

ILLINOIS RIVER: FISH AND MUSSEL RESOURCES

AQUATIC RESOURCES: FISH

Many changes have occurred within the Illinois River basin which have had a significant impact upon the river and its fish population. During the 1850-1965 period, the number of people living in the basin increased from 500,000 to over 10,500,000. This rapid growth, resulted in vast quantities of industrial wastes and human sewage being produced. Communities along the Illinois River poured their untreated sewage directly into the river.

By 1908 fish production of the Illinois River began to decline sharply as its water could no longer assimilate the tremendous volume of sewage it received. As increased quantities of sewage entered the Illinois River, the effect was devastating. Upper stretches of the river were depleted of oxygen and became toxic.

Mayflies, which are indicators of clean water and are an important food of many species of fish and fingernail clams, virtually disappeared from the river above Beardstown after 1950. The loss of the river's important fish food organisms was undoubtedly one of the major factors contributing to the declining fish populations.

Pollution was only one of the stress factors that lead to the degradation of the river. Primarily during the 1905-1920 period, some 200,000 acres of the river's rich bottomlands, sloughs and shallow lakes and ponds (wetlands) were ditched, drained and diked. Levees were also erected to isolate 200,000 acres of flood plain from the river and by 1930, 50% of the "overflowed land" between LaSalle and Grafton was "protected". These levied-off areas, which were vital to the river basin's high fish productivity in terms of providing essential spawning, nursery and feeding areas, became cropland.

Another event that has altered the aquatic habitat and water quality of the Illinois River, influencing its production of fish, has been the development of navigation. Although a series of low level dams were built across the Illinois River before 1900, it was the construction of the high navigation dams during the 1930's that had the greater impact on the river. The pooling effect of the dams slowed its flow, which increased the rate of sedimentation because its capacity to carry its silt loads was altered. The heavy barge traffic that followed has resulted in wave turbulences that have increased the turbidity of the water and caused erosive scouring of the river bottom and shoreline, directly affecting the ability of some fishes to feed and reproduce.

The deposition of sediments into the basin's rivers has resulted in loss of flow capacity, the filling of adjacent bottomland lakes and associated wetlands which are essential fish production areas, and has caused the smothering of valuable bottom-dwelling organisms and plants thus degrading quality habitat areas. The loss of depth and increased turbidity from the sedimentation most threatens the present aquatic habitat and fisheries resources.

In addition, the increased production of row crops and the practice of monoculture have resulted in a greater use of herbicides, insecticides and fertilizers. Many of the agricultural chemicals used are persistent in nature and extremely toxic to fish. Over the past 30 years, numerous agricultural chemical-caused fish kills have been documented within the Illinois River basin and its tributary streams. Fish kills have also been caused by numerous discharges from industrial and manufacturing operations, which discharge toxic heavy metals, inorganic and organic chemicals, and oxygen demanding organic waste such as wood pulp fibers, canning, dairy and food processing wastes.

Oxygen depletion has become a problem in the backwater areas of the lower river as wind-generated waves resuspend materials from the shallow lake bottoms, exerting an oxygen

demand and removing dissolved oxygen from the water. The turbidity caused by sediment inflow coupled with wind and towboat generated sediment resuspension has eliminated most aquatic vegetation by reducing the water clarity needed for photosynthesis and keeping bottom material too stirred ("soft") for plant roots to hold. Peoria Lake, the largest and deepest bottomland lake in the Illinois River valley, has lost 68% of its original volume due to sedimentation, has an average depth of only 2.6 feet, and has an estimated life expectancy of only 15 years. Loss of other existing bottomland lakes in the basin is also expected.

The major decimating and stress factors in the aquatic environment are the pollution of basin waters and sediments, depletion of oxygen levels and bottom vegetative food supplies, the modification of the river to accommodate navigation altering its flow and physical characteristics, urban and agricultural development removing vast acreage of forest and aquatic habitats, and the accelerating rates of sedimentation which have destroyed many highly productive bottomland areas of the Illinois River floodplain. The total sum of these many physical, chemical, biological modifications of the basin has resulted in a general decline in the aquatic ecosystem viability.

AQUATIC RESOURCES: MUSSELS

Prior to 1900, at least 38 species of mussels were found within the basin of the Illinois River, in varying degrees of abundance. Over-exploitation of mussel beds and the rapid progression of pollution on that portion of the river upstream of the Peoria-Pekin metropolitan area were probably the major factors causing the decline in mussels after 1915. Since 1915, virtually all mussel species upstream of Chillicothe have disappeared because of pollution.

Basin mussel resources have both been seriously degraded by over-harvest, increased sedimentation, channelization of natural waterways and streams, land use changes, industrial and domestic pollution.