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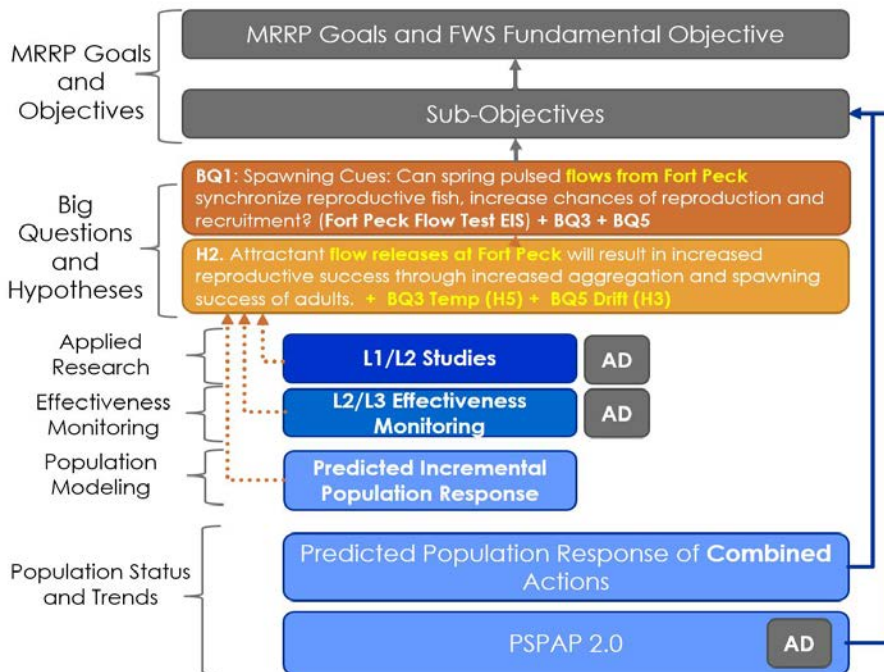
To: Joe Bonneau
Mark Harberg
Casey Kruse

From: Independent Scientific Advisory Panel

Re: Response to the current piping plover science agenda

Tuesday's forum on the piping plover was neither the time nor remote place for the ISAP to register an overarching concern about the current research and monitoring agenda for the piping plover and progress toward an adaptive management framework that can make use of the results of those efforts. For the third consecutive year, the report out on ongoing research, modeling, and monitoring for piping plovers offered evidence of narrow compliance with the 2018 Biological Opinion, but indiscernible progress toward supporting the needs of the Science and Adaptive Management Plan (SAMP). The presentation by the USGS of new dispersal data and analysis for plovers included findings with direct relevance to future management planning for the plover. However, the core "monitoring" data that were presented reflected a labor-intensive field effort in 2020 that showed little apparent project evolution in consideration of programmatic information needs. The data collection and analysis regime appear to be the same now as that carried out before the authorization of the recent BiOp and the pathbreaking SAMP that informed it. The single presentation slide referencing a planned revised-monitoring (hybrid) pilot project was uninformative.

The ISAP has inadequate information to present a detailed analysis of the complete scientific endeavor targeting the piping plover. But, this latest FSM summary of scientific activities adds to the perception that the current data collection and analysis effort lacks clear links to mid- and long-term information needs of resource managers, lacks a sampling design that can readily and defensibly be amended in response to budget constraints, and shows no sign of being responsive to a clearly articulated adaptive management action plan. The ISAP has emphasized these points in previous discussions with minimal response. That noted, the juxtaposition of Tuesday's presentations on piping plover with those on pallid sturgeon in the upper Missouri River the next day offers a useful contrast. Aaron Delonay's second PowerPoint slide, showing how research and monitoring for sturgeon can contribute to adaptive management decision-making under the Missouri River Recovery Program, provides context and rationale for the more research-oriented efforts targeting pallid sturgeon that are being performed in the upper river. That graphic (below) could serve as a useful guide for those carrying out the science program for the plover. A parallel diagram should be developed by the bird technical team to direct the design, implementation, and reporting of ongoing piping plover scientific program and monitoring elements in the context of adaptive management.



Graphic linking scientific activities and program objectives, working questions and hypotheses, and the scientific enterprise in support of adaptive management of pallid sturgeon on the upper Missouri River (from Aaron Delonay, USGS, FSM presentation on 4 November 2020).

The panel concerns outlined above should not be interpreted to suggest that the Corps' data-collection efforts for piping plover are largely misdirected or uninformative in directing specific conservation actions to the benefit of the birds on the river. However, the ongoing data-collection efforts have not been presented in the FSM as directly responsive to adaptive management of the birds. That state of affairs in part reflects that while the management process recognizes the river's dynamic effect on emergent sand bar habitat availability, there appears to be little ongoing activity to apply this understanding to adapt the management of piping plovers that reside both on and off the river. To the credit of the program, the FSM bird presentations demonstrated a quantitative characterization of the impacts of individual factors, including predation, vegetation management, flooding, and others on bird survival and reproduction. What appears lacking is an integrated model that clearly evaluates the relative importance of these factors as they affect the likelihood of achieving the management objectives. Such a model could, for example, determine tolerable levels of predation as a function of acreages of ESH that still allow the population targets -- numbers, fledge ratios, lambda -- to be met, or not. Similarly, the model could estimate the impacts of different degrees of vegetation management or numbers of nest relocations required to meet management objectives given the dynamic nature of ESH quantity and quality. Absent that kind of synthesis, the presentations at the FSM appear to underscore a "business as usual" approach to monitoring for the birds with minimal

attention directed at monitoring in support of adaptive management. It should be possible to describe decision points in the management process and explicitly link information needs to the key uncertainties that challenge resource managers in the design and implementation of a comprehensive approach to adaptive management of the birds on the Missouri River. The ISAP could engage with the technical team and MRRIC in the development of a modeling approach and further efforts to implement a monitoring scheme that advances program objectives.

The ISAP infers an apparent absence of a coordinated science and monitoring agenda for piping plovers that is fully responsive to MRRP information needs. The ISAP also notes the lack of any substantive response to the panel's review of the recently proposed and not-yet-implemented plover monitoring scheme. Based on our experience to date, the current piping plover adaptive management effort 1) lacks an implementable adaptive management agenda for piping plovers and their habitat, 2) promotes management decisions in the absence of an objective and clearly defined AM process, 3) lacks staffing that fully appreciates how the ecological needs of the listed species *and* the information needs of the resource managers need to be tied to program planning and budgetary constraints, and 4) lacks leadership that recognizes that piping plover science needs to be developed in service of adaptive management and makes decisions and advances the program accordingly. These issues need to be addressed and their resolution made clear in 2021.