KISSIMMEE RIVER restoration

Present

In 1948, Congress authorized the U.S. Army Corps of Engineers to initiate construction of the Central & Southern Florida Project for flood control and protection. In 1954, Congress specifically authorized the Kissimmee River portion of the project, which was planned and designed from 1954 to 1960. Between 1962 and 1971, the Kissimmee River was channelized and transformed into a series of impounded reservoirs (Pools A-E). Inflow from the upper basin was regulated by six water control structures (S-65s). Water control structures and canals were built in the upper lakes region which allowed regulation of water flow within and between the lakes of the upper basin.

The physical effects of channelization, including alteration of the system's hydrologic characteristics, largely eliminated river and floodplain wetlands and degraded fish and wild-life values of the Kissimmee River ecosystem (Toth 1993). The meandering river was transformed into a 56-mile-long, 30-feet-deep, 300-feet-wide canal. Excavation of the canal and deposition of the resulting spoil eliminated approximately 35 miles of river channel and 6,200 acres of floodplain wetland habitat. Transformation of the river-floodplain ecosystem into a series of deep impoundments drained much of the floodplain (Toth 1995), eliminated historical water-level fluctuations, and greatly modified flow characteristics. Approximately 26,000-31,000 acres of pre-channelized floodplain wetlands were drained, covered with spoil, or converted into canal. The floodplain at the lower end of each pool remained inundated, but pre-channelization water level fluctuations were eliminated. Low-and no-flow regimes in remnant river channels resulted in encroachment of vegetation, especially floating exotics (such as Pistia stratiotes [water lettuce] and *Eich-hornia crassipes* [water hyacinth]) to the center of the river channel. Senescence and death of encroaching vegetation covered the shifting sand substrate of the historic channel with thick accumulations (up to 3 feet) of organic matter, greatly increasing the biological oxygen demand of the system (Toth 1990).

River channelization and degradation of the floodplain let to severe impacts on the system's biological components. By the early 1970s, floodplain utilization by wintering waterfowl declined by 92% (Perrin et al. 1982). Wading bird populations, a highly visible component of the historic system, declined and were largely replaced by *Bubulcus ibis* (cattle egret), a species generally associated with upland, terrestrial habitats (Toland 1990). Low-and no-flow regimes in the canal and remnant river channels resulted in chronically low dissolved oxygen levels and sport fish species like largemouth bass were largely replaced by species tolerant of low dissolved oxygen regimes (such as *Lepisosteus platyrahincus* [Florida gar] and Amia calva [bowfin]). Rheophylic invertebrate taxa typical of many large river systems (for example, hydropsychid caddisflies and heptageniid mayflies) were replaced by species common to lentic systems (for example, *Chaoborus*, *Pelocoris* [Hemiptera:Naucoridae], and hydrophilid beetles) (Toth 1993). Stabilized water levels and reduced flow also eliminated river-floodplain interactions. Influx of organic matter, invertebrates, and forage fishes to the river from the floodplain during periods of water recession was eliminated. Stabilized water levels also largely eliminated adult spawning and foraging habitat, as well as larval and juvenile refuge sites for fish on the floodplain (Trexler 1995).