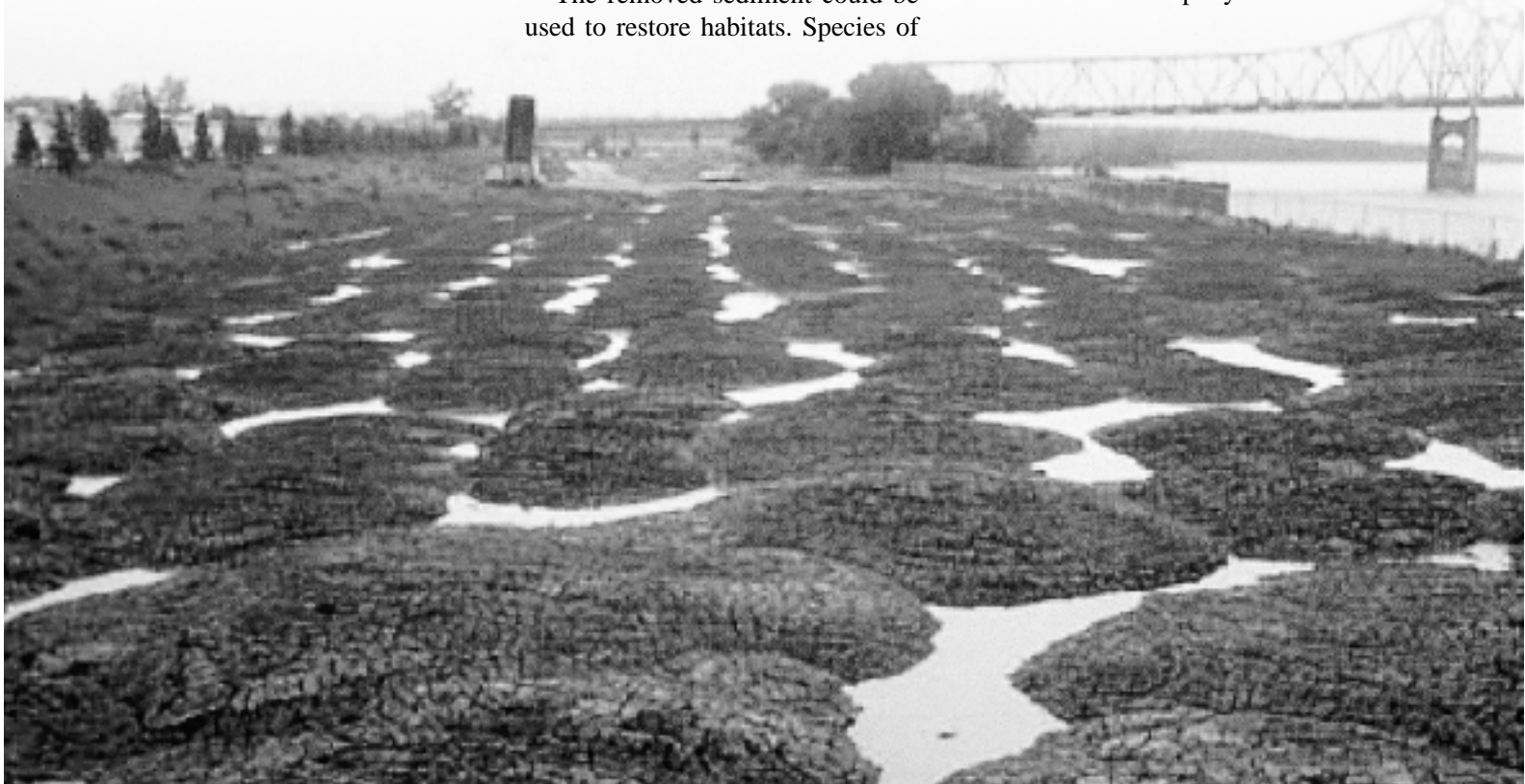
The removed sediment could be used to restore habitats. Species of

birds and fish could return to areas from which they have been missing in recent years. If it proves possible to transport this soil to other parts of the state, former strip mines and abandoned industrial sites near navigation channels could see a rebirth.

The administration of Gov. George H. Ryan and Lt. Gov. Corrine Wood has launched "Illinois Rivers 2020; the Illinois Rivers Restoration Program." This program could encompass 20 years and entail more than \$1 billion.

State officials recognize that the Illinois River is critical to the economic vitality of Illinois, the Midwest and the nation. It represents revenue and employment from

Silt is spread along the banks of the Illinois River to dry. The process takes approximately 10 weeks.





Plants grown in dried silt at the Natural History Survey greenhouse showed no difference from plants grown in conventional soil.

commercial navigation, harvest of natural resources, water supply, recreation and tourism. Illinois Rivers 2020 moves beyond studies and begins implementation of restoration and prevention throughout the river basin.

The voluntary, incentive-based program was developed through a cooperative partnership among the Illinois River Coordinating Council and agricultural, environmental and natural resources agencies. A portion of the restoration involves determining if the sediment contains harmful chemicals, if the sediment can be removed in a cost-effective manner and whether there are beneficial uses for the sediment.

This portion of the project is being spearheaded by DNR and has utilized experts from the Illinois Waste Management and Research Center, Illinois State Geological Survey, Illinois Natural History Survey and Illinois State Water Survey. It has involved the Environmental Sciences programs of the University of Illinois, the U.S. Army Corps of Engineers and a variety of local governments and organizations.

“The 60,000 acres of Illinois River backwaters have lost more than 70 percent of their capacity this century,” said John Marlin of the Waste Management and Research Center. “Backwaters that

were 6 to 8 feet deep now average less than 18 inches due to accumulated sediment. The lakes and sloughs have lost much of their value to fish, waterfowl and other plants and animals. Even shallow draft recreational boats frequently are unable to navigate these areas. The public has a huge investment in these backwaters, which are state and federal refuges and fish and wildlife areas. Unless depth is restored, these waters eventually will fill with sediment and be converted to willow-covered mudflats.”

Most of the accelerated sedimentation in the Illinois River has occurred since diversion of water from Lake Michigan began in 1900. Other dramatic changes over the century that impacted the river hydrology include navigation channels and dams, altered farm practices, channelization and urban runoff.



Hundreds of millions of cubic yards of sediment choke the river, its lakes and backwaters between Chicago and Grafton. This sediment, washed from fields and stream banks, is basically topsoil.

The filling of the backwaters is dramatically illustrated in the area between Chillicothe and Lacon. In this 7-mile stretch, the islands that separated Babbs Slough from the main channel in 1970 had become a long, wide peninsula by 1994. At normal pool, Babb’s Slough now averages about 8 inches in depth. This area was once several feet deep and famous for waterfowl hunting. Today hunters have difficulty getting their boats into the slough.

The shallowness of the backwaters lends a sense of urgency to finding a way to remove vast quantities of sediment. The present conversion of these areas from marginal aquatic habitat to largely barren mudflats will further stress regional populations of invertebrates, fish, mussels, waterfowl and other organisms. Sediment in shallow water also contributes to water quality problems since fish, waterfowl, waves and boats easily stir it up.

Because the sediment comes from farm field runoff, many people felt it would contain unacceptable levels of chemicals. However, Marlin says that so far this has not proven to be true. Barring any unforeseen developments, this soil should prove to be suitable for a variety of uses.

DNR collected 900 pounds of sediment from the river bottom in April 1999. It was dried and used to grow five species of plants at a NHS greenhouse in Champaign. Results indicate no noticeable difference in plants grown in sediment and Champaign County topsoil. A University of Illinois soil lab is evaluating soil formed by sediment

Scientists collect sediment from the Illinois River to test its fertility.

from previous dredging sites. The texture, mineralogy, organic matter content and nutrients contained in sediment are similar to that found in high-quality topsoil.

The near-term sediment removal concept concentrates on restoring habitat diversity to some areas in the backwaters and on the floodplain. Excavated sediment can be used to elevate floodplain areas to approximate the elevations and the soil moisture conditions that existed prior to 1900. This will allow the return of many plant species that cannot tolerate the current conditions. The concept calls for converting shallow, marginal aquatic habitat into higher-quality habitat. Areas of water almost 10 feet deep are essential for overwintering fish. Deep water currently is found almost exclusively in the navigation channel, which is used year-round by barges.

Building new islands in the river or enlarging existing ones is a likely use of some sediment. The islands would be long and narrow to minimize the impact on flood heights and could be built high enough to provide habitat for plants. They also would reduce wind and wave action and provide safe nesting and resting areas for numerous bird species.

Removal of sediment will enhance recreational opportunities along the Illinois River. (Photo by Ben Lenkart.)



Additionally, there are indications that the soil can be used to improve former surface mine areas. Several truckloads of the soil have been placed on a surface-mined parcel at Banner Marsh Fish and Wildlife Area,³ where it is expected to improve growth of plants on a dove field. Indications are that the sediment will prove useful for landscaping applications ranging from residential yards to highway projects and industrial site rehabilitation. If river sediment is used for this purpose, topsoil will not have to be taken from other locations, thus avoiding additional land degradation.

“Turning this ecological problem into a natural resource will take a few years, but if everything works out like we hope it will, there’s no reason not to do it,” Marlin said. “We would be solving two environmental problems simultaneously by getting the sediment out of the river where it’s not needed and getting it somewhere it is needed.”

To make collecting and using this soil efficient, the sediment needs to come out of the river with a minimum of water. Conventional dredging techniques add water to the sediment and pump the mixture out through pipes. The sediment then must be dried before it can be used, which takes huge areas of land. This mixture doesn’t have the consistency needed to build islands for habitats.

New dredging techniques being developed in the Illinois River 2020 project do not add moisture. This



Silt dredged from the river was placed at an old industrial site slated to become a park.

means sediment can be used more quickly. These new techniques also allow for greater use of barges for transportation instead of trucks. This is more economical since one barge carries the load of 75 trucks. Barge transportation also would reduce the highway congestion and environmental disruption that would be caused by hundreds of trucks motoring through urban areas.

This project has implications far beyond the Illinois River. Lakes throughout Illinois are experiencing silting problems. Successful removal of this silt would create more drinking water storage for Illinoisans, increase the recreational use of these lakes and promote renewed habitat for many aquatic species.

Marlin said that since the sediment problem developed over a century, it is reasonable to expect a restoration effort to take several decades. This would provide time to remove, dry and find uses for sediment and allow funding to be appropriated over many years. For now, the project is examining whether judicious dredging can preserve the Illinois River as aquatic habitat until society decides the long-term future of the river. 🌿

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