Summary of ISAP Evaluation of the 2019 Adaptive Management and Compliance Report

24 March 2020

Overview

- ISAP appreciates the thoroughness of data summaries and level of detail in the report and appendices
- State of knowledge
  - Piping Plover: good science, ready for AM
  - Pallid Sturgeon: studies are on-going, AM not feasible
  - Human Considerations: needs adjustment, should be included in plover and sturgeon sections

Overview, continued

- AMCR report format
  - Use Conceptual Ecological Models (CEM) to guide AMCR reporting
- Future AMCRs in two main sections (birds and fish)
- For each section, organize by current or anticipated management action in 3 steps:
  - For each action, present relevant data, analyses, and observations to understand state of the system (birds, fish, habitat, HCs) and include uncertainties
  - Relate findings directly to program targets and objectives
  - Describe suite of management options and implications for listed species, their habitats, and related HCs

Piping Plover

ESH habitat and management

- Good discussions at AMCR workshop
- Uncertainties about the overall system sediment supply and transport
  - Sustainability of created ESH?
  - Discrepancies between Northern and Southern ESH dynamics not explained
- A need for a clear decision process with respect to ESH construction/modification/augmentation, vegetation management, choice of delineated or modeled ESH, ESH on reservoirs, related HCs

The need for AM

- A full AM process needs to be implemented for the plover as outlined in the SAMP
  - Need clear population benchmarks (could better incorporate immigration and emigration)
  - Specific decision criteria for management actions are mostly absent (e.g., vegetation and predator management are currently more *ad hoc)*
  - New information comes from monitoring
  - Feedback loops to incorporate research and monitoring
- The AM process should also be used to guide *learning*
  - Design considerations
  - Replicate actions
  - Measurement of responses

Statistical uncertainty

- The AMCR workshop included discussions about uncertainties that challenge decision making
- Example: projections of standard and available ESH
  - Clearly contextualize hydrologic scenarios (Figures 2-11 and 2-12), including uncertainties and assumptions
  - Hydrologic scenario projections should address altered watershed hydrologic dynamics derived from recent land use and climate change
  - Need a clearer agreed-upon decision process for when to construct
  - With uncertainty, projections from 2020 onward broadly overlap
- A measure of uncertainty should be included for hydrological scenarios
  - Could be linked to decision criteria (e.g., what level of certainty is needed for action?)
  - Especially helpful if only a single hydrologic scenario is used
  - Helps to better evaluate trade-offs

Monitoring and research

- The AMCR highlights many information gaps and outlines research priorities
- The ISAP emphasizes that new information should be acquired through a structured monitoring program
  - Clear hypotheses should frame deficiencies (Table 2-24)
  - Prioritize management actions
  - Embed research (plover and its habitat) within the monitoring plan

Pallid Sturgeon

Pallid AM reporting

- Commend efforts of participating staff in obtaining new data and information under challenging conditions
- Need to ensure that sufficient resources are available to analyze and report existing data
- Use dashboard as vehicle to report Management Action (MA) performance in relation to management objectives
- Critical need to link anticipated results from MAs to species objectives, clearly defined benchmarks, and HCs

Pallid AM forecasting

- Need to predict outcomes of management actions in relation to species objectives
- Promise that the pallid sturgeon population model will provide projected outcomes of management actions sometime in the future
- Need for congruence between management actions and supporting models; each MA should map onto a corresponding model
- Sensitivity of pallid demographic model to age-0 survival

Management actions

- Likely effectiveness of IRCs in achieving population objectives remains to be assessed
- Need for spawning habitat remains to be demonstrated in relation to population management objectives
- No projected outcomes of flow management (Ft Peck, Gavins Point) on achieving population management objectives
- Population-level benefits from fish passage at Intake remain to be estimated

Pallid sturgeon AM

- Need to relate progress in evaluating Big Questions to CEMs and focus on projected outcomes of management actions in relation to species management objectives
- Focus the Evidentiary Framework on management, rather than as a general learning tool for pallid sturgeon
- Use global information concerning sturgeon biology and ecology to inform the MRRP recovery program

Human Considerations

Current treatment in AMCR

- HC “monitoring” relies primarily on meetings with stakeholders
  - Useful for planning actions, and to provide context for possible hypotheses and quantitative HC metrics, but not a substitute for measured HC effects to feed back into the AM process for bird and fish management actions
- Falls short of the HC guidance in SAMP
  - Reporting of the status of HC metrics/indicators is lacking
  - Specific HC monitoring and assessment studies need to be integrated with AM efforts for birds and fish
- Physical Monitoring of IRCs and SWH is taking place
  - Improved connections are needed between modeled effects, physical monitoring results, HC metrics of interest to stakeholders (e.g., reported shoaling incidents), and decision criteria for adjustment of management

HC monitoring and assessment priorities

- Metrics at spatial and temporal scale are needed that:
  - Address key stakeholder concerns regarding predicted vs actual impacts of IRCs and test flows.
  - Quantify baseline HC conditions of a more comprehensive set of HC indicators at sites of present and future bird & fish management actions
  - Distinguish changes in HC metrics that **are** due to management actions as distinct from those caused by:
    - Natural variability (e.g., unusual rainfall)
    - Changes in market conditions (e.g., prices, demand, supply bottlenecks)
- Communication of measured changes in HC metrics, including statistical tests of those changes, along with easily understood interpretation of those measured changes

Benefits of HC monitoring and assessment

- Increase Agency and MRRIC ability to directly assess whether, and to what degree, bird and fish management actions have impacted specific stakeholder interests
- Provide Agencies and MRRIC a *common* source of quantitative information on status and trends of HC conditions over the last several years in order to improve decisions on management actions
- Provide data for HC Dashboard and other means of communication
  - Built using metrics of key stakeholder concerns and HC metrics similar to those used in MRRMP EIS (e.g., # of days water elevations fall below water supply intakes)