PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

Technical Advisory Committee (TAC) Virtual Meeting

Meeting held in-person at Executive Director's Office in Kearney, NE

Tuesday, July 16, 2024; 9:00 AM – 12:00 NOON CT

Technical Advisory Committee (TAC)

State of Wyoming
Barry Lawrence – Member
Jeremy Manley – Alternate
Michelle Hubbard - Alternate

State of Colorado
Kara Scheel – Member

State of Nebraska
Caitlin Kingsley – Member
Jennifer Schellpeper - Alternate

Upper Platte Water Users
n/a

Downstream Water Users
Brandi Flyr – Member
Jim Jenniges – Member
Dave Zorn – Member

Bureau of Reclamation (Reclamation)
Brock Merrill – Member

U.S. Fish and Wildlife Service (Service)
Matt Rabbe – Member

Environmental Entities
Rich Walters – Member
Amanda Hegg – Member
Bethany Ostrom – Alternate
Melissa Mosier – Alternate

Colorado Water Users
Jason Marks – Member

Executive Director's Office (EDO)

Jason Farnsworth, ED
Chad Smith
Malinda Henry
Justin Brei
Seth Turner
Patrick Farrell
Tim Tunnell
Libby Casavant
Ed Weschler
Quinn Lewis
Nicole Fijman

Other Participants

Dave Marmorek – PRRIP ISAC
Jennifer Hoeting – PRRIP ISAC
David Galat – PRRIP ISAC
Alan Kasprak – PRRIP ISAC
Michal Tal – PRRIP ISAC
Aaron Pearse – PRRIP ISAC
Abe Kanz – Crane Trust
Cheyenne Love - WWDO
Shuhai Zheng – NE DNR
Mark Porath - USFWS
Richard Belt – SPWRAP
Kevin Urie – CO Water Users
Matt McConville - HDR
Creighton Omer - HDR
Mark Pegg – UNL
Jonathan Spurgeon - UNL
Kirk Steffensen - UNL
Chris Pullano - UNL

WELCOME & ADMINISTRATIVE

Rabbe called the meeting to order at 9:02 AM Central Time.

AGENDA MODIFICATIONS

No TAC motion will be made on agenda item #3 Wet Meadows at this time.

Document: 00 – PRRIP TAC Quarterly Meeting Agenda and ISAC Summer Meeting Agenda_July 2024

MINUTES

Rabbe offered corrections to the minutes from the May, 2024 TAC meeting. His red-lined version was reviewed by the TAC, and all revisions were acceptable to the TAC. For clarity, Henry will revise the text on page 12, lines 486-488 of the DRAFT version as specified below:

Revision suggested by Rabbe: "Rabbe suggests we leave adjusted and non-adjusted metrics in the report indefinitely, given that the adjusted metrics remove documented whooping cranes from our dataset during times we did fly according to the protocol at that time, but doesn't account for potential whooping cranes that could have been detected within the adjusted 5-95% window, had we flown. "

Final version to read: "Rabbe suggests we leave adjusted and non-adjusted metrics in the report indefinitely. Non-adjusted and adjusted WC metrics are included to ensure all data collected following the current monitoring protocol are reported as well as limiting longitudinal reporting over time to data that fall within the 5-95% time window for standardization purposes."

TAC MOTION: *Walters moved, and Jenniges seconded a motion to approve the May 7-8, 2024 TAC Meeting minutes.* Minutes approved.

DRAFT Document: 05-7_8-24 PRRIP TAC Meeting Minutes DRAFT
Rabbe Revised Document: 05-7_8-24 PRRIP TAC Meeting Minutes DRAFT_mr
FINAL Document: 05-7_8-24 PRRIP TAC Meeting Minutes FINAL

PRRIP WATER PLAN

GERMINATION SUPPRESSION RELEASE RECAP

Turner presented an overview of the 2024 germination suppression release for TAC members. He put the release in context within annual year to date flows and compared release results across years. Marks asked if EA releases were also reducing deficit to target flows in addition to contributing to channel maintenance. Turner said yes, there are multiple benefits. Rabbe explained that EA releases made within designated FWS target flow periods count toward reducing deficits (refer to slide 2 of presentation for target flow periods). Farnsworth explained how the accounting works to keep the Program from double dipping and ensure the Program get credit for the contributions it is making. Scheel asked how much water remains in EA? Turner said almost 115,000 acre feet were released thus far in 2024. Probably down around 40,000 acre feet remaining (below 50,000). Farnsworth asked Merrill to comment on any additional water Program may be getting from Pathfinder. Farnsworth said that should contribute to recharging the EA in the fall. Tal said it would be interesting to see a cumulative figure that shows total amount above the germination suppression release target and how much time flow remains above channel inundation flow. She is interested in evaluating cumulative flows across years as a way to evaluate the total amount of work done by germination suppression flows. May be a useful way to assess effectiveness of water releases.

Presentation: 02 – 2024 Germination Suppression Presentation

WET MEADOWS

TAC POLICY RECOMMENDATIONS FOR GC

Rabbe started off with an introduction to the policy document drafted by Rabbe, Walters, Jenniges, and a group of LAC members. The draft lays out differing viewpoints on wet meadows and provides a path forward to move the needle toward a management phase and away from a continued science discussion on whooping cranes and wet meadows. Comments on the draft were provided by Colorado just prior to the meeting. Marks asked in any other comments were received. Rabbe said Henry had provided feedback as well. Jenniges said we have gotten tied up in WC use of wet meadows. Jenniges said the document proposes no change to land objectives but does recommend a change in how grasslands are managed, including wetlands. Rabbe mentioned different viewpoints about science on whooping crane use of wet meadows. He said we don't need to agree, just stay within the bounds of the already negotiated Program and move forward. Jenniges asked about whether there was a need to take this to the GC – if TAC and LAC agree on management recommendations, maybe just implement. GC might not care. Scheel ran through Colorado's comments on the document, they included:

- Definitional concerns about wet meadow swales. Who specifically is defining wet meadows? Scientific community or others? Jenniges said classification schemes usually don't classify both upland and wetland areas as wet meadows. Program combines over both elevations and vegetation types. Rabbe said there is not an agreed upon term across the board. Jenniges/Farnsworth said the land plan is clear about this definition, but not clear about the proportion of the tract that needs to meet the specified characteristics. Kanz asked why the Program moved away from sedge dominated vegetation types to define wet meadows. Rabbe said most of PRRIP meadows are too high above groundwater to support that. Farnsworth mentioned Mormon Island as archetypical wet meadow. Kanz asked if data on what constitutes a functional wet meadow would be helpful. Rabbe said the wet meadow hydrology report gives a good idea of functional hydrology.
- Program science did not point to a selection for wet meadows or grasslands. Worth recognizing the differing conclusions, or deleting this sentence all together. Rabbe and Jenniges agreed to cite work that comes to different conclusions, giving credit to differing results.
- Concerns about whether current practices, including full season grazing will still be possible. Jenniges said there will still be grazing in certain land tracts. Rabbe said rotating grazing around on a schedule might be a good idea. Walters said can provide a mosaic of grassland habitats at a complex.
- Removing sandhill cranes from the document may be warranted. Rabbe says important to document sandhills as they are named as "other species of concern" in Program document. It is worth noting the Program provides benefits for sandhills as well as other migratory birds. Scheel thinks eliminating this makes the document cleaner. Scheel says we have best success with GC when we stick to target species. Ostrom reminded of the Program objective of preventing future listing of non-target species. Flyr said that providing benefits to other species does not need to be negative. Scheel clarified that the concern is about getting tied into providing benefits to additional species. Jenniges said the concern is over a scope creep from target species to system benefits. Scheel asked for focus. Marks suggested including something at the beginning of the document that says, "While we acknowledge there may be benefits to other species, …..". Rabbe suggested something like, " The TAC recognizes that management of grasslands for whooping cranes also provides feeding and foraging areas for a variety of species".

Henry said the hybrid nature of this document as providing benefits for whooping cranes and other species is confusing. It is hard to envision how this is achieved in terms of changes in management if no clear plan for implementation is provided. Flyr suggested maybe start from management end to see what changes would actually be made, then defend or explain in terms of benefits provided. Farnsworth said he would need some clearer plan on how management provides benefits for both. Are there still grasslands we need to manage for whooping cranes? If so, identify those and make a recommendation on how they should be managed. Farnsworth also suggested the TAC make a strong case to GC that some tracts aren't really wet meadows. What does the TAC/LAC/GC want to do with those? Some are just buffers to the channel, managed for short structure. If pollinators are coming down the pipe, how do you manage buffer to provide benefits for pollinators at minimal cost. Jenniges said maybe a better approach is to tackle this tract by tract. Jenniges said this approach would be more work for management of tenants. Farnsworth said EDO could provide a management plan for Dippel and Johns tracts, one wet and one dry, to demonstrate how management for those would look different. Farnsworth requested Matt add information on species coming down the pipe. Merrill said that a better venture for the group would be to develop a specific management plan, with income losses and any additional costs, with justification for the changes. Ask the GC if they are on board and quit wordsmithing. Merrill supports a change in management now. Marks suggested hammering out the objectives to get some agreement as an introduction to this. Scheel said the issues aren't very clear. Program definition doesn't fit what is on the landscape. Jenniges said it does because there is extreme variability. Walters said stop making a grassland into a wetland. Not that hard to manage for multiple purposes with rotation of management. Flyr said good grassland management will not always be related to benefits to whooping cranes. Jenniges requested TAC members to edit the document to get the Purpose and Objective clarified. Scheel asked if we should be implementing the management changes in the attachment now. Jenniges said grassland working group could pick one parcel west, one parcel east, and get a plan together for each as an example. Zorn supports managing grasslands as grassland to provide best quality for as many species as possible. Ostrom says grasslands rely on the disturbance pattern to make it suitable for both whooping cranes and pollinators. Rabbe asked for edits/comments on the document by July 31st. TAC members can work from CO or clean version. Send revisions using "Reply all" to entire TAC. The group will take another crack at it. Scheel will be added to the author group.

EDO ACTION ITEMS:

- EDO put together a map that shows where wet meadows (grasslands) are that have gotten use by whooping cranes to provide to TAC/LAC grassland management work group.

TAC/LAC ACTION ITEMS:

- CO will work with authors to help clarify objectives and tighten up the document.
- TAC/LAC grassland management work group put together example management plans for one west (Johns) and one east (Dippel) tract to demonstrate how these might differ.
- TAC/LAC grassland management work group will use map that shows where wet meadows (grasslands) are that have been used by WC to focus management for short stature on these wetlands. Consider high diversity management everywhere else. Checks both boxes.

TAC MOTION: No motion was made on this agenda item at this meeting.

Documents: 03 – PRRIP grassland working group general management guidelines_07_02_24
03 – PRRIP grassland working group general management guidelines_07_02_24_CO comments

PRRIP SCIENCE PLAN

TERN/PLOVER PREDATOR MANGEMENT

In May the EDO presented a plan for incremental data analysis for evaluating effectiveness of predator management to help inform management decision moving forward in 2025. With the resignation of the project lead, these analyses have been put on the back burner for now. The EDO has prioritized analysis of whooping crane telemetry data to address Extension Big Questions 4-6 addressing the importance of flow on whooping crane stopover decisions. Henry asked the TAC for guidance on what to implement for predator management in 2025 given that results of formal analyses will not be available prior to budgeting and planning for 2025. She asked the TAC to consider what information will be needed to prepare for negotiation of a Second Increment. She presented options for predator management implementation in 2025 including continuing current management, reducing level of effort, and discontinuing additional predator management implemented at three experimental sites. The benefits and costs in terms of information generated were presented for each option. Jenniges thought that we had decided to keep the cameras on nests until we had evidence that predators were keying in on them. Henry said that nest survival analyses have not shown this to be the case. Jenniges said that results are site-specific, actions and results at one site may not provide a good estimate of what result similar actions may have at other sites. Marks asked about the costs associated with each option. Henry said costs can be estimated, in general reduced effort means reduced cost; but today she is asking the TAC to reflect on what changes will mean in terms of reduced information. Zorn said the EDO could use additional long-term data from CNPPID sites that have no additional management to add to 'control' sites. Rabbe said he was fine with continuing for another year and then pulling together the data. Jenniges and Ostrom agreed. Ostrom asked how adding a year of data gets us closer to answering our questions? Henry said in a highly variable system, additional data generally provides more power for analyses. By continuing camera monitoring we are better able to fate nests. We get more information on impact of predation on productivity, and whether or not the Program is below the limit on take by predation at each site as established by the USFWS. Without the nest cameras we have been unable to accurately assess how much productivity loss is due to predation (something we may have some control over) as opposed to uncontrollable (like weather). Marks asked if we would assume predation rates will be similar given the information gather by cameras in the First Increment Extension? Farnsworth said if the Program moves to a maintenance phase, then yes. Jenniges said cameras have also provided targeted information about predators that can be useful to specifically eliminate site-specific threats.

EDO ACTION ITEMS:

Continue current predator management and monitoring for 2025. Budget for 2025 to maintain current predator management implementation and monitoring using camera equipment already purchased.

Presentation: LTPP Predator Monitoring Management Options 2025

WHOOPING CRANE (WC) FLYOVER VS. STOPOVER WORK GROUP UPDATE

Farrell provided an update from the WC Stopover vs. Flyover Work Group to let the general TAC know what was discussed at our June meeting, how data QA/QC is going, and how far we are with putting some general descriptive statics for the dataset together at the work group's request. The work group was asked to provide input on the explanatory variables, the scale for evaluating these metrics, and eventually the analytical framework for addressing the question. Belt asked via meeting chat if the time of day plot shown in the presentation refers to the Platte only or all of the NE sand bed rivers. Farrell said that plot is for Platte stopovers only. Marmorek and Tal recommended the EDO do comparisons of

more general river characteristics across multiple systems. Henry said, yes, explanatory variables will be more general over the wider scale. The ISAC asked if time of day was important in previous analyses? Pearse said previous corridor-wide analyses (Baasch et al. 2019) did not include time of day as an explanatory variable for riverine roost site selection because the telemetry data were collected at 4hr intervals, not at the finer temporal scale we have now. Galat asked when will telemetry data stop being collected (limit of data continuity). Pearse said the Partnership will be putting more transmitters out in the summer of 2024 (Aug), then stopping. They will receive data until end of transmitter lifespans. Galat asked why not continue this valuable line of research? Pearse said they have the resources but need to assess whether they have already answered the question posed. They must evaluate if there is a need to collect more data on the same question or if there is a new question to necessitate continued tagging? Galat suggested continued data collection while analyzing the data, these are not mutually exclusive. Kasprak said all flyovers may not be the same, and asked if there are patterns in flyovers to discern if bird is actively looking to stop? Can you use velocity, path, altitude? Farrell said we have velocity and path, but altitude has not proven to be an accurate metric from our QAQC. Pearse said their group has tried to assess the accuracy of the altitude metric. Kasprak said if there is path information prior to stopover that shows a pattern indicative of a stopover, we might want to define that portion of the path as something different than a "flyover". Marks asked about the typical altitude when migrating? Pearse said there isn't a typical pattern. Ostrom asked why QAQC concluded the altitude data were not reliable? Farrell said many high velocity birds obviously in flight have altitude data that say those birds are underground. Henry said previous EDO pilot analysis of telemetry data to look at patterns of altitude to identify initiation of descent (initiation of a stopover) showed that there was no clear pattern of descent. Farrell talked about time increments between last flight location and first on the ground stopover location. Some stopovers have a last flight location within 10 minutes of the stopover, fine scale information as the bird approaches. But if we want to use all stopovers, we have many for which the last flight location is 20, 30 or even 60 minutes out from the stopover location. We will have to consider this as we decide on the scale over which we can analyze factors involved in stopover decisions. Galat asked whether time of day alone is enough of a signal to limit your investigation into the other items? Rabbe said information on time of day when most stopover decisions may help refine the temporal or spatial scale over which other variables may be important.

EDO/TAC ACTION ITEMS:

- Next WC Stopover vs. Flyover Work Group meeting on August 22nd.

Document: 04 – DRAFT EBQ#4 Data Analysis Plan
Presentation: 05 – WC Stopover Flyover Update

PRRIP WC MONITORING PROTOCOL

Henry presented the revisions suggested by the Service to the 2024 PRRIP Whooping Crane Monitoring Protocol for TAC consideration. The TAC was on board with the revisions.

TAC MOTION: Scheel moved, and Ostrom seconded a motion to recommend the FWS revised version of the 2024 Whooping Crane Monitoring Protocol to the GC for their approval. Motion carried.

EDO ACTION ITEMS:

- Finalize monitoring protocol with FWS revisions and send to the GC for approval in September.

Document: 06 – 2024 PRRIP Whooping Crane Monitoring Protocol – FWS Update

PALLID STURGEON (PS)

UNL DATA ANALYSIS UPDATE

Spurgeon gave an update on UNL's PS Habitat and spawning research. Objective 3 of the study is to document successful spawning in the Platte system. UNL has documented successful spawn in the form of release of eggs within the Platte system. Spurgeon said annual flow variability has been high this year. The passive receiver system was designed for the low flows experienced during the first two years. This year they have had a couple 60,000 cfs flows. The receiver system has held up pretty well in general, but blowouts due to high flows has limited receiver effectiveness around Salt Creek for example. This year we have a similar number of fish using the system as in past years. Regardless of this high flow year, the numbers, spatial and temporal distribution of detections has been similar to previous year. Spurgeon provided a general update for spring 2024 including number of fish tagged and passive receiver locations. UNL bolstered capacity at checkpoint locations in the upper portion of the reach because of gaps in data previously identified there. That has helped provide data for transitions from the Platte to the Elkhorn for example. Network is holding well. UNL is not actively tracking fish in the Elkhorn anymore, following PRRIP recommendations, but the passive system is still in place providing data for the Elkhorn. Pallids have been detected through the entire system including fish beyond the Loup into the central Platte. Pallids have been detected fairly regularly up near the Loup, now a couple have pushed past the Loup. Reproductive status is based upon last handling date, but status could have changed as time elapsed. Galat asked what proportion of tagged catalogue currently comes from UNL efforts. Pegg said about one-third. Henry asked about the axes for the Assessing Movement Table in the presentation. Y-axis is Movement FROM the indicated segment; Y-axis is Movement to the indicated segment. Tables presents raw data on the number of transitions made from one river segment (state) to another. Henry asked if these are unique detections? Spurgeon said yes, not counting multiple detections of same fish hitting receiver repeatedly or back and forth in out multiple times. Spurgeon said they are using a daily time step at this point. Suggestion might be to use a continuous time step multi-state model. Spurgeon said using smaller segments gave us too many parameters for the sample size, so paired it down to Missouri, Lower Platte below Elkhorn, Elkhorn, Lower Platte above Elkhorn, and Loup. Survival considered a nuisance parameter because based upon re-detection. Not really interested in that, and limited by re-detection (no redetection is assumed mortality, but this isn't true). PSI parameter is the probability of movement from one location to another. Spurgeon said they have the least confidence in this parameter. Would like to add another state to this. The results of the 2 state model do not included active detections yet. This is a daily time step from 2022 through 2023. Spurgeon asked why the probability of moving downstream was lower? Detection probability may be lower as move more quickly or, alternatively, individuals may dawdle on downstream movement. A new USGS scientist with Bayesian experience is expected to contribute to this modeling effort. UNL is thinking about adding a general tributary state change (non-specific as to whether state change involves the Loup or Elkhorn). Still working on getting dataset from USGS receivers and active tracking data integrated into this model. Spurgeon gave an overview of evidence for pallid spawning in the Platte system. Individual 22188 was followed from early 2024 through June 2024. Apex of upstream movement was in the Loup, suspected spawn in the Loup River. Fish recaptured and confirmed void of eggs. Galat asked if this fish was wild or hatchery origin? Spurgeon said hatchery. 30379 displayed back and forth movements typical of spawning behavior just downstream of Louisville receivers. This fish was followed by active tracking. Can't say for sure if spawned in Platte, but behavior is supportive. Ended with Pullano's least cost path

analysis using water surface extent polygon from HDR derived from lower Platte Lidar information. Least cost path trajectories determine the path of least resistance. Resistance must be user defined. Right now only distance is being used to inform least cost path analysis. Spurgeon said the assignment of a resistance value to grid cells will come from capture/detection information. Henry asked how this would work if not a random sample design, if not collecting conditions associated with non-capture or non-detection. Wouldn't all detections be associated with low resistance. Marmorek asked if the state change model is over the entire year. He asked if it would be useful to chunk into informative seasons. Spurgeon said this would add more parameters to estimate with fewer data resulting in non-convergence of the model. Marmorek suggested that at a minimum a figure demonstrating the raw data table by season would be informative for evaluating if transition probabilities differ from season to season. Marmorek cited work by DeLonay that suggests the single factor determining time of spawning was temperature, without a signal for flow.

Presentation: 07 – UNL_update_July_2024

LOWER PLATTE RIVER 2D HYDRAULIC MODEL SCENARIOS REPORT

McConville and Omer – HDR

McConville briefly reviewed the scope of the project. He said HDR is currently working on 2D hydraulic model development and calibration at 10 different discharges. Bathymetry is where we left off at the February Reporting Session. Omer discussed the process for filling in data gaps in bathymetry. He said they started with filling of shallow bathymetry gaps where had better information from color imagery analysis. Then HDR needed to fill in gaps in LiDAR data for deep bathymetry They wanted to avoid too much overlap with shallow bathymetry for which information was better, but not leave too many gaps (want a balance). They evaluated a 5-mile stretch at Camp Ashland for which they had width/depth relationship data plus UNL ADCP data at North Bend and Louisville as potential sources for informing deep areas for which bathymetry gaps existed. The width/depth relationships were deemed inappropriate for filling gaps. Decided to use conveyance to inform the process instead. From which, HDR was able to derive 148 deep bathymetry polygons to fill gaps throughout the reach. HDR is currently working on calibrating the model for flows from 1,000 to 45,000 cfs. That range includes August 2022 flow when LiDAR was flown plus flows that occurred close in time. Focus is on multiple flows under 10,000 cfs at UNL/Program request. Timeline for model delivery is August.

Marmorek asked about including temperature in HEC-RAS 2D model. McConville said he is not sure how HEC-RAS 2D handles the temperature variable. Omer said the existing data frame could potentially be integrated into a different modeling framework that handles temperature better. Galat said we don't have temperature at this scale (high resolution). Marmorek said the Program needs to know if their actions have any effect on temperature. Galat asked if something else might be done to know that. Casavant said may be a separate investigation. Question is what information we have to feed this effort. Farnsworth asked does temperature change with incremental depth. How many gages take temperature readings? Pegg said USGS gages at Louisville and maybe North Bend have temperature data and we have temperature information at all UNL receiver locations. Kasprak said, how do we look at temperature over a

broader temporal scale if we only have 1 year of LiDAR? Farnsworth asked about diurnal temperature flux. Pegg said there is about a 10-20 degree C diurnal variation. Rabbe asked about groundwater contribution to temperature, that will have an effect for which we may not have information.

Presentation: 08 – HDR PRRIP_LowerPlatteRiver_TAC

TAC MEETING REVIEW & WRAP-UP

MOTIONS

May 2024 TAC Meeting Minutes approved

2024 Whooping Crane Monitoring Protocol recommended to GC for approval

ACTION ITEMS

EDO ACTION ITEMS:

- EDO put together a map that shows where wet meadows (grasslands) are that have gotten use by whooping cranes to provide to TAC/LAC grassland management work group.
- Continue current predator management and monitoring for 2025. Budget for 2025 to maintain current predator management implementation and monitoring using camera equipment already purchased.
- Next WC Stopover vs. Flyover Work Group meeting on August 22nd
- Finalize monitoring protocol with FWS revisions and send to the GC for approval in September.

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- CO will work with authors to help clarify objectives and tighten up the document.
- TAC/LAC grassland management work group put together example management plans for one west (Johns) and one east (Dippel) tract to demonstrate how these might differ.
- TAC/LAC grassland management work group will use map that shows where wet meadows (grasslands) are that have been used by WC to focus management for short stature on these wetlands. Consider high diversity management everywhere else. Checks both boxes.
- Next WC Stopover vs. Flyover Work Group meeting on August 22nd.

Future calendar events:

- September 4, 2024 Virtual ISAC/TAC meeting, follow-up from July TAC/ISAC meeting
- October 22-23, 2024 TAC Meeting, Kearney, NE

TAC MEETING END

The TAC meeting adjourned at 12:07 PM Central Time.

Summer TAC/ISAC meeting followed beginning at 1:00 PM Central Time on Tues, July 16 through noon Thur, July 18.