Not Too Big to Fail – The Missouri River Recovery Program

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Efforts to rehabilitate the Lower Missouri River illustrate the acute challenges of ecosystem recovery in large, complex, and highly altered ecosystems. Rehabilitation on the Missouri River began with the Water Resources Development Act (WRDA) of 1986, which authorized the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Program (Mitigation Program). The Missouri River Recovery Program is presently the U.S. Army Corps of Engineers' umbrella for implementation of the Mitigation Program, Endangered Species Act (ESA) compliance, and collaborative adaptive management. Through time, conservation objectives have evolved in response to ESA listings, critical scientific reviews, litigation, and practice of collaborative adaptive management. Initial objectives were defined by reference to habitat area that was lost due to channelization; the initial goal was to recover about one third of 522,000 acres of lost aquatic, sandbar, and connected floodplain habitat. Biological opinions in 2000, 2003, and 2018 progressively focused on more-specific ecological needs of three listed species (interior least tern, piping plover, pallid sturgeon). For pallid sturgeon, the objectives evolved from holistic to reductionist: Initial efforts were to increase shallow (2-5 ft depth) and slow (< 2 ft/s) water, which was more abundant in the historical river. Historically informed objectives were succeeded by objectives of providing habitat conditions specific to critical life stages, including spawning habitats hypothesized to increase production of viable gametes and interception-rearing complexes hypothesized to increase growth and survival during the first few weeks of larval dispersal. It was hoped that application of increasingly precise scientific understanding of reproductive needs of the species would minimize conflicts with socio-economic uses of the river. Instead, investment in robust science has been inadequate to counter perceptions held by influential stakeholders that Missouri River management is a zero-sum game: that conservation efforts to support the species necessarily detract from socio-economic objectives.

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