

PALLID STURGEON POPULATION ASSESSMENT PROJECT

Volume 1.3

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This project and subsequent document has been collaboratively developed by the “Pallid Sturgeon Population Assessment Team”. This Team is comprised of biologists and scientists possessing a diverse range of expertise to develop this assessment project for the pallid sturgeon.

The following agencies and offices have contributed to the development of this document and other guiding documents for the project. The Montana Fish, Wildlife and Parks (Fort Peck, MT), the South Dakota Game, Fish and Parks (Chamberlain, Pierre & Yankton, SD), the Nebraska Game and Parks Commission (Lincoln, NE), the Iowa Department of Natural Resources (Lake View, IA), the Missouri Department of Conservation (Jefferson City, St. Joseph & Chillicothe, MO), the U.S. Geological Survey-Columbia Environmental Research Center (Columbia, MO and Fort Peck, MT), the U.S. Fish and Wildlife Service offices, specifically, the Missouri River Fish and Wildlife Management Assistance Office (Region 6-Bismarck, ND), the Great Plains Fish and Wildlife Management Assistance Office (Region 6-Pierre, SD) and the Columbia National Fish and Wildlife Conservation Office (Region 3-Columbia, MO) have all played active roles in the development of the program. Current individual team members and their respective agency affiliations are listed in Appendix D.

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DRAFT DOCUMENT

INTRODUCTION

Dams and water management on the Missouri River since the 50's and 60's have blocked migration corridors, altered the natural hydrograph, and changed the sediment transport system that created the dynamic habitat elements necessary for native fauna and flora survival. These changes to the natural riverine system have caused impacts to both native terrestrial and aquatic species (e.g., pallid sturgeon, paddlefish, least tern, piping plover, sturgeon chubs, sicklefin chubs, blue sucker, and many others). Many native fish and animal populations have declined substantially, to the point where some species may be in danger of extinction. At present, pallid sturgeon and the least tern are listed as endangered under the federal Endangered Species Act, the piping plover is listed as threatened, and other native fishes (sturgeon chub, sicklefin chub and blue sucker) are classified as candidates for federal listing.

Pallid sturgeon, listed as endangered by the U.S. Fish & Wildlife Service (Service) in 1990, have had population trends that continue to move in a downward direction. The U.S. Army Corps of Engineers (Corps), as the water management entity responsible for the Missouri River mainstem from Fort Peck Dam and Reservoir to the mouth and projects making releases to the lower Kansas River, has consulted with the Service regarding the conservation of the pallid sturgeon. In 2000, the Service issued the Corps the 2000 Missouri River Biological Opinion (2000 Opinion) on the operations of the Missouri River Mainstem Reservoir System, the Missouri River Bank Stabilization and Navigation Project and Operation of the Kansas River Reservoir System. This 2000 Opinion addresses four species that are currently listed as threatened or endangered, the piping plover *Charadrius melodus*, the least tern *Sterna antillarum*, the pallid sturgeon *Scaphirhynchus albus*, and the bald eagle *Haliaeetus leucocephalus* (USFWS 2000). The Corps reinitiated consultation in July 2003 to address some of the elements of the 2000 RPA. In November 2003 the Service presented to the Corps an Amendment to the 2000 Opinion (2003 Amendment).

The 2000 Opinion and the 2003 Amendment list several Reasonable and Prudent Alternative (RPA) elements addressing the various species and habitat restoration issues. RPA element VI A (Pallid Sturgeon Propagation and Augmentation, p. 250, 2000 Opinion.) and RPA element VI B (Pallid Sturgeon Population Assessment, p. 252, 2000 Opinion.) address the sturgeon's inability to naturally reproduce and the need to be able to detect any change in population and ecosystem trends, good or bad. These elements were adopted by the Corps and reiterated (Elements IV and V) in the Service's 2003 Amendment to the 2000 Opinion. RPA element VI A describes the Corps' responsibility in propagation activity and then states, "The two agencies shall work cooperatively to monitor juvenile stocked pallid sturgeon to determine habitat use, distribution and movements, and survival, and guide future restoration/management efforts. The scope of the monitoring shall be developed and agreed upon by the Service and the Corps through the ACT during 2001."

RPA element VI B states, "Pallid sturgeon population assessment shall include: (1) Total number of fish captured and tag number, (2) GPS coordinates of capture sights, distribution, recapture

incidences and numbers, (3) channel and substrate mapping of the habitats used by the fish, (4) tributary use and concentrations by pallid sturgeon, (5) temperature, surface and bottom velocity, turbidity, and depth at capture locations, (6) length of fish frequency, (7) morphological measurements of fish and meristic counts, (8) species characterization utilizing morphological measurements, (9) genetic analysis of fish, and (10) productivity and recruitment. Additional information needs and priorities for the monitoring program should be developed through a cooperative effort between the Service, Corps, and Recovery Team. The population assessment information shall be included in the Annual Report referenced earlier under Adaptive Management.” In addition to these specific requirements for pallid sturgeon, RPA element VI B also states that the program will be designed in such a way to detect improvements in the warm water benthic fishery.

The Pallid Sturgeon Population Assessment Program (Program), which is guided by the aforementioned RPA elements of the 2000 Opinion and the 2003 Amendment, proposes to accomplish these elements through, amongst other things, a comprehensive monitoring plan designed to assess survival, movement, distribution, habitat use, and physical characteristics of these habitat used by wild and hatchery reared (stocked) juvenile pallid sturgeon. A series of native Missouri River species have also been identified and incorporated into the assessment program. An evaluation of these native species in addition to the pallid sturgeon will provide a more comprehensive assessment of the overall changes in the ecosystem (i.e., form and function through habitat development and flow modification) rather than assessing a single endangered species.

The Corps engaged a core group of scientists (Pallid Sturgeon Population Assessment Team-Appendix 1) composed of representatives of state and federal agencies, universities affiliated with Missouri River fisheries projects and/or pallid sturgeon projects to develop the monitoring scheme and protocols that make up this program and the document/plan that describes it. This long-term assessment plan is focused on identifying the best available science, in terms of strategy and techniques, to accomplish the overall purpose of the RPA elements. The plan begins by focusing pertinent actions on Missouri River action areas ranked as “high” (under the Biological Opinion) regarding management action priorities for pallid sturgeon as defined below in the Program Area. From there it builds on itself and works to integrate with other monitoring efforts. Standard Operating Procedures (SOP) for fishery sampling and data collection for this program have been developed by the Pallid Sturgeon Population Assessment Team (Team). These SOPs are contained in a separate document titled, “Missouri River Standard Operating Procedures for Fish Sampling and Data Collection”. These SOPs will be followed for all sampling and data collection for this program.

TEAM FUNCTION AND GOVERNANCE COMMITTEE

Since the inception of the Pallid Sturgeon Population Assessment Project, the Pallid Sturgeon Population Assessment Team (Team) has functioned collaboratively as a team in both the initial development and adaptive modification processes relative to the design and standard operating procedures guiding the program. However, the Team recognizes the need for a formal governance process to handle situations that require a vote or fall outside the authority of the team's technical expertise.

Therefore, a Governance Committee (GC) comprising a single representative from each contracting office (e.g., Nebraska Game and Parks Commission, Columbia Fishery Resources Office, etc.) has been established to make decisions that are not made by the Team. In addition to each Contracting Office representative, the U.S. Geological Survey, Columbia Environmental Research Center (CERC) and the U.S. Army Corps of Engineers will have one representative on the GC.

PROCESS FOR ADDING OR ELIMINATING GEARS

For adding gears,

1. This process will be initiated by a "Request for Data".
2. The request for data should be in the form of a brief proposal clearly articulating the following: a) purpose of the data/information, b) an explanation of how the data fits within the Project and c) how the information might best be acquired.
3. The Team will review the "request for data" proposal to determine if the request is aligned with the Project's goals and objectives and to identify specifically which crews will participate and who will be responsible for the various aspects of the evaluation including running the statistics and writing up the final report for the effort.
4. If the request is aligned with the Project's goals and objectives, the Team will select or develop an experimental gear.
5. A request for a new Gear Code will be submitted to the MDC database manager to ensure that a duplicate code is not established for an already existing gear.
6. The office submitting this request will include the Population Assessment Team via email on the request to aid communication and will also provide a detailed description of the gear (i.e., length, mesh size, twine size, lead line weight, etc...).
7. The new gear code, detailed description and date it was developed will be incorporated into the Missouri River Standard Operating Procedures document that will include a comprehensive list of all gears developed to date.
8. The Team (or Governance Committee if the Team cannot come to an agreement) will decide if all or just a few crews will run this gear to evaluate its effectiveness in addressing the data request.
9. The gear will be recognized as an "Experimental" gear during the evaluation phase.
10. The resulting data will be utilized to determine whether the gear is incorporated into the project as a standard (required) gear.

For eliminating gears,

1. The data will be analyzed to identify whether the data generated by a specific gear is providing the information to address the goals and objectives of the program for which it was intended.
2. The Team (or Governance Committee if the Team cannot come to an agreement) will determine whether the gear should be eliminated from the Standard (required) gears or continue to be a Standard (required) gear for the program.

For Data Use in addition to the Standard Reporting Template requirements, refer to Appendix C, “Reporting, Publication and Acknowledgement”.

PROJECT AREA

The Project area encompasses the Missouri River from Fort Peck Dam, Montana at Rivermile (RM) 1771.5 downstream to the confluence of the Missouri and Mississippi Rivers near St. Louis, Missouri (RM 0) and the lower reach of the Kansas River. The 2000 Opinion divides the Project area into river and reservoir segments and assigns high, moderate, or low priority management action to these segments for the pallid sturgeon. The focus of this Project will be the high priority management action segments. The segments identified as moderate or low priority for pallid sturgeon may be categorized as reservoirs or transitional zones between rivers and reservoirs (USFWS, 2000).

The high priority action segments include Segment 2, (Fort Peck Dam, Montana, RM 1171.5 to the headwaters of Lake Sakakawea, North Dakota, RM 1568), Segment 8 (Fort Randall Dam, South Dakota, RM 880 to the Niobrara River, Nebraska, RM 1845), and Segments 10-15 (Gavins Point Dam, South Dakota/Nebraska, RM 811 to the mouth, Missouri, RM 0). Segment 6, (Oahe Dam, South Dakota, RM 1072 to Big Bend Dam, South Dakota, RM 987) and Segment 16 (Confluence of the Republican and Smoky Hills River, Kansas, RM 170 to the mouth of the Kansas River, Kansas, RM 0) are identified as moderate priority action segments. Only the segments identified as high priority for pallid sturgeon will be incorporated into sampling efforts derived from this plan. Two exceptions are the Kansas River from the Johnson County Weir to the mouth and Segment 9 (Niobrara River, Nebraska, RM 845 to the headwater of Lewis and Clark Lake, South Dakota/Nebraska, RM 835). The 2000 Opinion does not recognize Segment 9 as high priority; however, a telemetry study indicated that juvenile pallid sturgeon utilize the upper portion of this segment, which is the transitional zone between the Missouri River and Lewis and Clark Lake (Personal Communication, Wayne Stancill, USFWS, Pierre, South Dakota). Therefore, a portion of Segment 9 will be included in the Project.

BACKGROUND

The Corps, as the federal entity that provides the primary water management for the Missouri and dams on tributaries to the Kansas River, has a responsibility under the Endangered Species Act to conserve species listed as endangered or threatened under that Act on these two rivers. Many large-scale restoration actions are underway or have already been finished to provide in-channel habitat diversity as well as backwater, and chute habitat for juvenile sturgeon. The effects of these projects and any potential change to the water management operations need to be clearly understood in regards to the pallid sturgeon population. It is essential that long-term monitoring take place as part of the Corps' listed species conservation to gather the information necessary to provide that understanding. Under the 2000 Opinion and the 2003 Amendment, several actions designed at gathering pertinent tern and plover habitat and population information were implemented. Those efforts to date have helped gather specific information and provide a scientific baseline understanding of habitat preferences and population dynamics. These tools are informing restoration actions for those species. A similar, or larger, effort is required to help inform the restoration of the pallid sturgeon.

Abbreviated Timeline

The following is a chronological history of actions taken with respect to the pallid sturgeon since 1990.

- 1990** Pallid Sturgeon listed on September 6th.
Very little monitoring in basin.
No successful spawning.
- 1992** Blind Pony State Fish Hatchery (SFH) successfully spawns sturgeons in captivity. This had never been accomplished before. Pallid sturgeon stocked from hatchery rearing efforts for the 1st time in 1994.
- 1997** Gavins Point National Fish Hatchery (NFH) spawns two females successfully. Blind Pony SFH spawns successfully. All progeny from the Blind Pony spawning efforts are lost due to a viral infection.
- 1998** Gavins Point NFH and Garrison Dam NFH both successfully spawn pallid sturgeon; however, all progeny at the Gavins Point NFH are lost. All progeny from the Garrison Dam NFH are transferred to the Gavins Point NFH for continued rearing. 1997 year class stocked into RPMA's 1, 2 & 3.
- 1999** Gavins Point NFH successful again with spawning.
- 2000** Garrison Dam NFH successfully spawns 2 female pallid sturgeon. Progeny are diagnosed with the Iridovirus. All fish are destroyed based on fish health recommendations.
- 2001** Corps initiates pallid sturgeon population assessment efforts with State and Federal scientists to develop the Project.
Nebraska Game and Parks Commission conducts trawl evaluation.
Monitoring begins.
Onset of development of standardized monitoring.
Columbia Fishery Resources Office begins monitoring under the project's standard guidelines (Columbia was previously conducting similar assessments).
Teams and workgroups continue to develop and meet.
- 2002** Corps hires fishery biologist to facilitate implementation of the 2000 Opinion. Pallid Sturgeon Population Assessment Team (Team) meets regularly to develop standard operating procedures for the project.
Nebraska Game and Parks Commission (NGPC) and the Columbia Fishery Resources Office (CFRO) are implementing the project in portions of the lower Missouri River.
Pallid sturgeon progeny originating from parentage in North Dakota are stocked into Recovery Priority Management Areas (RPMA) 1-4. This is significant as

this marks the 1st time fish from this geographic area are stocked into the RPMA 4 (lower Missouri River basin below Gavins Point Dam).

- 2003** Team continues to meet, develop and revise standard protocols and statistical design.
The Team recommended an Independent Science Review (ISR) of the Project. NGPC and CFRO continue to sample in the lower Missouri River
Great Plains Fish & Wildlife Management Assistance Office (GPFWMAO) begins standardized sampling in the Fort Randall reach.
Propagation Project continues with stocking of “North Dakota” pallid sturgeon progeny throughout the Missouri River.
- 2004** The NGPC, CFRO and GPFWMAO continue sampling.
Due to funding limitations, there was no additional expansion (no additional crews) of the project this fiscal year.
Sustainable Ecosystems Institute was hired to conduct the ISR of the Project. Recommendations from this review were provided in a final report. The review process included a Power Analysis.
- 2005** The project is fully implemented (fiscal year 2005) from Fort Randall Dam to the mouth. First year of Population Assessment Project implementation in Segment 4 (Yellowstone River confluence downstream to the Lake Sakakawea headwaters) leaving segments 1-3 the only voids in the project.
All data entry, database management and basic analysis are conducted through a single entity.
The Team met to incorporate the recommendations of the ISR and develop standardized reporting.
Concerns over genetic differences between Upper and Lower Missouri River Basin and Mississippi River Basin pallids is topic of discussion resulting in recommendations to acquire local broodstock into population augmentation efforts if attainable. Upper basin pallids still stocked into the lower basin as iridovirus positive fish are not allowed to be stocked into RPMA 1, 2 & 3 because of respective State Fish Health Pathogen Restrictions.
- 2006** Full implementation of the Population Assessment Project (Segments 1-14).
- 2007** Full implementation of Population Assessment Project
- 2008** Full implementation of Population Assessment Project

This Project helped influence some of the actions listed above and seeks to build off of them. This long-term assessment does **not** focus solely on pallid sturgeon, but will also include data collection of the associated fish community. Current pallid sturgeon numbers are extremely low, data collection targeting pallid sturgeon alone would (most likely) provide inadequate

information to evaluate management actions. A long-term population assessment approach that includes a series of native Missouri River species is required to address this concern and is called for in the 2000 Opinion. Evaluation of the responses of other native Missouri River fish species to changes in habitat or flow modifications is likely to provide more immediate feedback as to the biological benefits (successes or failures) of those changes. The information derived from this Project will be vital in making sound management decisions in the future.

To better detect improvements in the ecosystem, this assessment is comprehensive as it evaluates several native Missouri River fish species including the chubs species (*Macrhybopsis sp.*) which are believed to serve as important prey species for the pallid sturgeon. A representative group of native Missouri River fishes have been selected as surrogate species to detect improvements in the warm water benthic fish community. Among the species selected are: Sand Shiner *Notropis stramineus*, Sicklefin Chub *Macrhybopsis meeki*, Sauger *Sander canadensis*, Shovelnose Sturgeon *Scaphirhynchus platyrhynchus*, Plains minnow *Hybognathus placitus*, Western silvery minnow *Hybognathus argyritis*, Speckled Chub *Macrhybopsis aestivalis*, Sturgeon Chub *Macrhybopsis gelid* and Blue Sucker *Cycleptus elongatus*. These species will have additional data related to age, growth, and body condition (relative weight information) gathered on them to feed into the understanding of the affects of management actions on the ecological community. **Some of this information will be collected through aging of hard structures and some of this information may be collected through length frequency histograms utilizing aging results to validate this methodology.** All fish collected during population assessment activities will be recorded; however, detailed data will only be collected on pallid sturgeon and the representative group of native Missouri River species.

The high priority management segments (identified above) account for nearly 1,100 miles (1775 kilometers) of the Missouri River mainstem. The “Pallid Sturgeon Population Assessment Team” has designated 13 sampling segments on the Missouri River mainstem and the lower Kansas River encompassing the high priority management areas for pallid sturgeon. Each sampling segment has been selected based on a variety of characteristics such as water temperature, turbidity, tributary influences, degrading or aggrading stream bed, stream gradient, natural hydrograph, spillway releases, and flow fluctuations. Sampling within these segments of the Missouri River will enable biologists to monitor trends of pallid sturgeon and the associated fish community within each of these segments and provide insight regarding the effects of mitigation and shallow water habitat development projects. Biological benefits of shallow water habitat development efforts and mitigation projects will be captured through other sampling efforts; however, these components will be integrated to serve as complimentary data sets to this Program to enhance the knowledge and understanding of the ecosystem as a whole. Additionally, hatchery reared juvenile pallid sturgeon have been released in management Segments 2, 8, 9, 10, 13 and 14. This project will serve to assess the success of these stockings as well as future stockings.

Two sampling seasons have been established to guide assessment efforts. These seasons include a Sturgeon Season that focuses on the assessment of sturgeon species (data will be collected on the fish community during this sampling season) and a Fish Community Season that continues to

assess sturgeon but places an additional emphasis on the native Missouri River species. Due to the diverse habitats in the river and the longitudinal changes in climate, wide sampling time frames are necessary to facilitate comparable sampling efforts. Focused studies to fulfill unique biological information gaps may be initiated in conjunction with these assessment activities (i.e., food habits, telemetry projects, etc.). These specialized studies will fall into a focused research category.

Goals

Although the Pallid Sturgeon Population Assessment Project itself will not aid in the recovery of the pallid sturgeon, the information derived from this project will help provide the science to make future management decisions. Therefore, the overarching goal for this project is the Recovery of the Pallid Sturgeon.

Goal: Provide the information to detect changes in pallid sturgeon and native target species populations in the Missouri River basin.

The team recognizes two geographically distinct recovery units within the Missouri River basin. The Fort Peck Reach (segments 1-4) and the Fort Randall to the mouth reach (segments 5-14). These distinct recovery units will be recognized as the “Upper Sampling Universe” and “Lower Sampling Universe” respectfully.

Objectives

The following objectives have been identified to guide the development of the monitoring project:

- 1. Evaluate annual and long-term trends in pallid sturgeon population abundance and geographic distribution throughout the Missouri River System.**
 - 1.1** Ho: Annual trends in wild and stocked pallid sturgeon population abundance for all life stages remains constant over time.
Ha: Annual trends in wild and stocked pallid sturgeon population abundance for all life stages increase or decrease over time.
 - 1.2** Ho: Annual trends in wild and stocked pallid sturgeon geographic distribution for all life stages remains constant over time.
Ha: Annual trends in wild pallid and stocked sturgeon geographic distribution for all life stages increase or decreases over time.
 - 1.3** Ho: Long-term trends in wild and stocked pallid sturgeon population abundance for all life stages remains constant over time.

Ha: Long-term trends in wild and stocked pallid sturgeon population abundance for all life stages increase or decrease over time.

- 1.4 Ho: Long-term trends in wild and stocked pallid sturgeon geographic distribution for all life stages remains constant over time.
Ha: Long-term trends in wild and stocked pallid sturgeon geographic distribution for all life stages increases or decreases over time.

2. Evaluate annual results and long-term trends of habitat usage of pallid sturgeon and hatchery stocked pallid sturgeon by season and life stage.

- 2.1 Ho: Stocked and wild pallid sturgeon use the same habitat during all life stages annually.
Ha: Stocked and wild pallid sturgeon do not use the same habitat during all life stages annually.

- 2.2 Ho: Stocked and wild pallid sturgeon use the same habitat during all life stages over the long-term.
Ha: Stocked and wild pallid sturgeon do not use the same habitat during all life stages over the long-term.

3. Evaluate population structure and dynamics of pallid sturgeon in the Missouri River system.

- 3.1 Ho: The population structure of stocked and wild pallid sturgeon remains constant over time.
Ha: The population structure of stocked and wild pallid sturgeon changes over time.

- 3.2 Ho: The population dynamics of stocked and wild pallid sturgeon remain constant over time.
Ha: The population dynamics of stocked and wild pallid sturgeon changes over time.

4. Evaluate annual results and long-term trends in native target species population abundance and geographic distribution throughout the Missouri River system.

- 4.1 Ho: Annual trends in native target species abundance are stable throughout the year.
Ha: Annual trends in native target species abundance increase or decrease throughout the year.

- 4.2 Ho: Annual trends in native target species geographic distribution remains stable throughout the year.
Ha: Annual trends in native target species geographic distribution increases or decreases throughout the year.
- 4.3 Ho: Long-term trends in native target species population abundance are stable over time.
Ha: Long-term trends in native target species population abundance increases or decreases over time.
- 4.4 Ho: Long-term trends in the native target species geographic distribution remain constant over time.
Ha: Long-term trends in the native target species geographic distribution increases or decreases over time.

5. Evaluate annual results and long-term trends of habitat usage of the target native species by season and life stage.

- 5.1 Ho: Native target species use the same habitat during all life stages annually.
Ha: Native target species do not use the same habitat during all life stages annually.
- 5.2 Ho: Native target species use the same habitat during all life stages over the long-term.
Ha: Native target species do not use the same habitat during all life stages over the long-term.

6. Evaluate annual results and long-term trends in all remaining species (minimum of 50 fish collected/species) population abundance and geographic distribution throughout the Missouri River system.

- 6.1 Ho: Annual trends in non-target species abundance are stable throughout the year.
Ha: Annual trends in non-target species abundance are increase or decrease throughout the year.
- 6.2 Ho: Annual trends in non-target species geographic distribution remains stable throughout the year.
Ha: Annual trends in non-target species geographic distribution increases or decreases throughout the year.

- 6.3 Ho: Long-term trends in non-target species population abundance are stable over time.
Ha: Long-term trends in non-target species population abundance increases or decreases over time.
- 6.4 Ho: Long-term trends in the non-target species geographic distribution remain constant over time.
Ha: Long-term trends in the non-target species geographic distribution increases or decreases over time.

Success Criteria

Evaluation of success will be tied directly to the results of the Pallid Sturgeon Population Assessment Project and the resulting information that these assessments provide. The following four statements may be used to determine if success of the project:

1. The project has the ability to detect population changes.
2. The project identifies survival of hatchery reared and stocked pallid sturgeon in the river.
3. The project identifies reproduction of pallid sturgeon in the Missouri River.
4. The project identifies recruitment of wild pallid sturgeon in the Missouri River.

Changes to the Project 2007

1. The collection of substrate samples will no longer be required for the Population Assessment Program-Effective January 1, 2007.
2. The Montana Fish, Wildlife and Parks will take over age-growth processing of the *Macrhybopsis sp.* (i.e., Sicklefins, Sturgeon and Speckled Chubs) for collections made after July 1, 2007.
3. Additional segment designations have been developed for use in 2007 representing tributaries of the mainstem Missouri River. These are in addition to the large tributary segment designations that were developed in 2006. Prior to segment designation for tributaries, "TRIB" macrohabitat was used when crews sampled in the tributaries.
4. Segment 11: Extended boundary from the Johnson County Weir upstream to the Hwy 7 bridge.
5. Effective February 1, 2007, the crews in segments 5-14 will incorporate a caudal fin clip in addition to Floy Tagging Shovelnose sturgeon. The crews will adhere to the guidelines provided in the Missouri River Standard Operating Procedures document.
6. Effective April 1, 2007, the OT01 will retain the same specifications and will continue to be fished with the 30 inch boards. The same net when fished with 36 inch boards is a different gear and will be recorded as OT04. This change is reflected in Appendix N of Missouri River Standard Operating Procedures for Fish Sampling and Data Collection, Volume 1.2, April 2007.

Changes to the Project 2008

1. Delete Goal #2 of the Project: Provide the information to determine habitat preferences over time for pallid sturgeon and native target species in the Missouri River basin.
2. Utility Box 6: A code for a net that did not fish properly, but caught fish was developed. This code is recorded in utility box number 6 as MNCF (Malfunction Net Caught Fish).
3. Additional detail was incorporated into the Missouri River Standard Operating Procedures for Fish Sampling and Data Collection Volume 1.3 April 2008 to improve the standardization of gear deployments for the otter trawl and trammel net. The standard is a net or trawl fishing on the bottom regardless of river conditions relative to discharge.

4. Subsample requirements within the sampling unit (bend) will no longer be determined by the length of the bend in segments 8-14. This reduction in sub-samples is based on the power analysis conducted in 2007. Sub-samples will continue to be driven by the macrohabitat types available within a bend with two sub-samples collected within each macrohabitat by mesohabitat for a given gear. A minimum of 8 sub-samples per bend must be collected.
5. Utility box use will be in accordance to the data sheet instructions outlined in the Missouri River Standard Operating Procedures for Fish Sampling and Data Collection Volume 1.3 February 2008. Additional utility box needs will be coordinated and cleared by the database manager.
6. For mortalities of blue sucker, sauger, paddlefish, shovelnose sturgeon, lake sturgeon and pallid sturgeon, record an “M” in the otolith box.
7. Floy Tagging of shovelnose sturgeon: Fish less than 330mm may not be tagged due to their small size. No explanation is necessary when fish are not tagged.
8. BAR microcode was amended by dropping the 1.2 meter maximum depth range. The BARS mesohabitat code will remain the same as the original description following the 1.2 meter depth maximum. Any analysis that will be conducted using the BAR microcode should include depth data since the use of this BAR microcode has not been consistent between crews.
9. The addition of an SOP for Fishing/Angling have been incorporated into the “Missouri River Standard Operating Procedures for Fish Sampling and Data Collection” (Feb 20, 2008).
10. The addition of an SOP for “Crazy Nets” have been incorporated into the “Missouri River Standard Operating Procedures for Fish Sampling and Data Collection” (Feb 20, 2008).
11. Aging structures will no longer be collected from blue sucker, sand shiners, western silvery minnow, plains minnow, speckled chubs throughout the project area. Sturgeon and sicklefin chub aging structures will be collected in segments 1-3 (only) in 2008 to round out a full three set of this data set. At least 3 years of data for these species exists in the remaining segments of the project area where these species are present; therefore, length frequency histograms can now be used in conjunction with the existing age-growth data for aging purposes. Sauger scales and dorsal fin rays will be collected year round throughout the project area and the upper size limit has been removed. The upper size limit has also been removed from shovelnose sturgeon which will allow us to estimate mortality. Structures will continue to be collected in the lower universe from the onset of the sturgeon season (approximately November 1st) through April 30th. In the upper universe, structures will be collected after August 1st-October 31st.
12. Lake sturgeon will be treated like pallid sturgeon with a PIT Tag inserted as well as a genetic sample collected and sent to Dave Herzog, Missouri Department of Conservation. Most crews have already been doing this, but it has not been explicit in any instructions!
13. Addition of segment codes for Missouri Mainstem Reservoirs and a segment for the Mississippi River have been included in the project.
14. The Push Trawl (POT02) was discontinued as an evaluation gear and is classified as a Wild (optional) gear for the project.

IMPLEMENTATION STRATEGY

The Implementation Strategy for the Project is built on partnerships, common goals and objectives, and sound science. The Corps, as the Action Agency, is responsible for ensuring that these long-term assessment activities occur. The Corps has developed partnerships with state and federal agencies already active on the Missouri and Kansas Rivers and has provided them funding necessary to implement the field component of this long-term assessment. The Corps will continue to use partnerships to fully implement the project. The strategy to provide guidance and direction to the Project is also based on partnerships and adaptive management. The Corps and the core group of scientists (Population Assessment Team) have developed common goals and objectives thought necessary to accomplish this task. As a guidance team they continue to meet to refine and adapt efforts as information comes available through consensus and adaptive management. The 2000 Opinion also provides direction through description and explanation of the RPA elements. For example, RPA element VI B discusses philosophy and strategy, lists specific segments in which information must be gathered and specific data needs, identifies segments of research and restoration, and also identifies the need for a coordination and communication plan. This Project will refer back to this type of guidance to ensure project direction is in line with the 2000 Opinion.

As the Assessment Team members collect the data, it will be processed as described in the protocols. Each collection entity is responsible for producing an annual report that summarizes their activity and the data they have collected. These reports are submitted to the Corps and then provided to the Service. (Note: the Agency Coordination Team (ACT) is comprised of the Corps and the Service.)

SAMPLING SEASONS

Two sampling seasons have been established to accomplish sampling objectives 1-6. These sampling seasons are determined by dates and water temperatures to provide flexibility in sampling across the geographic range of the Missouri River Basin. The project will incorporate the handling guidelines and protocols developed by the Service to minimize the potential for “take” during these biological data collections.

The Sturgeon Season will begin in the fall when the water temperature is $\leq 12.8^{\circ}\text{C}$ (55°F) and will continue through June 30th. The water temperature criteria addresses the issue of the water temperature variations between the upper and lower portions of the Missouri River and the amount of time in the field season to accomplish restrictive sampling (i.e., gill netting) prior to ice up. On July 1st, sampling efforts will remain the same with an additional emphasis on the associated fish community. The Fish Community Season will run from July 1st through October 31st. These two seasons may overlap in portions of the river when temperatures fall below 12.8°C prior to the conclusion of the Fish Community Season. All required sampling efforts must be completed for each season in accordance with protocols.

A portion of the Sturgeon Season (when water temperatures $\leq 12.8^{\circ}\text{C}$) will enable crews to deploy standardized experimental mesh gill nets. Gill netting during the Sturgeon Sampling Season may not be feasible in all segments due to uncontrollable environmental factors (e.g., climate, weather) from year to year; however, at present, gill netting is feasible in the lower Missouri River. A variety of complimentary gears will be deployed throughout the habitats primarily from March through June. The project is designed with required sampling efforts and guidance, but also provides the flexibility for additional sampling, enabling crews to investigate and explore to enhance knowledge and understanding of wild and hatchery reared and stocked pallid sturgeon and their habitat use.

The Sturgeon Sampling Season will provide trend information regarding pallid sturgeon abundance and distribution, evaluate the success of the ongoing population augmentation project, and provide information related to dispersal, staging, and spawning sites of pallid sturgeon.

The Fish Community Season continues with an equivalent level of sampling effort (excluding gill netting) during the late summer and fall but places an additional emphasis on the fish community. Additional sampling utilizing passive gears (mini-fyke nets) to provide information related to species composition utilizing water habitats less than 1.2 meters deep. Sampling during this time frame with this suite of gears will provide an assessment of the young-of-year fish production. All structures for age and growth analysis will be collected primarily during the Fish Community Season, but will follow the guidelines established in the document, "Missouri River Standard Operating Procedures for Fish Sampling and Data Collection". Sampling during this time frame will provide the greatest opportunity to document natural reproduction via sampling young-of-year pallid sturgeon. Locating pallid sturgeon spawning sites and identifying the timing of these events will be addressed through focused research efforts.

The deployment of multiple gears in all habitat types will also assess growth, survival, movements, distribution, and habitat preference of pallid sturgeon. The sampling and gear efforts will be distributed proportionately throughout this sampling period to ensure representation of the entire sampling period. This strategy may also be useful in evaluating gear efficiencies in various habitats with respect to time of year, temperature, river stage, and other varying factors.

Sampling sites will be selected randomly; however, the project provides the flexibility to sample non-randomly selected sites in addition to the required sampling (e.g., non-randomly selected bends, tributaries, etc.). In addition to collecting routine fisheries and habitat data in these specific sites, an Acoustic Doppler Current Profiler may be used to provide detail regarding the physical attributes of these sites (depth, velocity, substrate).

The Pallid Sturgeon Population Assessment Team has identified 13 river segments for sampling throughout the Missouri River and the lower portion of the Kansas River. These segments encompass all of the high priority segments as identified in the 2000 Opinion (Reservoirs within the Missouri River system have been excluded from sampling since they are not a high priority for pallid sturgeon). The numbers of these river segments do not coincide with those identified

in the 2000 Opinion and discussed earlier in this document. These segments have been identified based on change in physical attributes such as degrading or aggrading stream bed, flow fluctuations, natural hydrograph, stream gradient, geology, water temperature, turbidity, substrate, discrete habitat changes (tributary or tributary influence), and modifications (presence of restoration projects).

DESIGNATION OF MISSOURI RIVER SEGMENTS FOR THIS PROJECT

The segments identified in the 2000 Opinion that will be sampled as part of this Project have been retained as specified in the 2000 Opinion or divided into shorter segments. After these new segments were identified, they were numbered so that the Project will have its own listing of river segments that is different from that specified in the 2000 Opinion. The remainder of this section of this main report consists of the listing of these segments with their new assigned numbers. A total of 13 new Missouri River Mainstem segments have been delineated for the Project. A series of physical characteristics were used to delineate these segments for the Missouri River.

1. Fort Peck Dam downstream to the Milk River (RM 1771.5-1760)
 - a. water temperature, turbidity, spillway releases, degrading streambed
2. Milk River downstream to Wolf Point (RM 1760-1701)
 - a. degrading streambed/transition segment, temperature, turbidity
3. Wolf Point downstream to the confluence with Yellowstone River (RM 1701-1582)
 - a. aggrading stream bed
4. Confluence with the Yellowstone River through the headwaters of Lake Sakakawea (RM 1582-1568)
 - a. major tributary, natural hydrograph
5. Fort Randall Dam downstream to the Niobrara River* (RM 880-845)
 - a. tributaries, temperature, turbidity, degrading/aggrading stream bed
6. Niobrara River downstream to the headwaters of Lewis and Clark Lake* (RM 845-825)
 - a. major tributary, aggrading stream bed, temperature, turbidity
7. Gavins Point Dam downstream to Lower Ponca Bend (RM 811-750)
 - a. temperature, turbidity, flow fluctuations, degrading
8. Lower Ponca Bend downstream to the Platte River (RM 750-595.5)
 - a. degraded stream bed, channelized, turbidity, flow fluctuations
9. Platte River downstream to Kansas River (RM 595.5-367.5)
 - a. major tributary, degrading/aggrading stream bed, tributary mouth, restoration projects
10. Kansas River downstream to Grand River (RM 367.5-250)
 - a. major tributary, less influence of dam releases (Gavins Point Dam), natural hydrograph, restoration projects
11. Kansas River upstream to the Hwy 7 bridge (Kansas River: RM 0-20)
12. Grand River to Glasgow-Combined into segment 13-Effective 7/01/2005.
13. Grand River to the Osage River (RM 250-130)
 - a. major tributary, floodplain, natural hydrograph, restoration projects
14. Osage River downstream to the mouth (RM 130-0)

- a. major tributary, restoration projects
- b. development bottleneck, backflow, delta, natural hydrograph, restoration projects

DESIGNATION OF TRIBUTARIES AS SEGMENTS FOR THE PROJECT

Due to the importance of tributaries and the flexibility built into the project to conduct sampling in addition to the standard (required) sampling, the following numeric designations have been assigned to large tributaries following the same format as the Project’s segment designations. When sampling these tributaries, these numeric designations must be recorded on the data sheet under the segment box. This facilitates the utility of the existing habitat classification system at all levels to maintain the consistency relative to data collection between the Missouri River and the tributaries.

Upper Sampling Universe (Fort Peck Reach)

Segment Number	Tributary
21	Milk River (MT)
22	Yellowstone River (ND)
Segment Number	Reservoirs
51	Fort Peck Reservoir
52	Lake Sakakawea
53	Lake Oahe
54	Lake Sharpe
55	Lake Francis Case

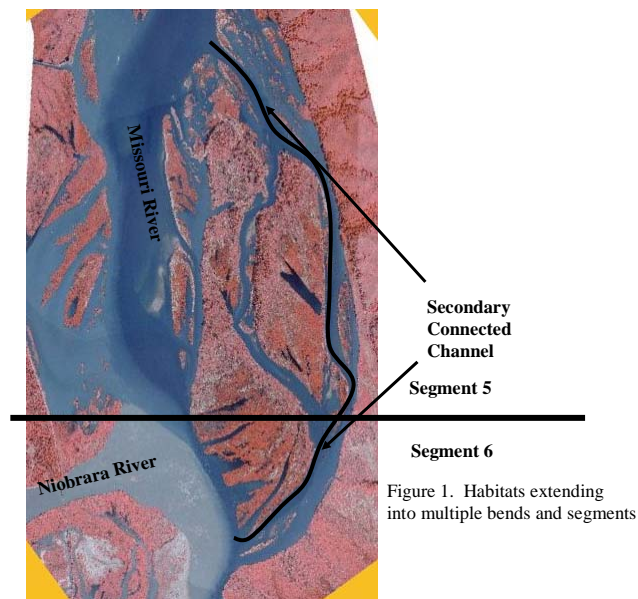
Lower Sampling Universe (Fort Randall Dam to mouth)

Segment Number	Tributary
23	Niobrara River (NE)
24	James River (SD)
25	Big Sioux River (IA)
26	Platte River (NE)
27	Grand River (MO)
28	Osage River (MO)
29	Gasconade River (MO)
31	Bazile Creek (NE)
32	Vermillion River (SD)
33	Nishnabotna River (MO)
34	Platte River(MO)
35	Fishing River (MO)
36	Lamine River (MO)

37	Chariton River (MO)
38	Perchy Creek (MO)
39	Crooked River (MO)
40	Nodaway River (MO)
41	Nemaha River (MO)
42	Tabo Creek (MO)
Segment Number	Reservoirs
56	Lewis and Clark Lake
71	Mississippi River

HABITAT CLASSIFICATION

The basic habitat classification system that was utilized in the Benthic Fishes Study has been adopted by this project. The Benthic Fishes Study was conducted in the late 1990s by the USGS Cooperative Units located throughout the Missouri River basin states. This basic habitat classification system has been further modified to address both broad and specific habitats by using a hierarchical classification system (i.e., Macrohabitat, Mesohabitat, Microhabitat) to aid in consistent and complimentary data collection for the project. This approach will be more consistent with previous sampling activities and will also provide a more detailed habitat classification system for the river. All habitats will be classified based on the conditions at the time of sampling. A “river bend” (bend) will serve as the basic sampling unit (replicate) within each river segment. A bend comprises three continuous macrohabitats, an outside bend (main channel), an inside bend (main channel) and a channel crossover (main channel). Bends will be determined by the hydrologic nature of the river (Bends will be identified beginning at the origin of each channel crossover and will include the adjacent downstream outside bend/inside bend complex.) rather than the adjacent landforms. In defining a bend, the river bend expands with the landscape to encompass any islands and secondary channels. A single secondary channel will be sampled within the adjacent main channel river bend (Figure 1).



This methodology may be applied to all river segments identified in this Pallid Sturgeon Population Assessment Project. Typically, the river parallels the adjacent geographic landforms; however, within the unchannelized reaches, the hydrology of the system does not always mimic the adjacent landforms. In these unique reaches, the number and length of the river bends may change more rapidly than in the channelized portions of the river. The need to remain consistent throughout the river allows for comparisons despite the magnitude differences and also allows for consistency regarding data collection while incorporating hydrologic factors of the river. The bends themselves and the number of bends within a segment may change over time. Additional discrete macrohabitats have been identified that may not be present in each bend. Large tributary mouths, small tributary mouths, confluences, large and small secondary connected channels, non-connected secondary channels, deranged, braided, detritic and Wild (all other macrohabitats) plus the 3 continuous macrohabitats make up the 13 macrohabitats (see Figure A1 in Appendix A) representative of the Missouri River from Fort Peck Dam to the mouth and on the lower Kansas River. Mesohabitats have been established and defined to describe macrohabitats, and microhabitats may be used to further describe mesohabitats, including identification of unique structural modifications. The use of microhabitats is required for this project in segments 8-14.

All habitats will be classified based on the conditions at the time of sampling. For example, a secondary connected channel at the current river stage may be a secondary non-connected channel at a lower river stage. At any rate, the habitat is always classified based on the conditions at the time of sampling.

STANDARD OPERATING PROCEDURES

Standard operating procedures (SOPs) have been developed for use in this Project. These SOPs have been consolidated into a separate document titled, “Missouri River Standard Operating Procedures for Fish Sampling and Data Collection”. These SOPs are the required procedures for this project and will be followed for all activities relevant to this project to ensure consistency among the data acquired.

DRAFT DOCUMENT
PALLID STURGEON
POPULATION ASSESSMENT PROJECT

APPENDIX A

**STANDARD OPERATING
PROCEDURES DEFINING
THE SAMPLING STRATEGY**

BASIC SAMPLING STRATEGY DESCRIPTION

Two sampling seasons have been established to sample pallid sturgeon and the associated fish community. These have been identified as the Sturgeon Season and the Fish Community Season for the Pallid Sturgeon Population Assessment Project for the Missouri River. The Sturgeon Season targets the sampling of pallid sturgeon; however, the diversity of gear/habitat combinations included in this sampling effort will result in the collection of a variety of fish species during sampling efforts. Basic data (i.e. species, length,) will be collected on all fish sampled. The Fish Community Season will continue with the same magnitude of sampling effort of the Sturgeon Season with an additional emphasis on the fish community with special effort on the sampling of shallow water habitats using mini-fyke nets in BAR mesohabitats. The Fish Community Season will provide the greatest opportunity to identify natural reproduction of pallid sturgeon and other native fish species as young-of-the-year (YOY) fish will be susceptible to a variety of gear types. The strategy designed in these sampling seasons will provide data related to the pallid sturgeon and the fish community representative of all habitat types throughout the year.

GEAR AND SITE SELECTION FOR EACH SAMPLING SEASON

Standard gear has been selected targeting specific habitat types for the Sturgeon and Fish Community Sampling Seasons. The standard gear will be deployed in the habitats as identified in Tables A2 through A7. These tables serve as a guide for sampling during each sampling season for the unchannelized reach in Montana, the unchannelized reaches below Fort Randall and Gavins Point Dams, and the channelized river from Ponca to the mouth. In addition to the sampling gear outlined in the tables, a minimum number of gear deployments for each standard gear have been established per bend to ensure adequate representation for comparisons between segments. The standard gears have been selected for various reasons. Some of gear was designed with the capture of pallid sturgeon in mind, while other gears target the associated fish community. The gear is not species specific and will sample multiple species despite targeting the capture of pallid sturgeon or the fish community. Regardless of the focus of each season, the diversity of gear and habitats that will be sampled will provide a broad spectrum assessment of the Missouri River fishery. The deployment of “Wild” gear is optional but may be used in addition to the standard gear/habitat combinations. This strategy provides flexibility for the field crews to experiment and explore to facilitate improved sampling techniques. The options for use of “Wild” gear are included in Tables A2 through A7.

Current aerial photographs or colored infrared (CIR) maps may be useful in identifying various habitats and rivermile information. When multiple “discrete macrohabitats” are identified within a single bend, those included in sampling should be selected randomly. In the channelized river, the channel crossovers are marked for navigational purposes and, therefore, should be easily discernable. Proportionately, channel crossovers comprise an extremely small portion of the river in the channelized sections from Ponca to the mouth.

Procedures for sample site selection and sampling requirements include the following:

1. All bends within a segment will be numbered prior to sampling beginning at the upstream boundary of the segment. This numbering system will remain consistent for each sampling season and from year to year unless significant physical changes occur within the segment (Renumbering may be necessary in the unchannelized reaches on a more regular basis as channel morphology change over time).
2. Bends will be randomly selected using a random number generator, table or random drawing on an annual basis beginning at the onset of the Sturgeon Sampling Season. These randomly selected bends will be sampled throughout the Sturgeon and Fish Community Seasons.
3. All bends within the segment will be randomly selected even though only a portion of the bends selected will actually be sampled based on the requirements of the sampling design. However, to increase statistical power, additional bends may be sampled in the order of their random selection and incorporated into the data set. For bends sampled in addition to the required number of bends within a segment, there is no requirement that all gears be deployed. Therefore, the gears that collect sturgeon (e.g., trawl, trammel net) may be deployed at the standard level in these additional bends to strengthen the random data set within the strata (i.e., segment) and statistical power of the data set for population and trend analysis.
4. When sampling a bend that contains a tributary mouth, the tributary mouth (lower 300 meters of the tributary) is considered part of the Missouri River as captured in the sampling design of the project. If the intent of the sampling is to conduct “wild” (not required) or exploratory sampling in a tributary, then the appropriate segment designation should be recorded on the data sheet for the tributary being sampled.
5. The number of bends required within each segment is outlined in Table A1. This has been determined by proportional bend selection will be used at a minimum rate of 25.2% of all bends within a segment unless specified otherwise in Table A1.
6. If evaluation of specific bends is desired that were **not** selected through the random selection process, these bends may be sampled in addition to the minimum required randomly selected bends. If a bend is sampled and other bends on the randomly selected list bends with higher priority through the bend selection are not sampled, the bend should be recorded as a non-randomly selected bend since the sampling effort did not follow the randomly selected bend list priority. Additional non-random sampling efforts should not be conducted in lieu of the required random bend sampling. Complete assessments are not required for non-randomly selected bends (e.g., trammel netting a location within a bend that typically has resulted in the catch of pallid sturgeon) or in bends that were sampled in addition to the required level of random bend sampling in accordance with Table A1.
7. If discrete habitats (e.g., secondary channels, tributary mouth and confluence, etc.) are minimally represented by the random bend selection (e.g., only 2 secondary connected channels within the 10 bends selected when there are 12 secondary channels located within the segment), additional effort may be directed to a portion of the bends containing these discrete habitats to provide more equal representation of the various

- habitats. When sampling these additional chosen discrete habitats within a bend, they would be recorded as non-randomly selected on the data sheet. These additional non-random sampling efforts should not be conducted in lieu of the required random bend sampling.
8. Additional bends above and beyond the randomly and non-randomly selected bends may be sampled at the crew leader's discretion. Additional bends should not be sampled in lieu of the required sampling efforts in accordance with the experimental design. For example, a series of angler reports indicate pallid sturgeon located in an area that does not fall within the randomly and non-randomly selected bends. These areas may be sampled.
 9. Randomly and non-randomly selected (chosen) bends will be identified on the datasheet in the appropriate box (R=random or N=non-random). Refer to the Missouri River Standard Operating Procedures for Fish Sampling and Data Collection.
 10. Once a bend is selected, all macrohabitats and mesohabitats (and microhabitats when appropriate) should be identified.
 11. Each mesohabitat within a macrohabitat requires sampling using the standard gears that are identified in Tables A2 through A7.
 12. A minimum of two sub-samples are required for each standard gear type for the habitats identified within a bend (Must achieve the minimum gear deployments criteria identified for each season per bend identified in Tables A2 through A7).
 13. When collecting sub-samples within a given habitat, the sub-samples should be collected at randomly selected intervals throughout the habitat (i.e. four sub-samples collected in the given habitat; the sub-samples should be spaced at locations ranging from 0-100 percent of the length of the habitat).
 14. Additional optional (non-standard) sampling (e.g., dragging a trammel net in a BAR mesohabitat) may be conducted and identified as "Wild" on the datasheet.
 15. As part of the process of evaluating new gears, an "E" will be utilized for gears undergoing an "Experimental or Evaluation Phase". This will only apply to the evaluation of gears that the Team has agreed to evaluate throughout the Project Area or throughout the upper or lower sampling universe. These gears will be identified in tables A2 through A7 as "E" rather than as an "S" (Standard) or "W" (Wild) indicating an optional gear. These gears will also be recorded as "E" on the data sheet and incorporated into the database with this designation.
 16. Habitat characteristic data collection (velocity, turbidity) is required for all gear deployments resulting in the capture of a pallid sturgeon and for one of the sub-samples within a given macrohabitat/mesohabitat for each required gear type (collection of substrate data is no longer required-effective January 1, 2007).
 17. Depth and temperature will be collected at all sampling locations.
 18. A visual estimation of velocity for each gear deployment will be completed. Actual measurements of velocity will also be conducted at 25 percent of the gear deployments (refer to Missouri River Standard Operating Procedures for Fish Sampling and Data Collection).
 19. If the habitat is available for a standard gear type, and the gear type is not deployed, a data sheet will be completed and the reason the gear type was not deployed will be briefly described in the comments section. A crew leader will reserve the right not to deploy a

gear if conditions are unsafe, or conditions are such that loss of gear is probable based on current river conditions.

Table A1. Required Sampling Effort (River Bends-Replication) for Each River Segment

Segment Number and Description	Randomly Selected River Bends
1 Fort Peck Dam to Milk River	0
2 Milk River to Wolf Point (Hwy 13 bridge)	12
3 Wolf Point to Yellowstone (Confluence)	21
4 Confluence to Headwaters (Sakakawea)	12
*5 Fort Randall Dam to Niobrara (Confluence)	10
*6 Confluence to Headwaters (Lewis & Clark)	combined w/ segment 5
7 Gavins Point Dam to Lower Ponca Bend	12
8 Lower Ponca Bend to Platte River (Confluence)	15
9 Platte River to the Kansas River (Confluence)	20
10 Kansas River to the Grand River (Confluence)	10
11 Kansas River from the Hwy 7 bridge to the Confluence with the Missouri River	3
13 Grand River to Osage River (Confluence)	11
14 Osage River to the mouth	14

*Bends will be selected with segments 5 and 6 combined as one unit and subsequent analysis of data collected in the Fort Randall reach will also be combined to increase power; however, data will be recorded by segment to differentiate between these segments to facilitate other analysis opportunities.

STURGEON SAMPLING SEASON

The focus of the Sturgeon Sampling Season targets abundance and distribution of sturgeon populations, specifically pallid sturgeon. A diversified sampling approach will also evaluate survival and growth of stocked pallid sturgeon resulting from basin wide propagation/population augmentation efforts. Initiation of this season will be determined by water temperature ($\leq 55^{\circ}$ Fahrenheit; 13°C) rather than by date. The season will begin when water temperatures decline to 55°F or less (in the fall) and will continue through June 30. The reason for this is that gill nets must **not** be set when water temperatures exceed 55° Fahrenheit to reduce the potential for “take” during sampling activities (USFWS, 2002). Because of this requirement, the timeframe for the sampling efforts within the Lower Sampling Universe may vary significantly with regards to gill netting sampling efforts. Gill netting is not included in the Upper Sampling Universe as a required sampling effort targeting sturgeon during the Sturgeon Season. Environmental conditions may conflict with these sampling efforts in the more northern latitudes, depending on weather conditions; however, similar sampling efforts have proven to be effective in documenting sturgeon abundance in the lower Missouri River. Although this season may cover several months, gill netting will be the only required gear for this season from the time the water temperatures decline to 55°F through February. Gill netting shall continue through completion

of required sampling efforts after February, provided water temperatures are $\leq 55^{\circ}\text{F}$. The remaining required efforts included in the Sturgeon Season will be deployed from March through June (Tables A2, A3, and A4). Additional “Wild” sampling efforts may be conducted at any time during this season.

Tables A2 through A4 serve as a guide for sampling during the Sturgeon Season for the unchannelized reach in Montana, the unchannelized reaches below Fort Randall and Gavins Point Dams, and the channelized river from lower Ponca Bend to the mouth near St. Louis. A secondary guide to the effort outlined in Tables A2 through A4 for the Sturgeon Season will require that a minimum gear effort be deployed per bend. These minimums will include 8 sub-samples of each standard gear per bend. When the effort prescribed in the tables do not meet the minimum requirements, then the netting effort will be distributed proportionately among the habitats that are available. Within each segment, half (half of the bends) of the required effort for trammel drifting and trawling will be completed in March and April and half will be completed in May and June. The minimum effort for gill netting is 20 net-nights per bend (2000 feet of gill net/bend). Within each segment, half of the gill netting effort (half the bends in the channelized river will be sampled with the full gill netting effort prior to January 15, and the remaining bends will be sampled after Jan 15. In the unchannelized river all of the bends will be sampled with half of the required effort (1000 feet) of gill net prior to January 15. These bends will receive the remaining effort after January 15.

Once a river bend is selected, all macrohabitats and mesohabitats should be identified.

1. Each mesohabitat within a macrohabitat requires sampling using the standard gear (s) identified in Tables A2 through A4.
2. A minimum of two sub-samples are required for each standard gear type for the habitats identified within a bend. **A minimum of 8 sub-samples/bend will be collected for each standard gear.**
 - a. **In segments 1-14, the minimum sub-samples required within a bend will remain at 8, but will be determined by the available macrohabitats within the bend. Crews will focus on increasing the number of randomly selected bends as time allows. However, only the active gears (i.e., TN and OT16) will be deployed in bends above the number of bends required in Table A1. The emphasis here is to increase the statistical power for the “sturgeon capturing gears”. The TN and OT16 will be deployed equally in these bends.**
3. Habitat characteristic data collection (velocity, turbidity) is required in conjunction with one sub-sample per mesohabitat (within a macrohabitat) for each gear type. Habitat characteristic data will be collected at a minimum of 25 percent of all sub-samples collected within a mesohabitat for each gear type.
4. Depth and temperature will be collected at all sampling locations.

Table A2. Standard (required) and Wild (optional) Gear Deployment for Each Habitat Type for the Sturgeon Season in the Fort Peck Reach (segments 1-4).

Macrohabitats	CHXO, OSB, ISB, SCCL, SCCS, DRNG, BRAD, DEND, CONF				TRMS			TRML		
Mesohabitats	BARS	POOL	CHNB	ITIP*	B A R S	P O L S	C H N B	B A R S	P O L S	C H N B
Gear Type										
Trammel Net TN			S	S			S			S
Otter Trawl OT16			S	S			S			S

S=Denotes the Standard (required) gear type for a given habitat

All other Applications are wild (W)

Applicable to all gear types and habitats: Deploy gear within a habitat type where conditions (depth, width, velocity) allow proper deployment

*Island Tips are only associated with Secondary Connected, Deranged, Braided and Dentritic Channels

Examples of gear deployment locations are shown in Figure A1.

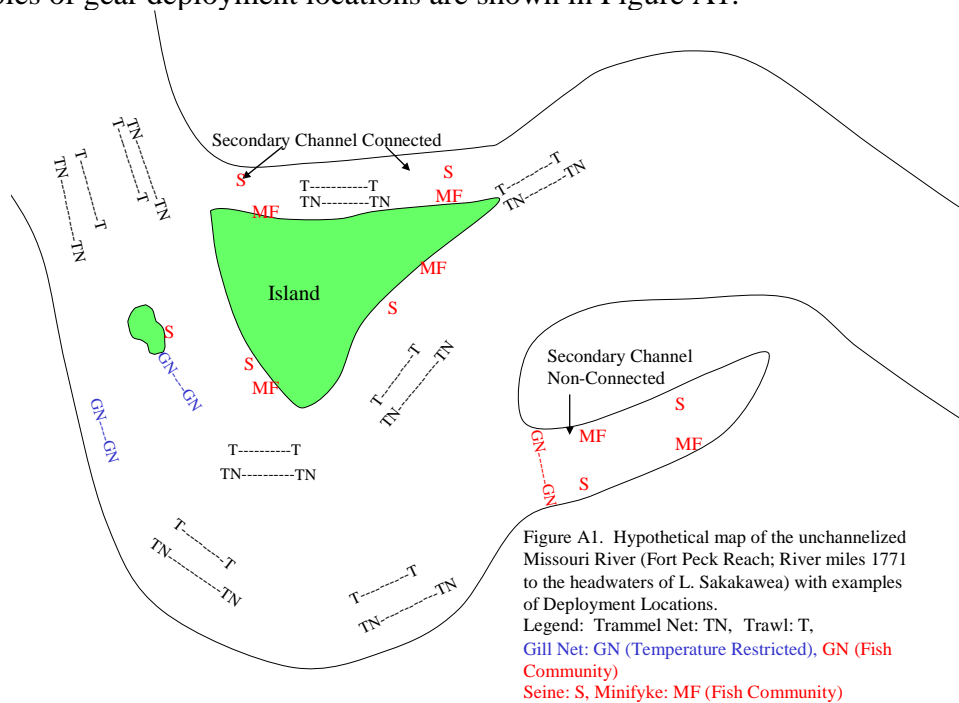


Table A3. Standard (required) and Wild (optional) Gear Deployment for Each Habitat Type for the Sturgeon Season in the Fort Randall Reach and the Unchannelized Portion of the Gavins Reach (segments 5-7).

Macrohabitats	CHXO, OSB, ISB, SCCL, SCCS, DRNG, BRAD, DEND, CONF				TRMS			TRML		
Mesohabitats	BARS	POOL	CHNB	ITIP*	B A R S	P O L S	C H N B	B A R S	P O L S	C H N B
Gear Type										
Trammel Net TN		W	S	S	W	W	S	W	W	S
Gill Net GN14, GN41, GN18, GN81		S	S	S	W	S	S	W	S	S
Otter Trawl OT16		W	S	S	W	W	W	W	W	S

S=Denotes the Standard (required) gear type for a given habitat

All other Applications are wild (W)

Applicable to all gear types and habitats: Deploy gear within a habitat type where conditions (depth, width, velocity) allow proper deployment

*Island Tips are only associated with Secondary Connected, Deranged, Braided and Dentrictic Channels

Examples of gear deployment locations are shown in Figure A2.

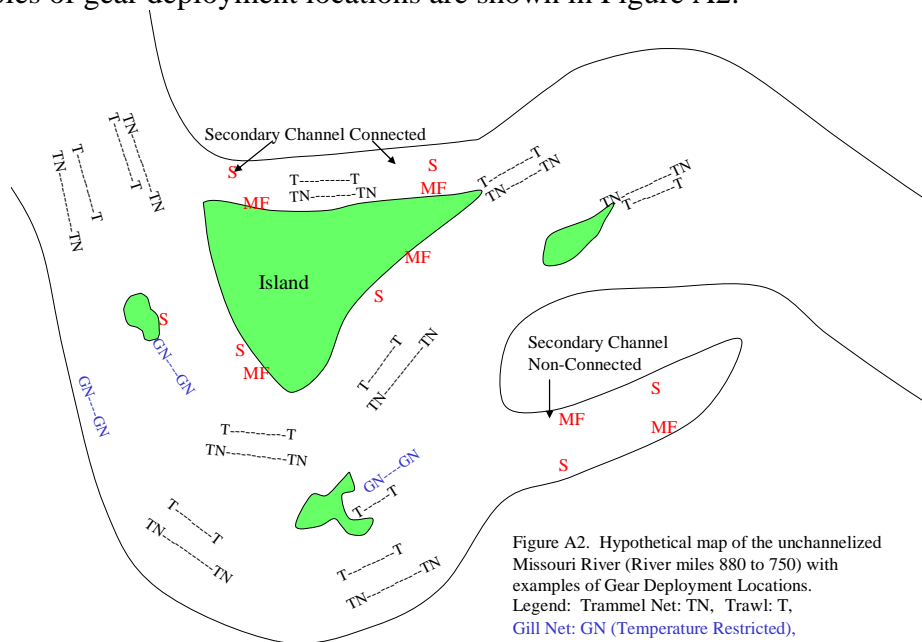


Figure A2. Hypothetical map of the unchannelized Missouri River (River miles 880 to 750) with examples of Gear Deployment Locations.
 Legend: Trammel Net: TN, Trawl: T,
 Gill Net: GN (Temperature Restricted),
 Seine: S, Minifyke: MF (Fish Community)

Table A4. Standard (required) and Wild (optional) Gear Deployment for Each Habitat Type for the Sturgeon Season in the Channelized Portion of the Missouri River (segments 8-14) from Lower Ponca Bend to the Mouth.

Macrohabitats	OSB, ISB, CHXO, SCCL, SCCS, DRNG, BRAD, DEND, CONF					TRMS				TRML			
Mesohabitats	BARS	POOL	CHNB	TLWG	ITIP*	B A R S	P O L S	C H N B	T L W G	B A R S	P O L S	C H N B	T L W G
Gear Type													
Trammel Net TN			S		S			S				S	
Gill Net GN14, GN41, GN18, GN81		S	S		S		S	S			S	S	
Otter Trawl OT16			S		S			S				S	

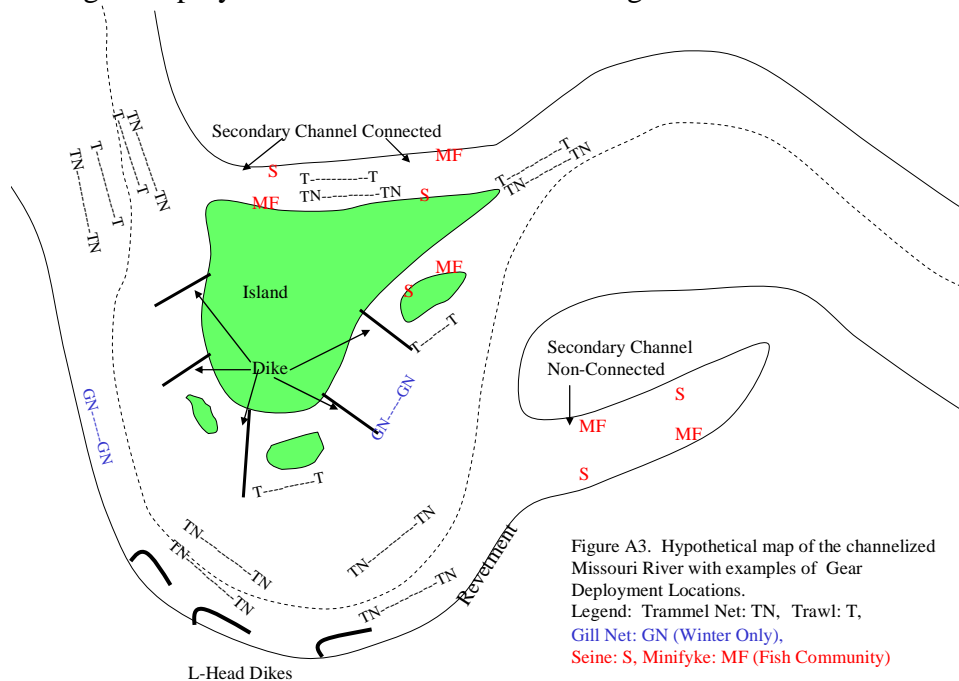
S=Denotes the Standard (required) gear type for a given habitat

All other Applications are wild (W)

Applicable to all gear types and habitats: Deploy gear within a habitat type where conditions (depth, width, velocity) allow proper deployment

*Island Tips are only associated with Secondary Connected, Deranged, Braided and Denticric Channels

Examples of gear deployment locations are shown in Figure A3.



Fish Community Sampling Season

The Fish Community Season will be July 1 through October 30 throughout the geographic range of this Project. In addition to the efforts of the Sturgeon Season, the use of seines and mini-fyke nets will be a part of the Fish Community Season's required efforts. Tables A5 through A7 serve as a guide for sampling during the Fish Community Season for the unchannelized reach in Montana, the unchannelized reaches below Fort Randall and Gavins Point Dams, and the channelized river from lower Ponca Bend to the mouth near St. Louis. A secondary guide to the effort outlined in Tables A5 through A7 for the Fish Community Season will require that a minimum gear effort be deployed per bend. These minimums will include 8 sub-samples of each standard gear per bend. Seines and mini-fyke nets will be deployed based on available habitat within a bend (8 seine hauls and 8 mini-fyke nets sets are optimum per bend). When the effort prescribed in the tables do not meet the minimum requirements, then the sampling effort will be distributed proportionately among the habitats that are available. Within each segment, half (half of the bends) of the required effort for hoop netting, trammel drifting, trawling, seining, and mini-fyke netting will be completed in July and August and half will be completed in September and October.

Once a river bend is selected, all macrohabitats and mesohabitats should be identified.

1. Each mesohabitat within a macrohabitat requires sampling using the standard gear (2 or 3 gear types/mesohabitat) identified in Tables A5 through A7.
2. A minimum of two sub-samples are required for each standard gear type for the habitats identified within a bend. **A minimum of 8 sub-samples/bend will be collected for each standard gear.**
 - a. **In segments 1-14, the minimum sub-samples required within a bend will remain at 8, but will be determined by the available macrohabitats within the bend. Crews will focus on increasing the number of randomly selected bends as time allows. Following discussion from the Team meeting held on July 8, 2008, for the time available from not using the push trawl, a crew utilizes a gear of choice (preferably a standard gear) with an equivalent effort to catch more pallid sturgeon. This gear cannot have an affect on your standard sampling effort (separated in space and time). Also, preferably the same gear in segment 1-4, 5-6 and 7-14. This should be set up and written up as well as work the logistics into the overall sampling design.**
3. Habitat characteristic data collection (velocity, substrate, turbidity) is required in conjunction with one sub-sample per mesohabitat (within a macrohabitat) for each gear type. Habitat characteristic data will be collected at a minimum of 25 percent of all sub-samples collected within a mesohabitat for each gear type.
4. Depth and temperature will be collected at all sampling locations.

Table A5. Standard (required) and Wild (optional) Gear Deployment for Each Habitat Type for the Fish Community Season in the Fort Peck Reach (segments 1-4).

Macrohabitats	CHXO, OSB, ISB, SCCL, SCCS, DRNG, BRAD, DEND, CONF				SCN	TRMS			TRML		
Mesohabitats	BARS	POOL	CHNB	ITIP*		B A R S	P O L	C H N B	B A R S	P O L	C H N B
Gear Type	S				S	S			S		
Mini-fyke Net MF											
Trammel Net TN			S	S				S			S
Otter Trawl OT16			S	S				S			S
Pallid Sturgeon Gear of Choice			S	S				S			S

S=Denotes the Standard (required) gear type for a given habitat

All other Applications are wild (W)

Applicable to all gear types and habitats: Deploy gear within a habitat type where conditions (depth, width, velocity) allow proper deployment

*Island Tips are only associated with Secondary Connected, Deranged, Braided and Dentritic Channels

Pallid Sturgeon Gear of Choice

For the time available from not using the push trawl, a crew utilizes a gear of choice (preferably a standard gear) with an equivalent effort to catch more pallid sturgeon. This gear cannot have an affect on your standard sampling effort (separated in space and time). Also, preferably the same gear in segment 1-4, 5-6 and 7-14. This should be set up and written up as well as work the logistics into the overall sampling design.

Examples of gear deployment locations are shown in Figure A1.

Table A6. Standard (required) and Wild (optional) Gear Deployment for Each Habitat Type for the Fish Community Season in the Fort Randall Reach and the Unchannelized Portion of the Gavins Reach (segments 5-7).

Macrohabitats	CHXO, OSB, ISB, SCCL, SCCS, DRNG, BRAD, DEND, CONF				SCN	TRMS			TRML		
Mesohabitats	BA RS	POOL	CHNB	ITIP*		B A R S	P O L	C H N B	B A R S	P O L	C H N B
Gear Type	S				S	S			S		
Mini-fyke Net MF											
Trammel Net TN			S	S				S			S
Otter Trawl OT16			S	S				S			S
*Pallid Sturgeon Gear of Choice			S	S				S			S

S=Denotes the Standard (required) gear type for a given habitat

All other Applications are wild (W)

Applicable to all gear types and habitats: Deploy gear within a habitat type where conditions (depth, width, velocity) allow proper deployment

*Island Tips are only associated with Secondary Connected, Deranged, Braided and Dentritic Channels

Pallid Sturgeon Gear of Choice

For the time available from not using the push trawl, a crew utilizes a gear of choice (preferably a standard gear) with an equivalent effort to catch more pallid sturgeon. This gear cannot have an affect on your standard sampling effort (separated in space and time). Also, preferably the same gear in segment 1-4, 5-6 and 7-14. This should be set up and written up as well as work the logistics into the overall sampling design.

Examples of gear deployment locations are shown in Figure A2.

Table A7. Standard (required) and Wild (optional) Gear Deployment for Each Habitat Type for the Fish Community Season in the Channelized Portion of the Missouri River (segments 8-14) from Lower Ponca Bend to the Mouth.

Macrohabitats	OSB, ISB, CHXO, SCCL, SCCS, DRNG, BRAD, DEND, CONF					SCN	TRMS				TRML			
Mesohabitats	BAR S	POOL	CHNB	TLWG	ITIP*		B A R S	P O L S	C H N B	T L W G	B A R S	P O L S	C H N B	T L W G
Gear Type	S					S	S				S			
Mini-fyke Net MF														
Trammel Net TN			S		S				S				S	
Otter Trawl OT16			S		S				S				S	
*Pallid Sturgeon Gear of Choice			S		S				S				S	

S=Denotes the Standard (required) gear type for a given habitat

E=Denotes a gear that is undergoing an experimental evaluation proposal.

All other Applications are wild (W)

Applicable to all gear types and habitats: Deploy gear within a habitat type where conditions (depth, width, velocity) allow proper deployment

*Island Tips are only associated with Secondary Connected, Deranged, Braided and Dentritic Channels

Pallid Sturgeon Gear of Choice

For the time available from not using the push trawl, a crew utilizes a gear of choice (preferably a standard gear) with an equivalent effort to catch more pallid sturgeon. This gear cannot have an affect on your standard sampling effort (separated in space and time). Also, preferably the same gear in segment 1-4, 5-6 and 7-14. This should be set up and written up as well as work the logistics into the overall sampling design.

Examples of gear deployment locations are shown in Figure A3.

General Data Collection Requirements

Information will be collected on all pallid sturgeon and a representative subset of native Missouri River Fishes specific to age, growth and relative weight. Table A8 provides a list of these target native species. In addition to collecting data specific to fish, information relative to the incidental capture of turtles may also be collected and recorded on the Turtle Data Sheet (provided by the Nebraska Game and Parks Commission). Turtle codes have been developed and are included within the fish species codes lists in the document, “Missouri River Standard Operating Procedures for Fish Sampling and Data Collection”. The Turtle data sheets should be sent to the Nebraska Game and Parks Commission as they will conduct the data entry and database management for turtle data.

Detailed information must be collected for all pallid sturgeon collected in accordance with pallid sturgeon handling protocols. **Lake Sturgeon should be treated in the same manner as the pallid sturgeon regarding checking for tags and inserting PIT Tags. A genetic sample should also be collected and sent to Dave Herzog of the Missouri Department of Conservation. Refer to Appendix D for Dave’s mailing address and the data sheet instructions section of the document, “Missouri River Standard Operating Procedures for Fish Sampling and Data Collection” for more information.**

Table A8. Target Native Missouri River Fish Species included in the Age-Growth and Relative Weight Assessment.

Species and Geographic Area of Collection	Time Frame for Collection	Scales	Scale Removal Location	Ray, Spine	Otolith	Number per length group
Sicklefin Chub <i>Macrhybopsis meeki</i> Segments 1-3 only	July 1- October 31	Yes: Preserve entire fish	Between lateral line and dorsal fin			10 fish/10 mm length interval
Sturgeon Chub <i>Macrhybopsis gelida</i> Segments 1-3 only	July 1- October 31	Yes: Preserve entire fish	Between lateral line and dorsal fin			10 fish/10 mm length interval
Sauger <i>Sander Canadense</i> (≥100 mm) No upper size limit All Segments	Year Round	Yes: Collect in the field	Posterior edge of pectoral fin. Minimum of 10 scales/fish	Yes	*Yes, ONLY if specimen is DEAD	10 fish/10 mm length interval. Count starts at the onset of the Sturgeon Season each year
Shovelnose Sturgeon <i>Scaphirhynchus platorynchus</i> (≥130 mm) No upper size limit All Segments	Segments 1-4 August 1-Oct. 31 Segments 5- 14 Nov. 1-April 30	NA		Left Pectoral Ray including knuckle		10 fish/10 mm length interval

I. Specifications

- A. Refer to Missouri River Standard Operating Procedures for Fish Sampling and Data Collection for detailed guidance relative to age-growth data collection.

DRAFT DOCUMENT

**PALLID STURGEON
POPULATION ASSESSMENT PROGRAM**

APPENDIX B

**STANDARD OPERATING
PROCEDURES FOR
DATA ENTRY, DATABASE MANAGEMENT,
DATA ANALYSIS AND
QUALITY ASSURANCE**

DATA ENTRY, DATABASE MANAGEMENT, DATA ANALYSIS and QUALITY ASSURANCE

Data Sheets

Standardized data sheets (i.e., Missouri River Data Sheet, Missouri River Supplemental Data Sheet) will be used for recording all data for this Project. Refer to the document “Missouri River Standard Operating Procedures for Fish Sampling and Data Collection” for the data sheets and instructions for each data sheet.

Data Entry

All data for this project will be submitted to the Missouri Department of Conservation (MDC). The original data sheets should be mailed to:

Missouri Department of Conservation
15302 LIV 2386
Chillicothe, Missouri 64601

Table B1. Schedule and locations for Data Sheet and Age-Growth Structure Submission

Data Sheets & Aging Structures	Submission Date	Office and Address
Missouri River Standard Data Sheet	Monthly, by the 10 th of each month	Missouri Depart of Conservation 15302 LIV 2386 Chillicothe, Missouri 64601
Missouri River Supplemental Data Sheets	Monthly, by the 10 th of each month	Missouri Depart of Conservation 15302 LIV 2386 Chillicothe, Missouri 64601
Sauger	<i>As requested by the office responsible for processing and analyzing for this species</i>	Missouri Depart of Conservation 15302 LIV 2386 Chillicothe, Missouri 64601

Shovelnose Sturgeon	As requested by the office responsible for processing and analyzing for this species	Nebraska Game and Parks Comm. 2200 N. 33 rd Street (PO Box 30370) Lincoln, NE 68503-0370
Sturgeon Chub	As requested by the office responsible for processing and analyzing for this species	MTFWP Administration Building Box 165 Ft. Peck, Montana 59223
Sicklefin Chub	As requested by the office responsible for processing and analyzing for this species	MTFWP Administration Building Box 165 Ft. Peck, Montana 59223

Database Management

All aspects of database design, entry, management and the basic analysis for the standardized reports will be conducted by MDC. MDC will provide basic analysis to facilitate the reporting requirements of the contracting offices. Refer to Appendix C for additional information regarding reporting.

The Pallid Sturgeon Population Assessment Project has incorporated measures to ensure the quality and consistency of the data collected, data entry and the reporting aspects of the project. The project has been implemented utilizing the knowledge and experience of individuals from throughout the Missouri River basin. In general, the basin's State and Federal agencies are the employers of these individuals; therefore, the project has been implemented by working directly with these agencies. In addition to utilizing this expertise, the project contains three levels of quality assurance.

I. Annual Training

- a. At a minimum, each field crew leader from each contracting office will attend the annual training to ensure they stay current with the Standard Operating Procedures which may change as the project evolves.
- b. Since the project utilizes the expertise of the basin, the crew leaders from various contracting offices will also lead training in different areas specific to their area of expertise.

II. Field Inspections

- a. Field crew leaders will rotate amongst the crews to review techniques, data collection and data recording to ensure this work is being conducted in accordance with the Standard Operating Procedures and Statistical Design of the project. Each crew will be reviewed by a crew leader from a different contracting office for at least two days during each of the sampling seasons.
- b. In addition to the rotation of the crew leaders, the Corps may review techniques, data collection and data recording to ensure this work is being conducted in accordance with the Standard Operating Procedures and Statistical Design of the project.

III. Data Entry and Quality Assurance

- a. The Missouri Department of Conservation will enter the data via double blind entry and/or other data entry mechanism to ensure the data is entered into the database accurately from the standardized data sheets.
- b. The Missouri Department of Conservation will perform all quality inspections of the data at the time of entry as well as within the database relative to the management of the database.
- c. The Missouri Department of Conservation will conduct basic analysis as outlined in the Reporting Template to ensure consistency between the reporting (contracting) offices.

DRAFT DOCUMENT

**PALLID STURGEON
POPULATION ASSESSMENT PROGRAM
FOR THE
MISSOURI RIVER**

APPENDIX C

**STANDARD OPERATING
PROCEDURES FOR
REPORTING, PUBLICATION AND ACKNOWLEDGEMENT**

REPORTING, PUBLICATION, AND ACKNOWLEDGEMENT

Each field station conducting population assessment activities will provide an Annual Summary Report for each of the segments for which they have conducted sampling. The Annual Summary Reports will be combined into a Comprehensive Annual Report for submission to the Service. The Annual Summary Reports and Comprehensive Annual Report will utilize a standardized format to ensure consistency and compatibility. This project has six objectives based on RPA elements VI A & B of the 2000 Opinion. A standardized template has been developed to provide for uniform reporting for all segments.

I. Annual Reporting Information

- A. An Annual Summary Report will include all data collected from the onset of the Sturgeon Season through the following Fish Community Season (Approximately November 1-October 31).
- B. This summary report will be due to the Corps not later than December 30, following the conclusion of the sampling year.
- C. Annual Summary Reports will be in a uniform format by segment and the Team will be responsible for developing this format/template.
- D. The Corps will provide the Service with the Comprehensive Annual Report and Annual Summary Reports in accordance with the requirements of the 2000 BiOp and 2003 amendment.

II. Additional Reporting

- A. In addition to annual reporting, multiple year analysis (e.g., 3-year analysis) may be periodically conducted to provide more rigorous evaluations.
- B. Additional reporting information may be incorporated into future reports, as needed. This information will be incorporated into appendices in addition to the standard reporting template.
- C. Additional analysis, as described under item A, will be determined by the Team and/or the Governance Committee.
- D. Additional analysis may be initiated at the request of the Service or other entity.

III. Data Use

- A. All data will be utilized within the “Adaptive Management” framework to guide future management decisions.

IV. Proprietary Rights

- A. The database management agency or agencies have no additional rights or ownership of the data and may not publish or provide the raw data to a non-participating Contracting Office without the permission of the Governance Committee.
- B. Each contracting office (i.e. inclusive of Governance Committee Agencies/Office: Montana Fish, Wildlife and Parks, U.S. Fish and Wildlife Service (Missouri River Fish and Wildlife Management Assistance Office, Great Plains Fish and Wildlife Management Assistance Office, Columbia Fishery Resources Office), South Dakota Game, Fish and Parks, Nebraska Game and Parks Commission, Missouri Department of Conservation, U.S. Geological Survey (Columbia Environmental Research Center) and the U.S. Army Corps of Engineers) will reserve the right to

the first opportunity to publish information resulting from the data that they were responsible for collecting for this project. The contracting office that collected the data will reserve this right for a one year grace period from the date which the data was collected to utilize this data for additional analysis and/or the purpose of publication. After one year, the data will be available to the remaining contracting offices participating in the project for the purpose of additional analysis and/or publication. The contracting office collecting the data may also waive their right to using the data for additional analysis and/or the purpose of publication prior to the one year grace period. Although a formal request to use the data collected by a contracting office is not required, the contracting office will still provide a summary of their use of data to facilitate communication among Team members. This communication should be in the same detail as required for a “Request for Data Use Proposal” (see Table C1).

- C. More than one contracting office may collectively pool the data that they collected to strengthen the analysis (publication). In this situation, a “Request for Data Use” is not necessary; however, a summary of data use/analysis will be networked with the Team to facilitate good communication.
- D. If additional data is desired by a contracting office for data collected in segments other than the segments for which they collected the data, a formal “Request for Data” will be made via a proposal and networked with the Population Assessment Team following the Standard Data Request Format.
 - 1. Only the offices that collected the data being requested will have a vote on the specific data request under review with the exception that the Corps and USGS will vote on all data requests.
 - 2. The office requesting the data may vote on their own request if they were also one of the data collectors.
 - 3. The USGS will abstain from voting on data requests that they submitted since they are not one of the data collectors.
 - 4. A simple majority vote will determine whether data is approved or disapproved.
 - 5. If an office votes against a particular data request, that office will provide a concise rationale for their “No” vote to the Corps’ Project Manager. This rationale will be sent (anonymously) back to the individual that submitted the request to aid that individual in refining the request to address the rationale for the “No” vote.
- E. If neither the contracting office that collected the data nor the remaining participating contracting offices desire to utilize the data for specific analysis and/or publication, the data will be available to an outside source.
- F. Regardless of the analysis/publication, a proposal must be submitted to the Population Assessment Team prior to release of the data following the Standard Data Request format (refer to Table C1).
 - 1. Requests for Data Use will specifically articulate the components of the analysis excluding the details of the methods to be use.
 - 2. The Requests for Data Use will be “Product Driven” clearly articulating what product or products will be generated from the data use effort.
 - 3. All Requests for Data Use will identify a Timeline/Deadline providing the products back to the Team.

4. Authorships and acknowledgements will be incorporated into the Data Request to ensure that all who deserve recognition are appropriately recognized.
 5. Responsibilities of authors relative to the analysis/publication will be included in the Request for Data Use.
 6. Data being requested. In accordance with Table C1, data requests will be complete and detailed.
- G. The Governance Committee will review all proposals on a “Case by Case” basis to utilize the data prior to any analysis and/or publication for all reporting outside the framework of the standardized reporting for this project.
- H. The same process as outlined above will determine the fate of data requests regardless of whether they are participating Team members or outside sources.
- I. All entities publishing data with the required permission of the Governance Committee will appropriately recognize the agencies and individuals via co-authorships or acknowledgements in the publication.
- J. All Data Requests will include Timelines with Deadlines.
- K. Permissions and details of co-authorships and acknowledgement will be agreed upon in writing prior to release of the data.

Table C1. Standard Form for Requesting Data for Analysis and/or Publication.

Request for Data Use Proposal	
Requesting Office	
Requesting Individual	
Purpose of Data Request:	
Components of the Analysis	Description of Components
1.	
2.	
3.	
4.	
Products	
Description of the Products	
1.	
2.	
3.	
Completion Date for Products	
Data Needed by:	Date
Authorship	
Description of Responsibilities of Each Author	
Author	
Co-Author	
Co-Author	
Co-Author	
Co-Author	
Co-Author	
Acknowledgments	
Data Being Requested	
Project	1, 2, or 3
Segments	For which segments
Date Range	
Season	
Bend	Randomly or Non-randomly selected data, or all
Gear	Specific gear, All Standard, Other
Physical Habitat Data	Specify which (e.g., Temp, Turbidity, other)

Habitat Classification	Specify which (Macro, Meso, micro)
Panel/hook information	
Bait	
Species	Specify which species
Length	
Weight	
Count	
Aging information	Specify which species
Floy Tag Information	
Other (e.g., “Check Mark information, or tagging information	Specify which species
Other	
Other	

To calculate CPUE remember to request the NFSH category to get the zeroes and that you also need all unique IDs for that gear.

**PALLID STURGEON
POPULATION ASSESSMENT PROJECT**

APPENDIX D

**PALLID STURGEON
POPULATION ASSESSMENT TEAM**

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