Pallid Sturgeon Biology in the Missouri River

Habitat Use and Behavior

- Reproduction
- Juvenile Rearing
- Over wintering
- Foraging/Residential

▪Juveniles to Adults

▪Life History

-The pallid sturgeon can take up to 20 to 50 years to complete it's life.

-During that time it spends up to 7 – 15 years as a juvenile.

-As adults, they may spawn a half dozen times before successful.

-Eggs - adhesive

-Larval – must begin feeding within 2 weeks

-Adults – Males can spawn annually, females every three to six years.

Spawning Habitat

- Gravel, cobble, rock substrate
- Areas in Yellowstone, Platte, and tributary mouths still have these substrates.
- Do not suspect that this is the limiting factor preventing recruitment.

▪Habitat Variability

The pallid, like many riverine species, require a diversity of habitats to maintain themselves through the various life stages, seasons and years. They have the capability of moving several miles in a short time period and finding suitable habitat to survive.

The physical habitat is ecologically inseparable from the hydrology which serves as a catalyst for driving the entire river ecosystem. (The flow component is often described as the "heartbeat" of the river.)

Flows and Sturgeon

- White Sturgeon
- Alabama Sturgeon
- Shortnose Sturgeon
- Gulf Sturgeon
- Pallid Sturgeon

Recovery efforts for these federally listed sturgeon species require flow restoration.

Little Time Left

It is estimated that the Upper Basin (above Garrison Dam) adult population will be extirpated by 2017, Kapucinski (2002), if not earlier.

This is not a sustainable approach to species management but it buys us a little time.

Consultations - *Section 7 ESA*

Federal agencies are required to:

- conduct programs to conserve endangered and threatened species
- ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or adversely modify critical habitat

If agency action may adversely affect a listed species or modify critical habitat, the agency must consult with the Fish and Wildlife Service.

Consultations - *Section 7*

Formal Consultations

If adverse effects are unavoidable, the Federal agency initiates formal consultation with the Service:

- Relies on more detailed descriptions and other relevant studies, proposal reports, etc.
- Up to 90 days of consultation, followed by 45 days to produce a “biological opinion”

Consultations - *Section 7*

The Fish and Wildlife Service issues a "biological opinion" evaluating the action and providing options, where necessary

Two possible outcomes of Service's opinion:

- Federal action *is not* likely to jeopardize the continued existence of species or adversely modify critical habitat
- Federal action *is* likely to jeopardize the continued existence of species or adversely modify critical habitat

Consultations

If action *is not* likely to jeopardize, biological opinion includes:

- incidental take statement with anticipated level and form of take that may occur incidental to the action
- Non-discretionary measures to minimize the anticipated level of incidental take (Reasonable and Prudent Measures).

Consultations - *Section 7*

If action *is* likely to jeopardize, opinion includes reasonable and prudent alternatives (RPA) to remove jeopardizing aspects of the federal action. RPA must be:

- consistent with the intended purpose of the action
- within the authority of the Federal agency
- technologically and economically feasible

In rare instances, such alternatives are not available.

Consultations - *Section 7*

Service reviews more than 70,000 Federal actions annually.

An average of 1200 formal consultations (biological opinions) per year with less than 5 per cent resulting in a jeopardy or adverse modification finding.

Consultation Scope

- The analysis for this consultation encompasses the Corps' operations as modified by the Drought Conservation Plan and unbalancing of the upper three reservoirs and incorporated most of the RPA's in the 2000 BO.

- The 2000 BO is still in effect. The evaluation determined whether a reasonable and prudent alternative different from the one the Service provided the Corps in 2000 would also remove the jeopardizing effects of the project.

  (The Corps embraced the RPA's and RPM's in the 2000 BO except for RPA II (flow modifications). The Service's analyses for the 2003 Amended BO was based on this premise)

Conclusion - 2003 Opinion

- The Service concluded that implementation of the 2000 Biological Opinion and associated RPAs without the flow elements, the proposed modification to the CWCP (Drought Conservation Program and intrasystem unbalancing), and the proposed substitute elements for the flow RPA will:
  - Likely continue to avoid jeopardizing the Interior least tern population
  - Likely continue to avoid jeopardizing the Northern Great Plains breeding population of piping plovers
  - Not adversely modify or destroy critical habitat
  - Not likely avoid jeopardizing the pallid sturgeon
    - **Further RPA elements provided**

Consultation Process

- Update the Status of the Species Rangewide
- Update Baseline (action area) – including requirements from 2000 RPA
- Consider any new cumulative effects
- Consider elements in 2000 BO being implemented
- Consider new information available
- Analyze effects of Corps' new proposed elements
- Collectively, is the likelihood of jeopardy still avoided?

Missouri River Operations

Status of the Species in the Action Area – Pallid Sturgeon

- Upper Missouri River
  - Heritage pallids are at historic low levels (151 fish, CI 89-236)
  - Some evidence of natural reproduction, not self-sustaining)
  - Habitat good, flows and temperatures altered
- Middle Missouri River
  - Heritage pallids few, isolated populations, aging, not reproducing
  - Habitat good, reduced river miles, altered flow and temperature
- Lower Missouri River/Middle Mississippi River
  - No reliable population estimates
  - Ratio of pallids to shovelnose is decreasing
  - Hybridization to be increasing
  - Evidence of reproduction
  - Habitat poor to good, downstream of Gavins altered hydrograph

Missouri River Operations

Conclusions

- Corps' proposal does not provide for a more normal river hydrograph below Fort Peck and Gavins Point dams
- Corps' proposal does not promote spawning cues for pallids nor provide conditions necessary for larval pallid sturgeon survival and development
  - Results in extirpation of heritage pallid sturgeon in the Fort Peck reach
  - Reduce reproduction of pallid sturgeon in the Lower Missouri River
- Corps' proposal, in conjunction with ongoing Missouri River operations, may appreciably reduce the likelihood of both survival and recovery of the pallids in the wild resulting jeopardy to the species

Missouri River Operations

Reasonable and Prudent Alternative

- Flow Modification
  - Modify Master Manual and NEPA
  - Flows below Gavins Point Dam
  - Fort Peck flow enhancement
- Fort Peck Temperature Control Device Feasibility
  - Development of Fort Peck Dam temperature control device feasibility study
  - Construct facilities recommended in the feasibility study
- Habitat Development: Shallow Water and Floodplain
- Feasibility, Flow Development, and Adaptive Management

Summary of 2003 RPA

- The status of the pallid sturgeon is dire
- A more normalized river is essential for the sturgeon to survive in the wild
  - prey, productivity, access to habitat, spawning cues, etc…
- 2003 opinion is more flexible in some ways, but is more restrictive regarding consequences of no action
  - Lacking sufficient Corps action, the RPA prescribes flow in 2006
- Extent of summer habitat flows is directly related to Corps progress on habitat development
- Corps regs (Master Manual) currently under revision must state that the Corps will operate the river to provide flows for sturgeon survival