Incorporating Wetlands into Reservoir Rehabilitation Projects for Fisheries and Other Benefits in Nebraska

Presented by Ted LaGrange, Nebraska Game and Parks Commission with help from Mark Porath from our Fisheries Division
• Need
• Aquatic Habitat Program
• Wetland Benefits
• Techniques
• Evaluation
New life for aging waters
Partners

Nebraska’s Landowners
Cities and Villages

Nebraska’s Fishing Clubs

Other partners include logos from various organizations and entities related to fishing clubs, landowners, and cities and villages in Nebraska.
Renovation
New Construction
Assess the reservoir and watershed
Techniques

• Watershed protection
• Sediment/nutrient catchments
• Sediment removal
• Shallow water
  o Shoals
  o Scalloped edges (cats paws)
• Wave attenuation
  o Jetties/breakwaters
  o Islands
  o Breakwaters
  o Shoreline protection

• Management
  o Planting
  o Drawdown
Aquatic Vegetation Management Considerations and Recommendations for Nebraska’s Salt Valley Reservoirs

By: Ted LaGrange, Wetland Program Manager

Nebraska’s Salt Valley Reservoirs are artificially created lakes, with fringe wetlands, that were constructed for the primary purpose of flood control. However, these areas also provide important fish, wildlife, and water-based recreation opportunities. As the reservoirs have aged, these opportunities have been reduced due to a decline in fish and wildlife habitat and water quality. The purpose of this report is to provide recommendations for increasing the amount of aquatic vegetation in the Salt Valley Reservoirs as they undergo renovation, and maintaining the vegetation once established.

THE ROLE OF AQUATIC VEGETATION IN RESERVOIRS

Fish and wildlife managers recognize that one of the limiting habitat factors in the Salt Valley Reservoirs is the lack of aquatic vegetation. Many things have contributed to this lack of vegetation including timing of water level changes, turbidity, wave action, uprooting by fish, and herbivory. There are a variety of benefits that aquatic plants provide in a reservoir setting.

BENEFITS:

Fish Habitat- Aquatic vegetation provides benefits for fisheries including production of invertebrates eaten by fish, and cover for spawning and hiding from predators. One of the reasons reservoirs are so productive in the years following initial flooding is that substantial nutrients are cycled from submerged decaying terrestrial plants into the aquatic food web. In addition, nutrients and organisms washed in during filling also get cycled into the aquatic food web. This phenomena is termed trophic upsurge. Trophic upsurge refers to the 5-10 years of highly successful sport fish production that follows initial reservoir filling. Unfortunately, internal nutrient loading declines substantially once the initial terrestrial vegetation component is lost. A period of 3-4 years of low water levels, when regrowth of terrestrial and aquatic vegetation takes place in exposed areas, followed by flooding of substantial areas of vegetation, can simulate trophic upsurge, increase productivity, and bring on strong year classes of certain fish species (Summerfelt 1999, Ploskey 1986).

Wildlife Habitat- Reservoirs with aquatic vegetation provide habitat for a greater number and diversity of wildlife than those without the vegetation. The plants provide food directly, are a production site for invertebrate foods, and provide resting and nesting cover. The number and types of wildlife using an area is very dependent on the distribution and type of plants growing in an area. As a general rule of thumb, it is best to have sites that provide a diversity of habitat types (i.e., a good interspersion of plant communities, open water, and exposed mud flats) (Helmers 1992, van der Valk 1989,
Reservoir Rehabilitations: Seeking the Fountain of Youth

Rehabilitación de reservorios: en búsqueda de la fuente de la juventud

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Abstract

Aging of reservoirs alters the functions, and associated services, of these systems through time. The goal of habitat rehabilitation is often to alter the trajectory of the aging process such that the duration of the desired state is prolonged. There are two important characteristics in alteration of the trajectory—the amplitude relative to current state and the subsequent rate of change, or aging—that ultimately determine the duration of extension for the desired state. Rehabilitation processes largely fall into three main categories: fish community manipulation, water quality manipulation, and physical habitat manipulation. We can slow aging of reservoirs through carefully implemented management actions, perhaps even turning back the hands of time, but we cannot stop aging. We call for new, innovative perspectives that incorporate an understanding of aging processes in all steps of rehabilitation of reservoirs, especially in planning and assessing.

Citing Literature
Antelope Creek removed from US impaired waters list: 'It's a big deal'

NANCY HICKS Lincoln Journal Star  Oct 18, 2018  📝

Ahmad Sajaniullah watches his son, Owhyce, 4, skip between rocks while pretending to fish in Antelope Creek in 2016 north of Q Street.

Journal Star file photo

Lincoln’s Antelope Creek, which runs 11 miles through the heart of the city, has been removed from the nation’s Impaired Waters list....
Thanks!
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NebraskaWetlands.com