MISSOURI RIVER RECOVERY PROGRAM

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A Community on Ecosystem Services Conference

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Missouri River Recovery Program
US Army Corps of Engineers
- Major impacts of current and past river uses
- Activities that are currently underway to restore some of the Missouri River ecosystems natural form and function.
- Emerging vision of the development of a sustainable river ecosystem that continues to provide for current social and economic values.
Outline

- Impacts (past and present)
  - BSNP (stabilization, navigation)
  - Dams (sediment, barriers, hydrograph)
- Restoration
  - Mitigation
  - BiOp (Shallow Water Habitat, Emergent Sandbar Habitat, Cottonwoods)
  - Fish Passage (Yellowstone Intake)
- Vision (s)
The Missouri River Watershed

- Longest River in the U.S.
- Drains 1/6 of the Country
- 10 States
- 2 Countries
- 29 Native American Tribes
- 12 million people
- Largest Reservoir Storage System in the U.S.
Missouri River Tributaries
29 Basin Tribes
1912-1945

- Seven different acts of Congress
- USACE charged with stabilizing and providing navigation
- Collection of projects known at Missouri River Bank Stabilization and Navigation Project (BSNP)

**Flood Control Act of 1944**

- Pick-Sloan Act
- Water development plan for the basin
- Construction of Six Dams
- Authorized Purposes Established
Authorized Purposes

- Irrigation
- Fish and Wildlife
- Water Supply
- Flood Control
- Recreation
- Water Quality Control
- Navigation
- Hydropower
Reservoirs

Gavins Point Dam
Lewis and Clark Lake
Reservoirs
Effects of Reservoirs on Suspended-Sediment Discharge

Lewis and Clark Lake/Gavins Point Dam
Sediment: Missouri Relative to the Mississippi River Load

Pre-development

Mississippi River (Tarbert Landing, LA)

Present day

Missouri River (Hermann, MO)

Over 5.5 million acre-feet of sediment deposited into reservoirs and within the BSNP

Since the 1930s coastal Louisiana has lost over 1.2 million acres of land

Mississippi River (Tarbert Landing, LA)

Missouri River (Hermann, MO)
Self-Scouring Channel
Unchannelized River

Missouri National Recreational River
84 Species at Risk

- Plants: 14
- Mussels: 2
- Insects: 6
- Fishes: 24
- Reptiles: 8
- Birds: 22
- Mammals: 8

Missouri River Recovery Program (MRRP)

WRDA 1986 & 1999
BSNP Mitigation
- Aquatic & Terrestrial
  - IA, KS, NE, MO
  - 166,750 acres of restored habitat (32% of losses)

WRDA 2007:
- MR Ecosystem Restoration Plan (MRERP)
- MR Recovery Implementation Committee (MRRIC)
- Fish passage at Intake, MT
- Funding above Sioux City, IA

2003 Biological Opinion
- Flow Management
- Habitat Creation
- Adaptive Management
- Hatchery Support
- Research

Fish and Wildlife Coordination Act requirement
Endangered Species Act requirement

Missouri River Recovery Program (MRRP)
Mitigation Program

- Authorized WRDA 1986 & amended WRDA1999
- Mitigation authorized by Congress to acquire land to replace 32% of lost habitat
- Nebraska, Iowa, Kansas and Missouri
- Restores habitat for fish & wildlife lost due to bank stabilization and navigation project not species specific
BiOp Habitat Creation

- Cottonwoods
- Shallow Water Habitat
  Pallid Sturgeon (endangered)

- Emergent Sandbar Habitat
  Least Terns (endangered) and Piping Plovers (threatened)

*Scaphirhynchus albus*  
*Sternula antillarum*  
*Charadrius melodus*
Cottonwood Forest \((Populus deltoides)\)

- Once the dominant floodplain vegetation
- Regeneration has largely ceased
  - Scouring and deposition of substrate (as a result of flooding) is crucial for cottonwood regeneration.
  - Aging cottonwood stands are being replaced by later successional species that lack the structure for suitable habitat.
Cottonwood Plan

- Biological Opinion
  - map the health of the remaining
  - create a cottonwood regeneration plan
  - ensure that no more than 10 percent of the cottonwood forest that is suitable bald eagle habitat is lost as eagle habitat

- Cottonwood Management Plan
  - living document that preserves, creates, or enhances cottonwood habitat
  - landscape-level cottonwood riparian community model (USD)
Pallid Sturgeon

- Endemic to Missouri and Mississippi
- Relic of the dinosaur era
- 15 years to mature; can live up to 70 years
- Used to migrate hundreds of miles upstream to spawn
- After fertilization, eggs hatch in 5 to 8 days, larvae drift back downstream for several weeks
- Larvae seek out slower moving waterways and mature over a period of a dozen years
- Few live to adulthood
Shallow Water Habitat Projects

Chutes
Shallow Water Habitat Projects

Backwaters
Channelized River

Jameson Island & Lisbon Bend, Missouri
Channelized River

Upper & Lower Hamburg Bend, Nebraska, Iowa, & Missouri

2010

1993

BUILDING STRONG®
Shallow Water Habitat Projects

River Structure Modifications
Emergent Sandbar Habitat (ESH)
ESH Succession

Variation in ESH During Nesting Season

- ESH Available for Nesting
- Base ESH
- Maximum Discharge

Baseline Discharge
- ESH Available for Nesting
- Base ESH
- Nesting Area

Aging of Mechanically Created Sandbar

- Good Nesting Habitat
- Declining Habitat Quality
- Unsuitable for Nesting

YEARS
Ongoing Corps Actions on Missouri River

- 735 Miles of Navigation Channel
- 6 Mainstem Missouri River Dams
  - 50 million visitor hours / year
- 50 Tributary Dams
  - 125 million visitor hours / year
- 1064 Miles of Federal Levees,
- 779 Miles of Non-Federal Levees
- Regulatory in 9 States
- WRDA Implementation
- Bank Stabilization Assistance
- 59 Miles of National Recreational River

- Missouri River Recovery Program:
  - Mitigation of 166,750 acres of habitat losses,
  - Recovery of 3 endangered species,
  - Stakeholder collaboration.
- Missouri River Ecosystem Restoration Plan
- Missouri River Authorized Purposes Study
Missouri River Federal Visions

**The Missouri River Recovery Program:**
To create a sustainable ecosystem supporting thriving populations of native species while providing for current social and economic values

**The Missouri River Basin Interagency Roundtable:**
A fully functioning ecosystem that provides benefits for the human community and habitat for native plants and animal species
Tribal Vision Statements

**Flandreau Santee Sioux Tribe**: “...to ensure the health and safety of Dakotah Oyate living on the Flandreau Reservation and protect the natural resources of Mother Earth.”

**Ho’ Chunk or Winnebago Tribe of Nebraska**: “…To preserve its resources and cultural heritage; To create opportunities for its members to thrive and become economically and socially self-sufficient …”

**Kansas Kickapoo Tribe**: “…a sovereign tribal government …responsive to the needs of Kickapoo tribal members as it relates to community and economic development and growth and the protection and use of its resources.”

**Three Affiliated Tribes, Mandan, Hidatsa, Arikara**: “provide to the Tribe and people, maximum quality services, by being responsible, accountable, respectful, caring, and will incorporate the traditional values of our elders and ancestors.”

**Prairie Band Potawatomi Band**: “…ensure self-sufficiency that respects diversity and equality… provide an environment of improved well-being for our people including education, health, safety, and welfare while valuing our culture, traditions, and all resources... ”

**Standing Rock Sioux Tribe**: “…effective, efficient and visible government providing opportunities for our economy to grow through business development by educating our members, to enhance the health and wellness of the people of Standing Rock.”
Other Stakeholder Visions

**MRNRC**: “To promote and facilitate the preservation, conservation, and enhancement of the natural resources of the Missouri River System”

**MLDDA**: “To Preserve our Heritage and Agronomic Resources in America's Heartland”

**MoRAST**: “…facilitating management of the natural resources of the Missouri River Basin”

**Coalition to Protect the Missouri River**: “To protect and support responsible management of Missouri River resources and the maintenance of Congressionally authorized purposes of the river…”

**The Nature Conservancy**: “…protect ecologically important lands and waters for nature and people”

**Mo-Ark**: “To promote conservation and beneficial use of land and water resources in the Missouri River Valley”

**WaterOne**: “Providing a safe, reliable and high quality water supply…”
Collective Future Vision

Missouri River Ecosystem Restoration Plan

- Develop joint vision and objectives
- Transition from recovery and mitigation focus to ecosystem restoration

- Focus on systems approach rather than species-based
- Align all authorities and projects that can accomplish restoration under common goals
MISSOURI RIVER AUTHORIZED PURPOSES STUDY (MRAPS)
(Omnibus Appropriations Act 2009, Div C, Sect 108)

- Flood Control
- Navigation
- Fish and Wildlife
- Irrigation
- Power
- Recreation
- Water Supply
- Water Quality Control

- Congressionally authorized study to review the project purposes established by the Flood Control Act of 1944.

- Will analyze the eight authorized purposes in view of the current Basin values and priorities to determine if changes to the existing purposes and existing Federal water resource infrastructure may be warranted.
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