MEMORANDUM

May 31, 2019

RE: Pallid Sturgeon Conservation Propagation and Stocking Program Guidance and Planning Document Preamble

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Purpose:

- To provide overarching context for the USFWS Pallid Sturgeon Conservation Propagation and Stocking Program
- To support finalization and surnaming of the body of guiding documents

The following document provides an overview of and context for the Pallid Sturgeon Conservation Propagation and Stocking Program (CPSP) administered and supported by US FWS Regions 3 and 6 Fish and Aquatic Conservation Program (FAC) and Ecological Services (ES).

Development of a CPSP is listed as Recovery Task 4 in the Pallid Sturgeon Recovery Plan (1993, 2014). For more than 2 decades, US FWS Regions 3, 4 and 6 FAC, along with Ecological Services and State and Federal Partners have researched, developed and implemented a comprehensive propagation and stocking program for the endangered Pallid Sturgeon (PS). In a large part, this was accomplished through the expertise and capacity within the National Fish Hatchery System and among Fish and Wildlife Conservation Offices as well as through State hatchery and field office staff in the Missouri and Mississippi river basins.

The development of this complex program took extensive coordination among partners, in depth research, ongoing evaluation and adaptive program change, as well as expertise, capacity and financial support from FAC and State and Federal partners. Planning and guidance for genetics, propagation and rearing, stocking, and post-stocking assessment has been developed over the past two decades, and is herein referred to collectively as the CPSP.

With the following preamble, FAC, in collaboration with ES, is providing clarity, transparency, and context to the body of plans and guidance, to the network of collaboration, and for the coordinated decision-making necessary among the agencies and organizations with interests in the PS propagation and stocking as a critical and necessary component of PS recovery.

We look forward to continuing this work through the CPSP in partnership with State and Federal agencies as part of our efforts to recover the Pallid Sturgeon.

Roles, Responsibilities, Guidelines and Adaptive Management Decision Making for the Pallid Sturgeon Conservation Propagation and Stocking Program

A preamble to guiding documents for the Pallid Sturgeon Conservation Propagation and Stocking Program (CPSP)

I. NEED

The current Pallid Sturgeon Recovery Plan (original 1993; revised 2014) provides the background, life history, analysis of threats and status of Pallid Sturgeon along with an outline of prioritized recovery tasks, and estimated costs and timelines with general reference to responsible parties in the context of the Endangered Species Act (ESA). This CPSP preamble includes a more detailed framework and description for the planning and implementation of the Pallid Sturgeon Conservation Propagation and Stocking Program (CPSP) as a component of PS recovery.

The Pallid Sturgeon Recovery Plan (1993, 2014) makes clear that US Fish and Wildlife Service is the responsible entity for ESA-related administration including listing/delisting and recovery decisions with input and support from the Pallid Sturgeon Recovery Team and a broad suite of partners. The purpose of this document is to describe the network and collaborative arrangement of agencies and organizations, teams and programs necessary to implement recovery task 4.0 – *Implement and Evaluate a Pallid Sturgeon Conservation Propagation and Stocking Program*. This includes explaining the purpose of CPSP, the guiding documents, organizational roles and responsibilities, and a decision framework for agencies, organizations and entities with invested interests in the propagation and stocking of Pallid Sturgeon.

With this preamble, we intend to provide clarity, transparency, and context to the body of guiding documents, the network of collaboration, and the coordinated decision-making necessary among the agencies and organizations with interests in the Pallid Sturgeon recovery under the umbrella of the Pallid Sturgeon Recovery Plan and for all actions related to the CPSP. The result should be greater effectiveness in our shared quest to achieve Pallid Sturgeon recovery while managing the resources of the Missouri and Lower Mississippi River Basin.

II. RECOVERY TASK for the CPSP

The following excerpted from the Pallid Sturgeon Recovery Plan (2014) directs development, implementation and evaluation of the CPSP:

4. IMPLEMENT AND EVALUAT[E] A CONSERVATION PROPAGATION AND STOCKING PROGRAM

4.1 Implement a Conservation Propagation and Stocking Program

Current stocking efforts are conducted in accordance with a range-wide stocking plan (USFWS 2008). This plan should be amended if necessary using adaptive management principles as new data become available from Tasks 3.1-3.3 and 4.2.

GPMU, CLMU, IHMU, CPMU

(1) Annually review, update if necessary, and implement range-wide stocking and propagation plans using the most recent information.

(2) Annually review and update the tagging plans with the most recent information.
- (a) Improve tagging mechanisms to minimize tag loss/failure in hatchery produced fish.
  - (i) Ensure that genetic samples are collected from all fish used in propagation efforts.
  - (ii) Continue to evaluate tag placement location for improved PIT tag retention.
  - (iii) Ensure that all monitoring crews have appropriate tag reading equipment.

(b) Ensure that all field crews throughout the Missouri and Mississippi River drainages have appropriate equipment to read tags.
(c) Implement tagging plan.

4.2 EVALUATE SUCCESS OF PROPAGATION AND STOCKING PROGRAM
GPMU, CLMU, IHMU, CPMU

(1) Evaluate Pallid Sturgeon supplementation using various age classes of progeny.
  (a) Use data to derive Pallid Sturgeon specific survival rates where stocking occurs.
  (b) Use data to refine stocking strategies:
    (i) Determine optimal stocking numbers,
    (ii) Determine optimal stocking size,
    (iii) Determine optimal stocking time and location.
  (c) Evaluate dispersal of hatchery progeny.
  (d) Evaluate effectiveness of hatchery products within each management unit.
  (e) Determine when stocking is no longer needed.
(2) Ensure that hatchery stocking and propagation records are incorporated into integrated a range-wide species recovery database.

4.3 RESEARCH METHODS TO IMPROVE SPAWNING, CULTURING, REARING, AND STOCKING OF PALLID STURGEON
GPMU, CLMU, IHMU

(1) Continue to refine efficient, effective spawning techniques in the hatcheries and in the field.
(2) Conduct trials to determine spawning requirements of broodstock (e.g., optimal spawning temperature) and methods for maximizing survival and growth of progeny collected from broodstock.
(3) Continue to refine techniques to improve hatchery product quality and survivability.
(4) Continue to refine and improve cryopreservation techniques.
  (a) Insure cryopreservation program is adequately funded to maintain sperm as long as necessary.

III. KEY PROGRAM ELEMENTS for the Conservation Propagation and Stocking Program

Development of an effective propagation and stocking program for a long-lived, rare fish is complex and requires long-term dedicated capacity, resources and funding. All activity must be part of shared strategies and be coordinated among many Federal and State field and management offices. Key inter-related program elements include:

a. Genetics management
b. Fish capture, handling, tagging and stocking
c. Spawning in captivity and in the wild
d. Fish rearing including hatchery conditions of temperature, water quality, nutrition, disease, disposition and other factors
e. Field sampling and follow-up analysis and modeling to estimate survival and effectiveness through recapture rates
f. Program and data tracking and effectiveness monitoring
g. Administrative oversight for permitting and approval of activities under State and Federal regulations and laws
h. Research and adaptive management to inform the above activities using the best available science

Each program element requires an in-depth set of knowledge, skills and abilities of trained personnel ranging from fish biologists to coordinators and managers to species and subject matter experts. Those involved must have the authority to make decisions or provide input for their respective agencies. The program also requires clear communication, plans, networks, and associated outreach. The specific

guidance for how to conduct each of these elements has taken more than two decades to develop, compile, and revise into this finalized compilation. This canon of information for the PS CPSP is described within a body of documents listed herein. Collectively, these guide CPSP implementation. Additionally, in implementing these actions, responsible agencies are required to meet regulatory requirements for ESA (Section 7 Consultation and Section 9 Take Permitting), NEPA review of federal actions, state fish health requirements and in-state and out-of-state transport or relocation approvals and permitting, as well as other compliance related issues.

The logistics, coordination and decision-making roles and responsibilities of these activities are not described in any one document and generally require a process of consensus among agencies that have overlapping and concurrent responsibilities. The complexity of coordinated planning and decision-making requires a high level of collaboration and cooperation and must happen across a broadly scaled temporal and spatial range down to local action for purposes of planning, scheduling and implementation. These include annual, seasonal and day-to-day collaboration and decisions across numerous States and 3 USFWS regional offices, including a number of field offices or facilities and other interested government and nongovernment parties.

IV. KEY PARTNERS AND COLLABORATORS

1. USFWS – Ecological Services and the Regional Director (R6) USFWS has the ultimate authority for making final decisions on Pallid Sturgeon ESA Section 4 Listing, Delisting and Recovery, Section 7 Interagency Consultation, Section 9 and 10 Take and Permitting, and other administrative duties as described in the ESA and related regulations (henceforth referred to as ESA Regulatory Decisions). At the same time, ESA clearly identifies the need for cooperation and collaboration with and recognition of State agency and Federal action agency authority and input as the USFWS makes determinations for a listed species.

   Role of the USFWS (Regional Director) in the context of Pallid Sturgeon recovery
   The Regional Director makes decisions that include:
   1) ESA authorities related to status or changes to status of Pallid Sturgeon including decisions under Sections 4, 7, 9, 10
   2) Finalization of Recovery Plan and associated process and documents that guide recovery
   3) Review of input from the Recovery Team and Basin Workgroups or others teams associated with Pallid Sturgeon recovery to inform the above decisions

   Pallid Sturgeon Recovery Coordinator is:
   - Responsible for comprehensive leadership and coordination
   - Ensures consistency of the CPSP efforts with broader pallid sturgeon recovery objectives.
   - Works to find solutions if conflicts arise and elevates decisions as warranted (see section on Non-routine Decisions).

   The USFWS also manages and provides expertise, capacity and resources for Federal hatcheries in close association with State partners, to conduct Pallid Sturgeon propagation and stocking activities. Several USFWS managed hatcheries and personnel with specific expertise at these hatcheries are integral to the success of the program including:
   - Bozeman Fish Technology Center (R6)
   - Bozeman (R6) and Midwest (R3) Fish Health Centers
   - Garrison Dam National Fish Hatchery (R6)

- Gavins Point National Fish Hatchery (R6)
- Neosho National Fish Hatchery (R3)
- Northeast Fishery Center Genetics Laboratory
- Warm Springs Fish Technology Center

Several State hatcheries are also involved in the CPSP (See section on States).

In addition, USFWS Fish and Wildlife Conservation Offices (FWCO) in the Missouri River Basin play a significant role in cooperation with State agencies and researchers in stocking and conducting field sampling and research as part of the CPSP. FWCOs responsibilities can include but are not limited to population sampling, broodstock capture and assessment, fish tagging and transport, and fish stocking as well as research projects and distribution of information. The following FWCOs participate in activities related to the CPSP:

- Missouri River Fish and Wildlife Conservation Office, Bismarck, ND (R6)
- Great Plains Fish and Wildlife Conservation Office, Pierre, SD (R6)
- Columbia Fish and Wildlife Conservation Office, Columbia, MO (R3)
- Carterville Fish and Wildlife Conservation Office, Marion, IL (R3)

The National Fish Hatchery Fish Health Centers in FWS Regions 3 and 6 work closely with each State to ensure fish health is assessed, hatcheries are disease free and protocols are in place to respond to any suspected pathogen or disease issue before, during and after transportation of any life-stage to hatcheries.

The Fish Technology Centers, in particular the Bozeman FTC, provide research, analysis and expertise in reproductive physiology, rearing, nutrition, genetics and habitat and early life-stage ecology as necessary and feasible.

2. STATE WILDLIFE AGENCIES – the States of Montana, North Dakota, South Dakota, Nebraska, Iowa, and Missouri have specific jurisdictions over wildlife including fisheries, water, and habitat management and use, that gives them a unique voice and role in decision-making, both within State and where actions take place across waterways and State boundaries. Similar to the USFWS, State authorities include oversight of field work through collection permits, of fish propagation and rearing through State fish hatcheries, for fish health conditions through State and Federal hatchery disease certification or water quality and quantity requirements, and other related issues.

   Congress enacted the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.) (ESA or Act), to establish a program for the conservation of endangered and threatened species and the ecosystems on which they depend. The Fish and Wildlife Service and National Marine Fisheries Service, (the Services), have the responsibility for administering the ESA. In February of 2016, the Services announced an interagency policy [*Federal Register*, February 22, 2016 (Vol. 81), p. 8663] to clarify the role of State agencies in activities undertaken by the Services under authority of the Endangered Species Act of 1973, as amended, and associated regulations. The policy, which is a revision of a policy issued in 1994, reflects a renewed commitment by the Services and State fish and wildlife agencies to work together in conserving America's imperiled wildlife.

   State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of

their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. The term State agency means any State agency, department, board, commission, or other governmental entity that is responsible for the management and conservation of fish, plant, or wildlife resources within a State.

Given the listed status of pallid sturgeon, the USFWS will strive to engage States in the following aspects of recovery:

Habitat Conservation Planning

1. Use the expertise and solicit the information and participation of State agencies in all aspects of the habitat conservation planning process.
2. Work collaboratively with State agencies to the maximum extent practicable to advance efficiency and avoid duplication of effort when the Services and the States both have similar authority for permitting activities related to threatened and endangered species.

Recovery

1. Use the expertise and solicit the information and participation of State agencies in all aspects of the recovery planning process for all species under their jurisdiction.
2. Use the expertise and solicit the information and participation of State agencies in implementing recovery plans for listed species. State agencies have the capabilities to carry out many of the actions identified in recovery plans and are in an excellent position to do so because of their close working relationships with local governments and landowners.
3. Recognize and use the expertise and authority of State agencies in designing and implementing monitoring programs for species that have been removed from the Lists of Endangered and Threatened Wildlife and Plants. Unless preempted by Federal authority (e.g., Marine Mammal Protection Act, Bald and Golden Eagle Protection Act), States possess primary authority and responsibility for protection and management of fish, wildlife, and plants and their habitats, and are in an excellent position to provide for the conservation of these species following their removal from the lists.
4. Work collaboratively with State agencies to design and encourage the use of Safe Harbor Agreements to assist in recovery of listed species.

The following State Fish Hatcheries are involved in propagation and rearing of Pallid Sturgeon:

- Miles City SFH, Miles City, MT
- Blind Pony SFH, Sweet Springs, MO

The fisheries field staff of State fish and wildlife agencies in Montana, North and South Dakota, Nebraska, Iowa, and Missouri either lead or may be otherwise involved in field work that includes stocking, sampling, analyzing and reporting on Pallid Sturgeon recovery and management. Other States in the lower Missouri and Mississippi rivers are also engaged in Pallid Sturgeon recovery; however, this document includes only those active in the CPSP.

3. ARMY CORPS OF ENGINEERS - As a lead federal agency with responsibility for operation of the Missouri River Mainstem Reservoir System, the operation and maintenance of the Bank Stabilization and Navigation Project, the operation of the Kansas River Reservoir System, and the implementation of the Missouri River Recovery Management Plan, the Army Corps of Engineers (USACE) retains

significant responsibilities, control and leadership for actions that impact and support Pallid Sturgeon recovery that includes providing, directing and overseeing significant funding for the CPSP. The USACE oversees activities with support from USFWS in the context of ESA Section 7 Interagency Consultation on the aforementioned responsibilities, and the USACE leads National Environmental Policy Act review for their actions in the same context. In recognition of the significant impact their actions have on other Federal, State and local agencies, organizations and individuals, USACE has developed Missouri River Recovery Program (MRRP) and supports stakeholder involvement through the Missouri River Recovery Implementation Committee (MRRIC) to coordinate input, feedback and meaningful dialogue for their actions and proposed management. As such, USACE acts as a major leader and convener of diverse participants sharing in responsibilities for actions in support of Missouri River operations, including substantial funding and planning that directly supports pallid sturgeon recovery over the past 10 years.

4. BUREAU OF RECLAMATION – As a lead Federal agency with authorities for upper Missouri River and Yellowstone River system water projects and other tributaries, the Bureau of Reclamation (BOR) retains significant responsibilities, control and leadership, as well as providing some funding for actions that impact and support Pallid Sturgeon recovery. BOR oversees activities with support from USFWS through ESA Interagency Section 7 Consultation for BOR water projects, and they lead NEPA review for their actions. BOR works collaboratively with other State and Federal agencies on shared priorities for water use and management and species recovery.

5. US GEOLOGICAL SURVEY – As a Federal agency with priorities for developing sound science in support of Federal and State partners and national priorities, the USGS has significant responsibilities and leadership role for conducting research to inform Missouri River management actions and to fill information gaps regarding river ecology, endangered species conservation and related to flow and habitat management.

6. UNIVERSITIES– In addition to USGS, a number of researchers from universities and research institutions play a significant role in developing science and developing tools and data to inform management actions and to fill information gaps for species management and conservation and related to ecology, flow and habitat management among other issues.

V. TEAMS and PROGRAMS

1. THE PALLID STURGEON RECOVERY TEAM

Although by law, the USFWS (designated Regional Director; RD) makes final decisions for the endangered Pallid Sturgeon in his/her role administering the Endangered Species Act, the Regional Director can convene experts to interpret science and information and to provide recommendations in support of decision-making. With the assistance of the Pallid Sturgeon Recovery Coordinator, the RD convenes Pallid Sturgeon and related expertise from Federal, State and academic institutions to serve on the Pallid Sturgeon Recovery Team. Over time, team members can change at the discretion of the Regional Director. The Recovery Team provides recommendations to the RD on how to achieve recovery of Pallid Sturgeon, mainly through their efforts in writing and updating the Recovery Plan as well as contributing expert opinion on other matters or issues related to recovery when that information is requested.

The Recovery Team is not responsible for implementation, funding or oversight of recovery action as it fits within the side-boards of the Recovery Plan, except when specifically asked for as a recommendation from the RD (or RD delegate such as Recovery Coordinator). The Recovery Team is not expected to implement or make annual, seasonal, day-to-day or other decisions about the logistics, coordination, and implementation of recovery actions except when requested for input on actions or issues that deviate or may not be addressed in the Recovery Plan and body of guiding documents.

The Recovery Team has played a role in the CPSP by providing their recommendation to develop such a program and in review and finalization of supporting documents that guide the program. They have also occasionally provided recommendations to the RD on particular issues not addressed or that are outside the scope of guiding documents for Pallid Sturgeon recovery, ecology, propagation and/or stocking.

Role of Recovery Team

The Recovery Team, as per request by the Regional Director or Pallid Sturgeon Recovery Coordinator of US Fish and Wildlife Service will:

1- Provide direction regarding Pallid Sturgeon recovery
2- Provide feedback and recommendations to the basin recovery workgroups on progress towards recovery
3- Consider recommendations from the workgroups for consistency with protocols, procedures and planning documents guiding Pallid Sturgeon recovery
4- Work closely with workgroups in defining recovery and establishing downlisting and delisting criteria as overseen by USFWS
5- Facilitate inter-basin evaluation and synopsis of ecological issues related to Pallid Sturgeon recovery

2. THE BASIN WORKGROUPS

The USFWS Pallid Sturgeon Basin Workgroups are geographically-focused, collaborative inter-agency teams, academia, NGO's and citizens with technical expertise and mutual interests in over-lapping jurisdictions for Pallid Sturgeon and its habitat. These workgroups convene under agreed-upon levels of governance to determine the annual, seasonal and day-to-day logistics and coordination of actions and associated decisions necessary to coordinate implementation of recovery actions, particularly as it relates to capturing, handling, rearing, stocking and evaluating survival of Pallid Sturgeon and specifically those actions within the guidelines of approved recovery planning documents and guidance.

As such, Basin Workgroups are the entity for routine annual, seasonal and day-to-day planning, coordination and decision-making regarding capturing, handling, rearing, stocking and evaluating survival of pallid sturgeon that falls under the umbrella of guidance provided in the Pallid Sturgeon recovery plan and associated recovery documents. Because such decisions generally require approval from diverse agencies, Basin Workgroups comprise USFWS Recovery leads, USFWS and State field and hatchery personnel, species and subject-matter expertise (i.e. researchers or scientists with specific knowledge) and representatives from action agencies that retain authorities for related project management (e.g. BOR and USACE).

Basin Workgroups work closely and overlap in personnel with other programs but have the unique purpose of being geographically focused on Pallid Sturgeon-relevant recovery management units where they work. The workgroups can include organizations that have specific jurisdictional responsibilities, authorities, and expertise and skills to make day-to-day decisions for wildlife sampling, water and habitat conditions and management, and others that are more broadly-based agency decisions.

Workgroups provide geographically specific data and information as well as develop and implement agreed upon protocols, measures and actions that are part of other programs like MRRP. They are the appropriate forum for sharing and discussion about spatial and temporal trends of Pallid Sturgeon status and survival in local reaches and for standardization of methodologies, techniques and analyses that can provide the underpinnings for broadly-scaled analyses and evaluation of management actions at a basin scale. This helps to inform the work of the USACE MRRP, the Recovery Team, and ultimately the States and USFWS efforts toward Pallid Sturgeon recovery. Recommendations developed by basin workgroups are provided to the USFWS Pallid Sturgeon Recovery Lead for consideration by the USFWS.

The geographic scope of the Upper Basin Workgroup includes the range of Pallid Sturgeon from Great Falls, MT downstream to Gavins Point Dam and associated tributaries (Great Plains Management Unit including Recovery Priority Management Area [RPMA] 1, 2, and 3*; Pallid Sturgeon Recovery Plan [1993]). *Currently the Upper and Middle Basin Workgroups are working with Pallid Sturgeon Recovery Coordinator to clarify oversight of a portion of RPMA 3 which was traditionally Upper Basin but is now within the Central Lowlands Management Unit traditionally overseen by the Middle Basin.

The geographic scope of the Middle Basin Workgroup is the Missouri River downstream of Gavins Point Dam to its confluence of the Mississippi River and associated tributaries (Central Lowlands Management Unit and upper portion of the Interior Highlands Management Unit including RPMA 4; Pallid Sturgeon Recovery Plan [1993]).

The geographic scope of the Lower Basin Workgroup is the Mississippi River from the confluence with the Missouri River to the Gulf of Mexico, associated tributaries and the Atchafalaya River distributary system to the Gulf of Mexico (lower portion of the Interior Highlands and the Coastal Plains Management Units including RPMA 5 and 6; Pallid Sturgeon Recovery Plan [1993])

Basin Workgroups typically meet twice per year to coordinate recovery actions, the propagation and stocking strategies for Pallid Sturgeon and to consider the out-year propagation and stocking needs and to share annual and seasonal data and trends, analyses and summaries that are used to inform management actions and recovery status. Workgroups also have a role in providing recommendations and feedback to the Service for Pallid Sturgeon recovery related to Section 7, in particular as referenced in the 2018 Biological Opinion on Missouri River Operations.

The UBWG meets once during the late summer (governing board only) and once in late winter (entire group). The UBWG operates under a governance agreement and MOU among participating agencies. The MBWG also meets once during the late summer (stocking sub-committee) and once in late winter (entire group). The MBWG currently does not have formal governance but operates under commonly-understood parameters and creates ad-hoc sub-teams when needed. The LBWG meets at least once a year in spring and as needed otherwise.

Additionally, the chairpersons of the Basin Workgroups continually disseminate new sampling, monitoring and research information as it becomes available and schedule conference calls to aid in coordination and discussion of data and analyses. These meetings and conference calls provide all members or designated representative workgroup sub-committees the opportunity to discuss strategies and potential concerns and ramifications of current and future actions and provide findings to management and recovery decision makers.

Role of the Basin Workgroups

The Basin Workgroups should strive to accomplish the following:

A. Develop administrative or operating procedures for committee business, annual workplans, recommendations on issues to the USFWS Pallid Sturgeon Recovery Coordinator, routine decision making as noted by approved documents, and implementation of recovery actions
B. With Recovery Lead(s) assistance develop a Recovery Implementation Strategy (RIS) within USFWS Recovery Implementation Planning process and annually review and update implementation activities and responsibilities within the RIS.
C. Provide the USFWS, States and Pallid Sturgeon Recovery Team with an annual report detailing workgroup activities like research, monitoring and recovery accomplishments and research results.
D. Provide recommendations on or develop protocols, procedures, and planning documents used to guide Pallid Sturgeon recovery, e.g., propagation plan, stocking plan, handling protocols.
E. Coordinate or make recommendations for locally available funds and in-kind contributions for effective implementation of recovery actions.
F. Form committees in response to the workgroup and the USFWS or Recovery Team as needed to address issue-specific tasks.
G. Implement and oversee actions for the CPSP as outlined in the body of program documents.

3. RANGE-WIDE PALLID STURGEON PROPAGATION COMMITTEE

The Range-wide Pallid Sturgeon Propagation Committee comprises personnel with expertise in fish propagation, health, hatchery management, and genetics. This committee:

a) Produces documents to guide the spawning, propagation, and stocking of hatchery-produced Pallid Sturgeon.

b) Serves as a collaborative forum to discuss Pallid Sturgeon spawning, propagation and genetics issues to assure state-of-the-art processes and techniques are used and to overcome problems affecting the production of healthy and vigorous fish for conservation stocking.

c) Provide collaborative input and guidance, and decisions where requested by USFWS, to the Recovery Team, the Recovery Team Leads, the USFWS, and Basin Workgroups regarding the CPSP.

d) Provides oversight and necessary follow up for annual review of hatcheries engaged in Pallid Sturgeon production

4. MISSOURI RIVER RECOVERY PROGRAM (MRRP)

MRRP is administered by the US ACE. MRRIC provides a forum for stakeholders, Tribes, States, and Federal agencies within the Missouri River Basin to develop recommendations that consider the needs of the various groups affected by management actions. The Secretary of the Army established the Missouri River Recovery Implementation Committee (MRRIC) as authorized by Section 5018 of the 2007 Water Resources Development Act (WRDA) to make recommendations and provide guidance on a study of the Missouri River and its tributaries and on the existing Missouri River recovery and mitigation plan lead by US ACE as per their authority for Missouri River water operations and management. The MRRP Science and Adaptive Management Program is included in this work and adaptively designs, funds, evaluates and implements research and action effectiveness related to Section 7 consultation on Missouri River Operations.

MRRIC includes broad stakeholder representation to ensure a comprehensive approach to Missouri River recovery implementation while providing for congressionally authorized Missouri River project purposes (see: The Missouri River recovery and mitigation plan referenced in Section 5018 (B)(3)(b) of the Water Resources Development Act of 2007). The MRRP has an excellent overview of the program

purpose, structure and process (see: http://moriverrecovery.usace.army.mil/mrrp/f?p=136:1:0::NO:::) including its efforts to promote Pallid Sturgeon recovery.

VI. KEY DOCUMENTS and ASSESSMENTS

Guiding the Conservation Propagation and Stocking Program

The Regional Director's approval of the following documents signifies approval of ***Routine Decisions***. ***Routine Decisions*** are defined as those that fall within the guidance and sideboards of the Recovery Plan and approved documents guiding Pallid Sturgeon recovery and are overseen by Basin Workgroups in close association with the Recovery Coordinator(s) and State partners. Thus the Recovery Plan and other key documents provide the framework and a level of flexibility for routine adjustments to day-to-day, seasonal and annual management, protocols and logistics decisions regarding propagation and stocking of Pallid Sturgeon. The following describes the inter-relationship of these documents.

Pallid Sturgeon Recovery Plan

The Pallid Sturgeon Recovery Team completed the initial Recovery Plan in 1993 and a revised Recovery Plan in 2014. The Recovery Plan includes a prioritized list of actions expected to achieve recovery. Recovery actions will be prolonged given the scope of actions required. The Recovery Plan and recovery efforts as outlined in ESA do not impose requirements on any organization or agency to achieve recovery. However, it is expected that agencies with authority, jurisdiction and responsibilities under ESA such as those identified in Section 6 and 7 will participate in coordinated recovery efforts as resources allow and their respective responsibilities dictate. The USFWS does not dictate this participation; however, USFWS invites and encourages, as well as oversees through Section 6 and 7, the planning and implementation of recovery actions, as well as providing guidance and regulation on actions to minimize take through Section 9 and 10 permitting. Ultimately a broad array of partnerships will need to be developed to realize Pallid Sturgeon recovery.

Pallid Sturgeon recovery is expected to occur through related strategies of (1) aquatic community, water and habitat management, and (2) a conservation propagation and stocking program, both supported through the best available science and through adaptive management principles. As actions to support the former become more effective and Pallid Sturgeon reproduce and recruit to maturity in the wild, less emphasis will be placed on the latter; however, it is expected that propagation and stocking will remain necessary for at least another decade (or more) to ensure adequate demographic and genetic representation in wild and captive populations.

Documents that are part of the Conservation Propagation and Stocking Program

The CPSP is task (4) of the Pallid Sturgeon Recovery Plan and has been successful to date in preventing extinction of Pallid Sturgeon in several reaches. It is clearly understood that stocking itself cannot achieve recovery, and propagation and stocking efforts are necessary until other management actions are effective in promoting wild recruitment.

In the meantime, coordinated efforts to capture, spawn, rear, tag, inspect, release, recapture and evaluate the survival of a large, long-lived rare fish like Pallid Sturgeon require significant commitment of capacity and funds as well as clear, agreed upon guidelines for planning, coordination of logistics and carrying-out of actions. Success also requires a clear and efficient evaluation and decision-making process as annual, seasonal and day-to-day conditions can change without notice. Therefore, a well-

developed and agreed upon strategy is necessary but implementation may include quick and decisive adjustments in actions.

There are a number of documents that guide implementation of the CPSP. ESA itself and the body of regulatory and planning documents for ESA are not discussed here except to note that the Controlled Propagation of Species Listed under the Endangered Species Act (2000) sets general guidelines for all controlled propagation under ESA as the title implies. The CPSP falls under these guidelines.

Below are the plans written specific to Pallid Sturgeon and that comprise the CPSP as a priority task of the Pallid Sturgeon Recovery Plan.

These documents outline the rationale, strategies and objectives (why and how) of this program. The decision-making, evaluation and timeline are often more complex and, as described herein, are primarily delegated to the Basin Workgroups with oversight by Recovery Coordinators and by relevant USFWS and State offices. State and Federal Hatcheries, Fish Health Centers, Fish Technology Centers, and Fisheries Offices also provide critical capacity and expertise. Federal, State and University researchers as USGS, USFWS have also become integral to the adaptive management process.

1. **The Upper Basin Genetics Management Plan (2013) and Annual Genetics Assessments and Mating Plans**
   This plan describes genetic considerations for spawning, rearing and stocking Pallid Sturgeon based on information from the Upper Basin (RPMAs 1-3) in developing annual stocking targets by the Upper Basin Workgroup. Recommendations are included to promote maintenance of genetic diversity and preventing in-breeding and out-breeding depression through stocking. This information is paramount to guiding the annual crosses of wild (or captive) fish and the number and disposition of offspring. The Middle Basin Workgroup adheres to the foundational principles of this plan and much of the specific information.

2. **The Range-wide Pallid Sturgeon Propagation Plan – 2019**
   This plan describes information necessary for culture and rearing of Pallid Sturgeon in captivity. This includes information on reproductive health and readiness, stress reduction, disease prevention and other important aspects of fish culture.
   a. Disposition Plan (appendix H in Propagation plan)
   This plan deals with how excess or undesired fish that have been raised in captivity will be disposed of when they cannot be used as part of annual stocking. For example, where too many fish are available or if the fish health is compromised and they cannot be released, there are criteria and steps to follow to ensure disposal of these fish has been done in a way to meet Federal, State and all other requirements and considerations.

   b. Family Lot History Health and Condition Assessment (described in Propagation Plan)
   This deals with the necessary steps to ensure Federal and State requirements for fish health and prevention of disease spread are met while fish are reared, raised and before they are transported, transferred or disposed. This has also been recently expanded to include information to assess condition related factors and comparable metrics of fish condition that can be used to ensure consistent standards and protocols in pre-release condition to the extent feasible and appropriate.

c. Hatchery Inspection (described in Propagation Plan)
This deals with the necessary steps to ensure Federal and State hatcheries are compliant with Federal and State hatchery requirements and recommendations for a range of issues including water quality, water treatment, waste disposal, fish nutrition, etc. as well as following guidelines for Pallid Sturgeon captive propagation and rearing.

3. **The Range-wide Pallid Sturgeon Stocking Plan 2019**
The Stocking Plan describes the purpose, goals, targets, rationale, decision-making and effectiveness monitoring for all activities related to stocking pallid sturgeon into the wild or augmenting wild populations.

4. **Range-wide Pallid Sturgeon Tagging and Marking Plan 2019**
This plan provides specific strategies and standardized methods for tagging and marking. The purpose is to ensure the most up to date methods and technology are used in a shared strategic approach that allows data collected from fish sampling to track, measure and evaluate effectiveness of research, propagation, and stocking activities and/or habitat and flow management strategies where applicable. Using individual, reach or event specific tagging and marking strategies, researchers and managers are ensured the best available data for analyses of actions.

5. **Range-wide Pallid Sturgeon Handling Protocols and Procedures 2019**
The primary purpose of this document is to describe protocols, training requirements and standardized techniques for handling Pallid Sturgeon during sampling, capture, spawning, rearing and stocking to prevent harm or damage to individual fish in compliance with ESA Section 10 recovery permits issued to hatcheries and field offices for purposes of research, propagation and stocking of Pallid Sturgeon. These protocols also serve to address industry standards for animal welfare and to ensure the most effective information and standardized data and analyses will be available upon recapture using. This document provides general requirements for compliance with ESA Section 10 but does not provide specific reach or basin information for strategic tagging and marking related to identification of annual stocking events.

6. **Post-stocking Population Assessments** as described among numerous plans as part of state and federal programs
There is not one specific plan that describes post-stocking assessment and evaluation for the CPSP. However, the Basin Workgroups are able to use the USACE Pallid Sturgeon Population Assessment Program (PSPAP) program in conjunction with other local population assessment sampling outside of the geographic scope of the PSPAP. The PSPAP was established by USACE, USFWS and partners in 2005 and was designed to collect data on survival, movement, distribution, and habitat use. The PSPAP was revised in 2016-18 as part of the most recent Biological Opinion and associated Adaptive Management Program and is entering a 'pilot' year. The monitoring data collected by the PSPAP allows for the assessment of population abundance, length frequencies, age distribution, geographic distribution, survival, growth, genetic representation, fish fitness (i.e., condition), habitat use, and carrying capacity. In reaches that are not included in the scope of the MRRP and therefore not subject to PSPAP, similar but differing methodologies are used to assess population status, recruitment and survival of stocked fish.

A research component of PSPAP and other research opportunities outside of USACE PSPAP allows for studies specifically designed to address information gaps regarding the rearing, spawning, recruitment, survival and life history of the populations in the wild. All monitoring and research

results are synthesized by researchers and within Basin Workgroups, and this information is used to guide annual stocking targets and future augmentation, update plans, develop recovery strategies and identify information deficiencies.

VII. DECISION PROCESS AND ADAPTIVE MANAGEMENT

Adaptive Management Principles and Evaluating CPSP Effectiveness

The CPSP evaluation is an integral part of the process to determine propagation needs and annual stocking targets. Although program effectiveness is informally conducted each year as part of determining propagation and stocking needs, a range-wide formal standardized evaluation of the CPSP has not been implemented. Under newly established guidelines and recently revised and finalized propagation and stocking plans and associated information, a standardized CPSP Evaluation will be developed and implemented and will use a framework including:

1. Program objectives and benchmarks where feasible and practical
2. Assumptions
3. Testable hypotheses with criteria
4. Data requirements
5. Decision process tracking
6. Results
7. Conclusions
8. Recommendations for changes or modifications related to assumptions and hypotheses
9. Reporting and information dissemination

Considerations to be included in a CPSP Evaluation Design

Program Objectives, Assumptions and Hypotheses should consider the following:

1. Pallid Sturgeon recovery actions that require activities related to stocking hatchery-origin fish with detailed evaluation criteria explicitly linked to management objectives and deliverables pertaining to stocking. This includes recovery actions and related hypotheses that rely on stocking as part of the MRRP and other project area impacts being evaluated.
2. Benchmarks of stocking success based on recaptures, survival and population projections should be the basis for out-year stocking targets.
3. Standardized assessment of recaptures and wild fish including survival/recruitment, growth, condition and movement should be used to assess the success of stocking related to the following variables:
    a. Size/age at stocking
    b. Fish health/condition
    c. Stocking location
    d. Parentage or genetic representation
    e. Hatchery of origin or rearing conditions
    f. Tagging effectiveness

In addition, the decision-tracking process must be included in annual CPSP reporting. Analysis and report completion will be overseen by USFWS FAC who retains primary responsibilities for the CPSP. This will be done in cooperation with USFWS Ecological Services and PS Recovery Leads as part of PS recovery oversight, and in coordination with workgroups, the USACE as a basin lead and substantial funding partner as well as with State and other Federal partners.

The following are examples of information that are available and could be analyzed and included as part of program evaluation and reporting. An adaptive framework including hypotheses will be developed and tiered from Pallid Sturgeon recovery planning to inform and adaptively manage the CPSP:

1. Hatchery-origin year class survival rates.
2. Effect of stocking size on year class survival rates.
3. Effect of release location on year class survival rates.
4. Effect of HRPS hatchery of origin on year class survival rates.
5. Effect of health/condition on year class survival if applicable
6. Hatchery-origin abundance within each RPMA.
7. Hatchery-origin length-at-age, growth rates and condition.
8. Movement patterns at various life stages.
9. Family lot identity, history and health

CPSP Decision Guidelines

1. Routine Decisions

Routine Decisions with respect to the CPSP, are those that are made annually, seasonally or day-to-day as needed to implement the CPSP and under the umbrella of guidelines as described in approved and finalized documents. To ensure that decisions are based on adaptive management principles using the best available science, the guidance from the key documents is considered with annual monitoring results and with the results of topic-specific research. The results are processed and applied to relevant management strategies at the appropriate level within Basin Workgroups, the MRRP and through Section 7 consultation progresses and/or through State coordination. The new information, recommendations or findings are shared to the extent possible across multiple spatial scales to align with respective and tiered goals for pallid sturgeon and Missouri River Basin:

i. Locally through Basin Workgroups
j. Organizationally through respective agencies and jurisdictions
k. Basin-wide through PS recovery efforts, the MRRP and other regional or basin projects with ESA obligations

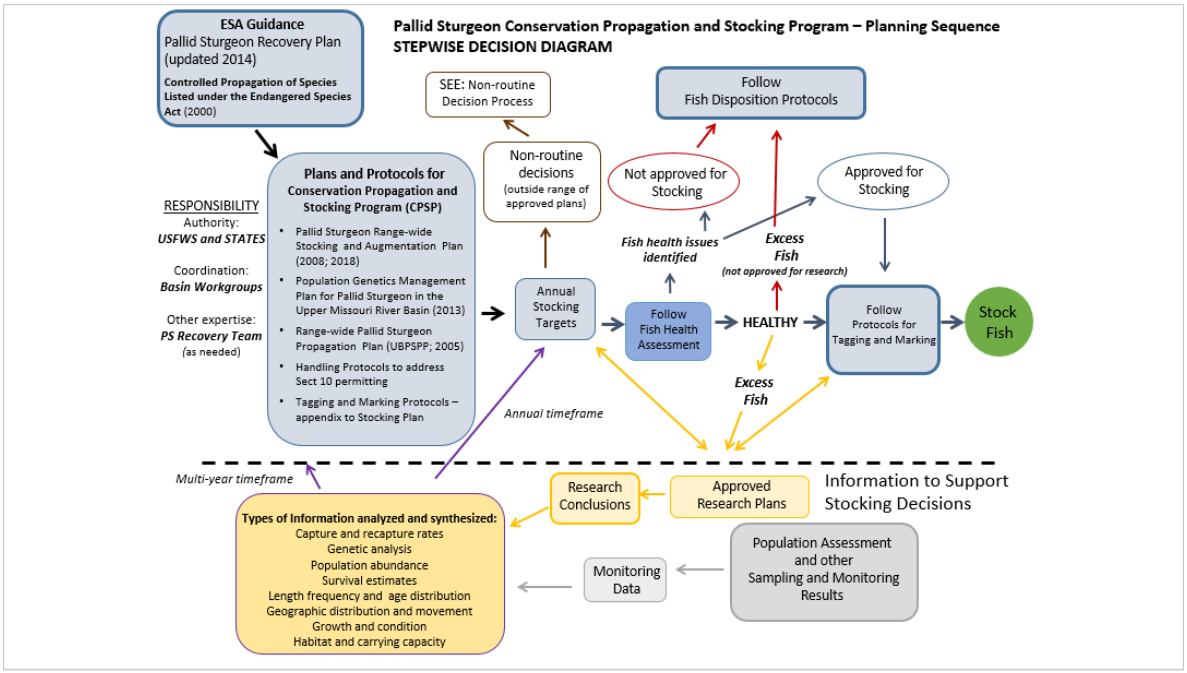

Figure 1. Stepwise decision-process included in the over-arching CPSP as part of routine decision-making

2. Non-routine Decisions

'Non-routine Decisions' are defined as those decisions that are considered to be outside the range of flexibility in the body of CPSP finalized documents. These decisions may be needed where we are lacking in science and information, where there is controversy or a lack of agreement among stakeholders or partners or simply policy calls. Under these conditions, decisions are considered 'non-routine' and require greater scrutiny.

The following steps should be followed when the need for decisions that fit the definition of 'non-routine' above is encountered (Figure 2):

1. Basin workgroups and project leaders formulate management recommendation(s) or science related questions relative to the population augmentation program to the PS Recovery Coordinator who pass on to the appropriate USFWS Program Supervisors

2. USFWS Program Supervisors through guidance from the PS Recovery Coordinator ensures there is sufficient supporting information to make a decision.
    a. If information is sufficient, the Program Supervisors make a decision for approval by the Regional Director
    b. Alternatively, they may request more information. This may include a request to convene the Recovery Team.

3. If necessary and as requested by the Pallid Recovery Coordinator, the Recovery Team convenes to assess available information and evaluates new information and potential actions to promote recovery and/or minimize negative impacts to the species recovery.
    a. Following review of relevant information, the Recovery team may choose to concur or contest the recommendation. The Pallid Recovery Coordinator would provide a briefing

of the Recovery Team's recommendations at the appropriate level within the decision structure (i.e. to Program Supervisors, PSC, MRC, and Fish and Aquatic Conservation and Ecological Services Assistant Regional Directors (ARDs) or to the Regional Directors.

b. The Recovery Team may recommend that further research or data analysis be completed before a recommendation to the Service can be made.
c. Under certain circumstances, such as a significant disagreement within the Recovery Team, between Program Supervisors and/or ARDs, a neutral third party science team may be engaged.

4. The Pallid Sturgeon Recovery Coordinator, USFWS Program Supervisors and ARDs evaluate the recommendation and discuss it with key Federal and State participants and partners.

5. Depending on the scope of the decision, the ARDs would make the decision or they present a recommendation to the Regional Director. The Regional Director(s) may engage the senior leaders of key partner agencies in their decision making process, as necessary, before making a final decision.

After a decision is made, the Regional Director may establish policy or guidance in accordance with standard practices, which may include Federal Register notification (for example the 2010 Similarity of Appearance Rule) or by working with the Recovery Team, Recovery Leads and/or Basin Workgroups to update and revise procedural, policy and/or planning documents (for example the Recovery Plan revision). Figure 2 outlines the decision process for 'non-routine' decisions.

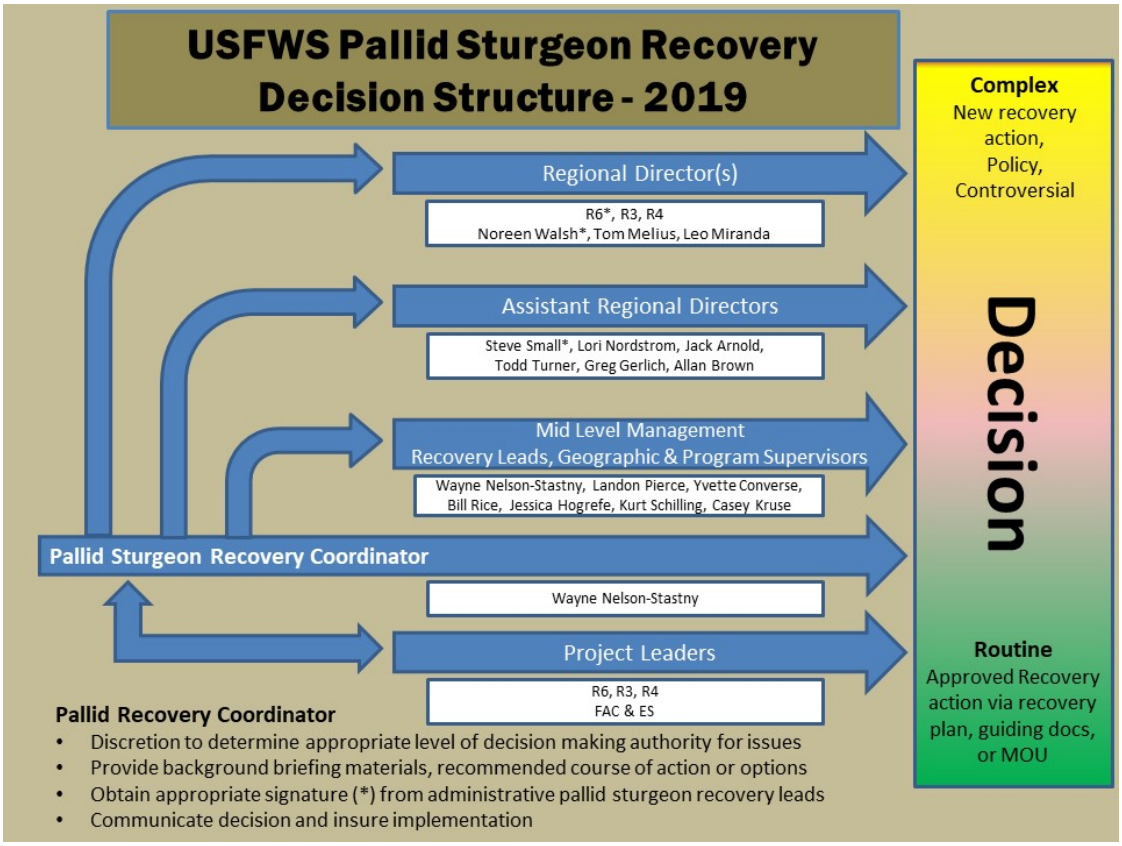

Figure 2. Non-routine Decision process.