WF4313/6613-Fisheries Management

Class 18–Habitat & management case studies

In the news

NEWS › COLORADO NEWS

Denver's South Platte River revival gains water for fish during dry times

A fundraising goal was met to create a 500 acre-feet "environmental pool" to be stored in Chatfield Reservoir

Starting next year, state aquatic biologists plan to release that water strategically, concentrating on 65 or so low-flow days each year. The South Platte still will be one of the world's most tightly controlled rivers, unable to be a natural river that meanders through a flood plain moving sediment. But biologists say a dedicated flow for ecological purposes will allow some bending within the engineered channel through metro Denver.

Viewed from the 16th Street Bridge, a couple passes along the South Platte River, where Commons Park and the City of Commerce's Park join together in Denver, CO, Wednesday, Feb. 16, 2011.

By BRUCE FINLEY | bfinley@denverpost.com | The Denver Post
PUBLISHED: October 16, 2017 at 7:00 am | UPDATED: October 16, 2017 at 3:16 pm

Denver's project to ensure at least some water for fish in a 40-mile urban stretch of the South Platte River — even during the winter low-flow months when people practically drain it — is gaining momentum.

A fundraising goal has been met to buy space in Chatfield Reservoir, southwest of Denver, to store an "environmental pool" of water — about 500 acre-feet (163 million gallons), Denver Water officials confirmed last week.

Starting next year, state aquatic biologists plan to release that water strategically, concentrating on 65 or so low-flow days each year. The South Platte still will be one of the world's most tightly controlled rivers, unable to be a natural river that meanders through a flood plain moving sediment. But biologists say a dedicated flow for ecological purposes will allow some bending within the engineered channel through metro Denver.

Mayor Michael Hancock has declared that all great cities, including Denver, are defined by major waterways. "The South Platte River is a central feature of our landscape, and we are committed to keeping it flowing through the year for the benefit and

Announcements

Exam November 1…

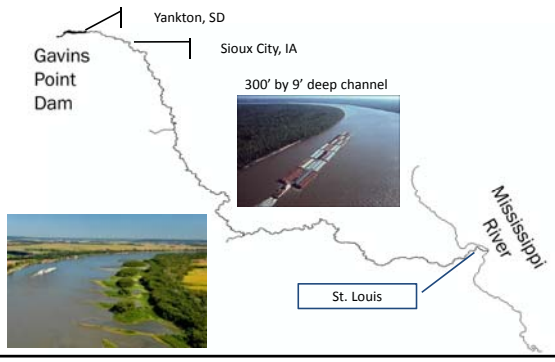
Paddlefish Lab

- Group 1

Class Topics

Management case study with habitat

Lower Missouri River

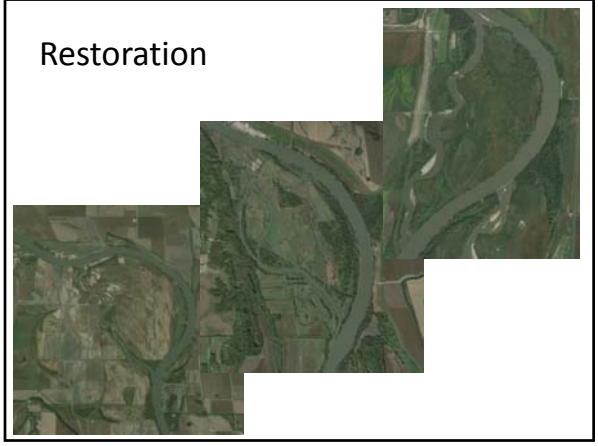


Lo. Mo. River @ Yankton

Training outer bends

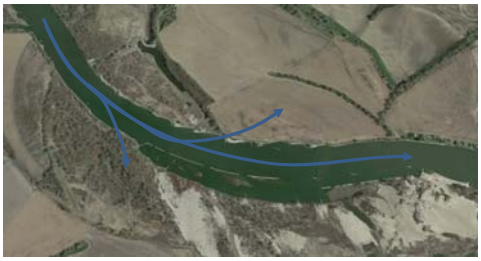
Flood control

Restoration



Restoration

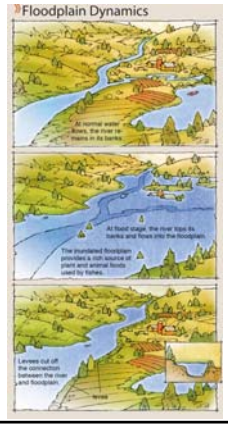
Floodplain connectivity



Floodplain dynamics

- Nutrient spiraling
- Dike notching

http://www.in-fisherman.com/catfish/catfish-habitats/

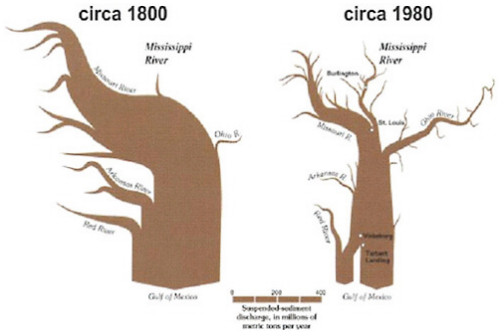


Floodplain connectivity

Effects of channelization

1. Chemical
   - Contaminants
2. Physical
   - Sediment, turbidity, substrate, flow
3. Biological
   - Energetic demand, life history habitats, prey communities

Sediment delivery



https://www.nap.edu/read/13019/chapter/4#37

Emergent Sandbar Habitat

Shared habitat

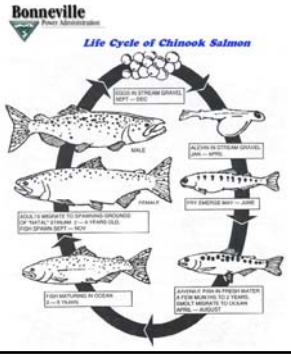
RESTORATION, CONSERVATION, & MITIGATION EXAMPLE

Restoration, Conservation, & Mitigation Example

- Supplement population for lost habitat
- Example: Dams & anadromous fish

Columbia Basin

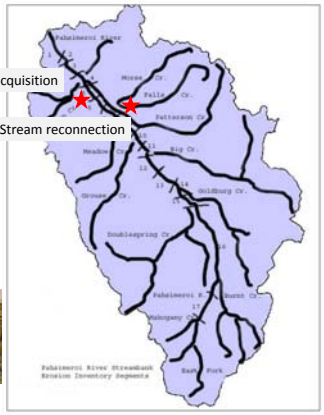
Anadromous life history



Habitat restoration

- Watershed improvements (land uses, strategic land acquisitions)
- Improve riparian corridors (Nutrients, sedimentation, thermal)
- Improve stream connectivity (stream reconnection, fish ladders, physical transport)

Pahsimeroi River



Conservation

- Fish screening- conserves fish in existing habitat

Mitigation

- Raise fish in other habitats

Salmon Mitigation

- Raising fish at a hatchery to mitigate for loss of Snake River Habitat

Steelhead

Juveniles rear for ~2yrs. before heading to ocean

Stream habitat types

- Water
- Spawning
- Rearing & foraging
- Growing
- Migratory
- Cover

Stream habitat

- Restoration
  - Riparian zones: thermal input, organic input, trophic input, intercept sediment and nutrients
  - Channel complexity: flow refuges (good for larval fish), provides cover (depth, turbulence)
  - Coarse woody debris: contributes to channel complexity, provides cover, flow refuge, invertebrate substrates
  - Connectivity: among stream reaches, floodplain

Stream habitat

- Mitigation
  - Rearing fish in alternative habitats
  - Rearing fish quicker to compensate for production

Stream habitat

- Conservation
  - Keep fish in existing habitat
  - Strategic land acquisitions
  - Landuse policies minimizing stream degradation (i.e., livestock exclosures, riparian buffers, not till)

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Salmon Mitigation

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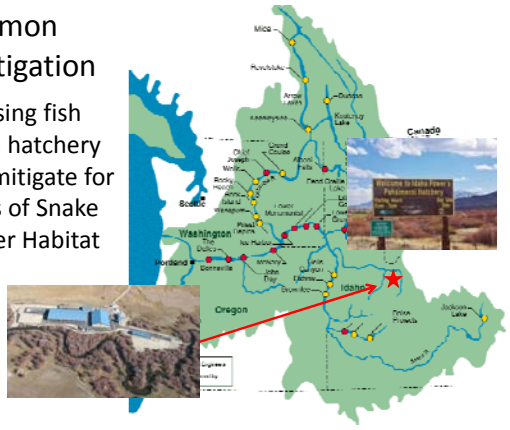

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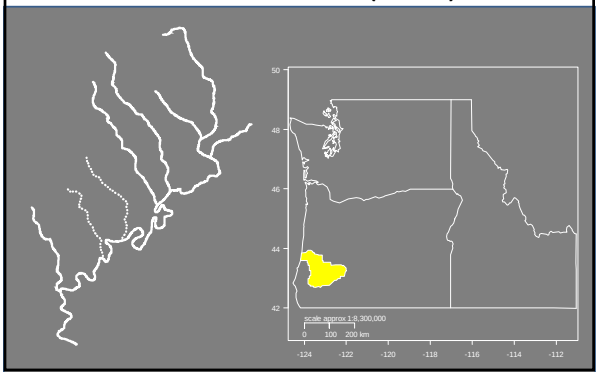
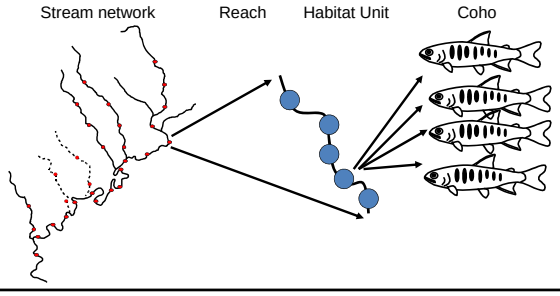
Stream habitat (Lotic)



Hierarchical organization



Lotic habitat units

- Pools
  - Plunge
  - Scour
- Riffles
- Runs
- Alcove

Stream habitat types

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- Spawning
- Rearing & foraging
- Growing
- Migratory
- Cover