

ISAP Evaluation of Draft Piping Plover Monitoring Plan Documents

MRRIC Bird Work Group Call

23 January 2020

Welcome and introduction

- Monitoring in relation to management objectives is the litmus test of adaptive resource management
- As we consider technical issues attending a monitoring approach, be aware that a piping plover “population” estimate on the Missouri River is dependent on a concurrent estimate of plovers in adjacent off-river circumstances
- Absent data on the status and trends of plovers both on and off river, it would be advisable to reconsider how monitoring of piping plovers and their habitats can meet MRRP information needs and assessment obligations
- A piping plover monitoring plan needs a place to land. Along with modeling and research, it must service the information needs of the functioning AM program that has not yet been fully articulated

ISAP identified four primary concerns

- 1) Stratum membership is assumed to be static, which may not match system dynamics
- 2) Monitoring plovers on the Missouri River requires an understanding of dispersal and other connections to the Northern Great Plains plover population
- 3) The lack of an adult plover banding program eliminates the possibility of estimating adult survival, which is an important population metric
- 4) A lack of clear links exists between the plover monitoring plan and the adaptive management framework stipulated in the *Science and Adaptive Management Plan*

Question 1

Will the spatial extent, temporal scale, and intensity of sampling proposed in the monitoring plan produce data that allow resource managers to assess whether the piping plover species objectives as described in the Science and Adaptive Management Plan (SAMP) and Biological Opinion are being achieved?

- Overall statistically sound approach
- Monitoring state variables -- adult count and fledge ratio -- are appropriate
- Consider more than two strata to improve precision
- Map units may change stratum membership across years
- Power analyses assume static stratum membership and may be inaccurate

Question 2

Are those same attributes of the monitoring plan adequate to allow resource managers to observe, analyze, and assess piping plover response to those Corps' management actions implemented under the MRRP and whether data collected using the monitoring plan is adequate to assess whether management actions under the MRRP are contributing to achieving plover species objectives?

- Adult census and sub-sampling for nest survival and fledge ratios define the monitoring efforts
- Management actions focus on ESH construction, vegetation management, and predator control
- Monitoring plan is not clearly linked to the SAMP
- Need for decision criteria that elicit specific management actions
- Nest-survival modeling should include additional variables that relate to management actions

Question 3

Will the monitoring plan produce data and observations that, when combined with those from outside the MRRP project area, allow FWS to assess the status of the piping plover population and ascertain its progress toward recovery?

- The plan provides annual estimates of adult breeding population size and fledge ratio
- This information helps understand the status and trend of plovers in the MRRP action area
- There is a mismatch between MRRP project area and the distribution of the Northern Great Plains plover population
- Monitoring inside and outside the MRRP project area is necessary to ascertain progress towards plover recovery

Question 4

Will the sampling scheme in the monitoring plan provide data that are compatible with historical data, such that analysts can compare and evaluate current and previous piping plover population dynamics and responses to habitat availability and proposed management actions in the project area?

- The plan provides overlap with previous adult “census” survey methods
- The plan implements an approach to adjust for observation error in the adult count, achieving more accurate estimates of fledge ratio
- The TPMP count has high bias (Shaffer et al. 2013)
- Fledge-ratio data collected historically and under hybrid plan may not be comparable because of the observation-error adjustment in the hybrid plan
- There is a trade-off between continuing old method (with known problems) versus developing a new method that is more rigorous but suffers from comparability

Question 5

Is the monitoring plan scalable, so that resource constraints can be accommodated, and the monitoring program will continue to provide adequate data to understand if species objectives are being met?

- Shaffer et al. (2013) showed high bias in TPMP counts, so further reduction in effort will result in greater bias
- Adjustments to the frequency of sampling map units is possible, but missed negative trends may be more likely than missed positive trends
- Unclear how a single “index” segment could represent the spatial and temporal dynamics of the entire system
- The two-phase sampling design should receive a minimum 5-year commitment to assess precision targets for state variables
- Evaluating statistical power for trend estimation will require a longer time commitment (~10 years or more)

Question 6

What are the scientific implications for population and habitat modeling of the decision regarding adult banding in this monitoring plan?

- Depends on opportunistic studies to provide estimates of adult mortality rate, a key parameter for projecting population growth and recommending ESH construction
- Banding is justified as basis for quantifying distribution, persistence, population dynamics, and incidental take on the Missouri River
- Failure to band impacts estimates of survival in an open population
- Banding can help reduce uncertainties and answer questions concerning how plovers respond to management actions

Question 7

Are there other comments or recommendations in addition to the answers to the above questions that you (ISAP) would make?

- Integrate the three documents into one that specifically relates data collection and analysis to decision-making in support of adaptive management
- Transform predator control and vegetation management actions to programmatic adaptive management actions
- Refocus proposed plover research agenda to relate specifically to monitoring in support of adaptive management
- Evaluate the effects of climate change and altered hydrology on representativeness and continued relevance of the current period of record
- Directly link data gathering and analysis to decision criteria and decision-making in support of adaptive management in ways that address the overlapping concerns and obligations of the Corps and FWS.