



PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program) PRRIP Responses to 2025 Q1 Independent Scientific Advisory Committee (ISAC) Recommendations

Summary of Specific ISAC Recommendations:

1. Provide training in scientific integrity for all PRRIP participants.

- a. The ISAC recommends that PRRIP provide training in scientific integrity policy and the DOI Code of Scientific and Scholarly Conduct to all PRRIP participants including the GC, TAC, EDO, other PRRIP committees, and outside contractors.
- b. The 1-page code of conduct ([DOI 2024b](#)) developed by DOI is a concise summary of Section 3.9 of DOI (2024a; pages 22-24). Distributing this code of conduct to all PRRIP participants would be beneficial. It would also be valuable to have PRRIP members explicitly acknowledge that they have read and understand the DOI Code of Conduct.

PRRIP Response – The EDO will distribute the one-page DOI Code of Conduct to all Program participants and Program staff for review by participants and to make sure all are aware where to find the full document. The EDO will implement internal science integrity training for Program staff.

2. Appoint scientific integrity leaders for the PRRIP.

- a. Identify two Scientific Integrity Coordinators within the PRRIP, one from the EDO and one from the GC. The Scientific Integrity Coordinators can create training programs and provide guidance on how to report and investigate concerns about potential violations of scientific integrity policy.
- b. Establish a formal process for reporting, investigating, and addressing potential violations of scientific integrity.

PRRIP Response – The ISAC was established in part for this purposes. The following process will be used going forward to address any specific issues of scientific integrity:

- 1) Any issues raised internally regarding the scientific integrity of PRRIP science implementation, analysis, or application will be directed to the ISAC for review, discussion, and recommendation. Any ISAC review will be explicitly directed by the Governance Committee (GC) and the review process will be managed by the Program’s Independent Science Coordinator.
- 2) If the GC requests ISAC review, the ISAC will follow its Charter¹ and base its review on the following:
 - Independent opinion on the design and general implementation methodology of the science matter in question.
 - Independent opinion on analysis methods.
 - Independent opinion on conclusions and interpretations “in terms of the response (or lack of response to management interventions”², and as related to relevance to PRRIP key questions (i.e., Big Questions) and uncertainties important to PRRIP decision-making.
- 3) The ISAC will deliver its recommendations in written form and in presentation form to the GC and the EDO.

¹ PRRIP Final Program Document, Adaptive Management Plan, Attachment 6, Appendix I

² Ibid.



3. Continue to use Structured Decision Making (SDM) to assist with decision making for complex issues.

We recommend that the Program continue to apply SDM to elucidate tradeoffs between alternative choices, as is described in the Extension Science Plan. Using SDM enhances the scientific integrity of the program by allowing for informed and transparent decisions.

***PRRIP Response** – SDM will remain an important tool in the Program tool box, but the GC will need to analyze each situation to determine the most effective approach to decision-making.*

4. Continue to consider all credible sources of scientific information.

In the case of differences of scientific opinion, continue to follow the process recommended in ISAC (2023) to resolve differences.

***PRRIP Response** – The PRRIP is interested in all good science to inform decision-making, even science generated outside of the structure of the PRRIP. As directed by the GC, if issues arise between the conclusions and applications of PRRIP science and new science generated outside of the PRRIP or by PRRIP participants without PRRIP involvement (in whole or in part and speaking to PRRIP conclusions, management, or decisions), a process similar to that used related to the recent Ecotope paper will be utilized. This includes, when there are differences of scientific opinion, reaching out to authors to understand those differences.*

5. Continue to use best practices for data documentation, storage and release.

Formalize protocols for data accuracy, storage, and access to ensure full compliance with DOI standards. The ISAC recommends that all data continue to be properly documented with comprehensive metadata and a long-term storage and back-up plan. When data sets are released, they should be well documented, organized, and easily accessible. The program would benefit from annual reviews of data practices to ensure that the considerable investments in data collection continue to be available and useful for the Program.

***PRRIP Response** – The PRRIP intends to address this via the 2025 PRRIP Data Storage and Release Policy as drafted by the EDO.*

6. Encourage and fund professional development for EDO employees.

The GC should prioritize allocating sufficient budget within the Program to allow EDO scientists to continue their professional development, attend conferences, and publish articles in peer-reviewed journals. Doing so will help maintain the high quality of Program science and ensure scientific integrity.

***PRRIP Response** – Headwaters provides the Executive Director and staff for the PRRIP as an independent contractor and in that capacity provides an annual allotment of 60 hours of professional development time for all staff working on the PRRIP³. This will continue throughout the course of the Extension.*

³ Professional development time is not charged to the Program (i.e., overhead cost) unless staff are representing the PRRIP at a conference or similar event.



7. Review research-related laws and regulations.

If this isn't done already, review whether PRRIP research on humans and non-human animals is conducted in accordance with applicable laws and regulations.

PRRIP Response – *On behalf of the GC, the EDO conducts regular reviews of requirements for research on non-human animals and maintains the appropriate state and federal permits and authorizations.*

8. Improve the PRRIP web page search feature.

Improve the search feature in the Program document library to allow efficient and accurate access to PRRIP documents.

PRRIP Response – *This is being completed now as part of the PRRIP website refresh and update occurring via the work of PRRIP's website and database contractor.*



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

TO: PRRIP Governance Committee (GC)
FROM: Jason Farnsworth, Executive Director (ED)
SUBJECT: PRRIP Scientific Data Storage and Release Policy
DATE: May 8, 2025

This document outlines the Platte River Recovery Implementation Program's (PRRIP or Program) official policy for data storage and public release. It draws upon existing policies from the United States Fish and Wildlife Service (USFWS), United States Geological Survey (USGS), and United States Bureau of Reclamation (Reclamation), incorporating best practices and common themes to ensure responsible data stewardship. This policy aims to promote transparency, accessibility, and the long-term preservation of PRRIP data, ultimately contributing to better decision-making and enhancing scientific credibility.

This policy is uniquely positioned to address the specific needs and challenges of the PRRIP by providing clear guidelines for managing the diverse data generated by the Program, including biological, hydrological, environmental, and geographic data. By promoting data sharing and accessibility, this policy fosters collaboration among stakeholders, supports informed decision-making, and enhances the Program's scientific rigor and transparency.

1. Data Storage

1.1. Data Management

Data management will be a component of design/protocol development for Program science activities. The Program currently develops protocols for data collection and implementation, data management and QA/QC, and data processing and analyses.

Data collection and implementation protocols include the following:

- **Procedures implemented:** Documents the planning, development, and implementation of experimental design.
- **Types of data to be collected:** Specifies the categories of data that will be gathered, including physical, biological, hydrological, and environmental data. Provides definitions of metrics to be collected.
- **Data collection methods:** Describes the procedures and methodologies employed for data acquisition, ensuring adherence to established scientific standards and ethical considerations.
- **Brief description of data quality assurance and quality control (QA/QC):** Outlines procedures for data validation, error checking, and quality control to maintain data integrity and reliability with reference to the relevant QA/QC protocols.
- **Brief description of data management, data processing, and analyses** for which the data are intended, with reference to more detailed data management and analyses protocols as appropriate.

Data management and QA/QC protocols include the following:

- **Data quality assurance and quality control (QA/QC):** Outlines procedures for data validation, error checking, and quality control to maintain data integrity and reliability.



- **Data formats and standards:** Preference will be given to non-proprietary, open formats to maximize data sharing and long-term accessibility.
- **Metadata creation and management:** Final datasets will be distributed with metadata for documenting data, ensuring comprehensive descriptions of data content, context, and quality.
- **Data storage:** Outlines temporary (field data) and long-term storage locations for data.

Data processing and analysis protocols include the following:

- Data sources and steps for acquisition.
- Data processing workflow from raw format to dataset utilized in analyses with description of final analyzed datasets.
- Definitions of explanatory variables and methods for deriving these metrics.
- Definitions of response variables and methods for deriving these metrics.
- Description of analytical frameworks, methods for performing analyses including checking assumptions.

1.2. Data Security, Access Control, and Preservation

- **Data storage:** Data are stored and secured on one of two storage solutions.
 - Whooping Crane, Piping Plover, and Interior Least Tern data – stored in custom databases hosted by the Program’s website & database contractor.
 - Whooping Crane Telemetry data – The Whooping Crane Tracking Partnership provided satellite and cellular telemetry locations for whooping cranes for Program analyses. These data are stored on redundant physical servers at the Offices of the Executive Director in Kearney, NE and Lakewood, CO. Data are mirrored between servers.
 - Plover and Tern predator monitoring and management – Data stored on redundant physical servers at the Offices of the Executive Director in Kearney, NE and Lakewood, CO. Data are mirrored between servers.
 - Pallid Sturgeon data – Data collected by UNL and SIU are stored according to their respective university data storage policies. Data collected by UNL are shared with the Executive Director’s office via access to a SharePoint file maintained by UNL. These data are periodically updated by UNL and subsequently downloaded by the EDO. USGS/ACOE also share data with the Program via a SharePoint file, from which both UNL and the EDO download and store the data. SIU shares data through annual reporting of genetic samples received and results of analyses performed. All sources of Pallid Sturgeon data are stored on redundant physical servers at the Offices of the Executive Director in Kearney, NE and Lakewood, CO. Data are mirrored between servers.
 - LiDAR and imagery data – stored on redundant physical servers at the Offices of the Executive Director in Kearney, NE and Lakewood, CO. Data are mirrored between servers.
 - Working files – stored on redundant physical servers at the Offices of the Executive Director in Kearney, NE and Lakewood, CO. Data are mirrored between servers and subject to daily cloud backup.
 - Work products – final approved work products are archived on Program servers and stored/hosted on the Program’s public website.
- **Data Security:** Program data and working files are secured against unauthorized access, use, disclosure, disruption, modification, or destruction of data.



- **Data preservation:** Program data are hosted permanently to ensure long-term accessibility and integrity.

2. Procedures for Public Release

2.1. Data Release Principles

The PRRIP is committed to making data publicly available to the greatest extent possible, while adhering to legal, ethical, and security considerations. The following principles will guide data release decisions:

- **Transparency:** PRRIP will strive to provide clear and accessible information about its data holdings, including metadata.
- **Timeliness:** Data will be released as quickly as possible, following appropriate quality assurance and review procedures. PRRIP will immediately release remote sensing data and data associated with final peer reviewed work products. PRRIP will also work to quickly release data associated with ongoing monitoring and research activities, subject to internal QA/QC.
- **Accessibility:** Data will be made available in user-friendly formats and through accessible platforms.
- **Confidentiality:** PRRIP will protect sensitive information and ensure compliance with privacy regulations. Data will be carefully reviewed to identify and redact any sensitive information before public release.
- **Free of Charge:** PRRIP data will be made available to the public free of charge.

2.2. Data Release Process

- **Data Review and Approval:** Prior to public release, data will undergo a thorough review process to ensure accuracy, completeness, and consistency. This review may involve internal experts, external collaborators, and relevant stakeholders.
- **Metadata Completion:** Metadata will be created for each final dataset, providing detailed information about the data's content, context, and quality.
- **Data Preparation:** Data will be formatted for public release, ensuring it is in a user-friendly and accessible format (e.g., CSV, TXT).
- **Data Publication:** Data will be published through appropriate platforms, such as the PRRIP website, data repositories, or online data transfer portals (I.E. Google Drive).
- **Data Citation:** Clear instructions on how to cite PRRIP data will be provided to ensure proper attribution and acknowledgements.

2.3. Data Release Exceptions

While PRRIP is committed to data transparency, certain exceptions to public release may apply:

- **Sensitive Information:** Data containing personally identifiable information, confidential business information, or information that could compromise national security will not be released.
- **Proprietary Data:** Data owned by third parties or subject to intellectual property rights will only be released with the owner's permission.
- **Data with Restrictions:** Data with restrictions will be released according to the terms set by funding agencies or collaborators. In general – the Program will not release high resolution location data for target species due to concerns about potential for future disturbance.



3. Roles and Responsibilities

3.1. Data Stewards: Executive Director

- Responsible for the overall management and oversight of PRRIP data.
- Develop and implement data management plans.
- Ensure data quality, security, and accessibility.
- Oversee the data release process.

3.2. Data Producers: Executive Director's Office & Contractors

- Responsible for collecting, processing, and documenting data.
- Adhere to data management plans and best practices.
- Ensure data quality and accuracy.
- Create and maintain metadata.

3.3. Data Users:

- Responsible for using PRRIP data in a responsible and ethical manner.
- Cite PRRIP data appropriately.
- Respect data use restrictions and confidentiality.

4. Best Practices

The following best practices have been identified from reviewing data storage and release policies of the USFWS, USGS, and US Bureau of Reclamation:

- **Prioritize data management planning:** Including data management in protocol development is crucial for ensuring data quality, accessibility, and long-term preservation.
- **Use open data formats:** Open formats promote data sharing, interoperability, and long-term accessibility.
- **Ensure data quality through QA/QC procedures:** Implement robust quality assurance and quality control measures to maintain data integrity and reliability.
- **Preserve data in approved repositories:** Utilize trusted digital repositories for long-term data preservation and archiving.
- **Provide clear data documentation and metadata:** Comprehensive metadata are essential for data discovery, understanding, and reuse.

These best practices are integrated into the PRRIP Data Storage and Release Policy to ensure responsible data stewardship and maximize the value of PRRIP data.

5. Policy Review and Updates

This Data Storage and Release Policy will be reviewed and updated periodically to ensure it remains aligned with best practices, evolving technologies, and PRRIP's strategic goals.

6. Conclusion

This policy provides a comprehensive framework for responsible data management and public release within PRRIP, synthesizing best practices and guidance from established agencies like the USFWS, USGS, and Reclamation. By adhering to these guidelines, the PRRIP aims to promote transparency, accessibility, and the long-term preservation of its valuable data resources,



ultimately contributing to the program's success in recovering endangered species and rehabilitating the Platte River ecosystem. This policy is intended to be a living document and will be updated as needed to reflect changes in technology, policy, or best practices.

Relevant Agency Resources

1. Data Management | U.S. Fish & Wildlife Service, accessed January 24, 2025, <https://www.fws.gov/program/data-management>
2. Data Management | U.S. Fish & Wildlife Service, accessed January 24, 2025, <https://www.fws.gov/policy-library/274fw1>
3. Data Release | U.S. Geological Survey - USGS.gov, accessed January 24, 2025, <https://www.usgs.gov/data-management/data-release>
4. Preserve | U.S. Geological Survey - USGS.gov, accessed January 24, 2025, <https://www.usgs.gov/data-management/preserve>
5. U.S. Geological Survey (USGS) Public Access Policy - Data Cooperative - The University of Arizona, accessed January 24, 2025, <https://data.library.arizona.edu/data-management/us-geological-survey-usgs-public-access-policy-data>
6. Reclamation Manual | Bureau of Reclamation, accessed January 24, 2025, <https://www.usbr.gov/recman/>
7. The Data Release Process | U.S. Geological Survey - USGS.gov, accessed January 24, 2025, <https://www.usgs.gov/sciencebase-instructions-and-documentation/data-release-process>

Independent Science Advisory Committee (ISAC) Report on Platte River Recovery Implementation Program (PRRIP) Alignment with U.S. Department of Interior 2024 Policy on Scientific Integrity

Prepared by the ISAC

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February 7, 2025

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PRRIP Charge to the ISAC

2025 Q1 Independent Scientific Advisory Committee (ISAC) Discussion Question

Response Deadline: 12:00 PM Central Time on Friday, February 14, 2025

The Governance Committee (GC) requests the ISAC to deliberate and comment on the following Discussion Question. The ISAC will deliver to the Program both a written response to this Discussion Question and a summary presentation via virtual meeting in Teams to members of the Governance Committee (GC), Technical Advisory Committee (TAC), and Executive Director's Office (EDO). Responses to the Discussion Question should be based on review of provided pre-read reference documents and online material regarding the recently revised [Department of the Interior \(DOI\) Policy on the Integrity of Scientific and Scholarly Activities](#); ISAC member expertise with the implementation, evaluation, and use of science; and ISAC member experience with the implementation, evaluation, and use of science in other large-scale ecosystem restoration, endangered species recovery, and adaptive management (AM) programs similar to the PRRIP.

The GC requests a final set of ISAC comments no later than 12:00 PM Central Time on Friday, February 14, 2025. Please email the final comments in both Word and PDF formats to Chad Smith in the EDO at smithc@headwaterscorp.com. *A virtual meeting will be scheduled for the week of February 17, 2025 or February 24, 2025 for the ISAC to deliver a presentation on their findings.*

2025 Q1 ISAC Discussion Questions:

- 1) Does the implementation and use of PRRIP science align with the recently revised [DOI Policy on the Integrity of Scientific and Scholarly Activities](#)? If not, how could PRRIP processes be adjusted, revised, or otherwise improved to better align with the DOI policy?

Pre-Read Reference Materials:

- PRRIP One Page Summaries of Extension Science Activities (EDO document)
- PRRIP Independent Science Review, Peer Review, and Publication (EDO document)
- PRRIP Signatory Science Process Q&A (EDO document)
- PRRIP Scientific Peer Review Guidelines (from the Final Program Document – Adaptive Management Plan)
- 2013 ISAC Report to the Governance Committee (where the ISAC previously addressed the question “*Do all reports, documents, or other reference materials need to be published in refereed journals in order to be considered useful for making policy decisions?*”)

Executive Summary

The Independent Science Advisory Committee (ISAC) provides scientific review and advice to the Platte River Recovery Implementation Program (PRRIP). This ISAC report is in response to the “2025 Q1 Independent Scientific Advisory Committee (ISAC) Discussion Question.” Below we review the degree of alignment between the implementation and use of PRRIP science with policies and procedures described in the U.S. Department of the Interior’s Manual on the Integrity of Scientific and Scholarly Activities ([DOI 2024a](#)).

The ISAC commends the Program’s commitment to maintaining a high level of scientific integrity. The ISAC acknowledges PRRIP’s impressive history of conducting and implementing high quality science going back several decades. Overall, the ISAC finds that PRRIP practices uphold a high standard of scientific integrity, acknowledging that this assessment pertains specifically to the aspects of the program within the ISAC’s review scope and awareness.

The DOI science integrity policy offers valuable guidance for all PRRIP participants. As outlined in the DOI manual, scientific integrity is crucial not only for researchers conducting the science but also for decision-makers who rely on that science. The responsibility for integrity lies not just with scientists, but also with information users and policymakers, who must apply the information with the same level of integrity.

Summary of ISAC recommendations:

1. Provide training in scientific integrity for all PRRIP participants.

- a. The ISAC recommends that PRRIP provide training in scientific integrity policy and the DOI Code of Scientific and Scholarly Conduct to all PRRIP participants including the GC, TAC, EDO, other PRRIP committees, and outside contractors.
- b. The 1-page code of conduct ([DOI 2024b](#)) developed by DOI is a concise summary of Section 3.9 of DOI (2024a; pages 22-24). Distributing this code of conduct to all PRRIP participants would be beneficial. It would also be valuable to have PRRIP members explicitly acknowledge that they have read and understand the DOI Code of Conduct.

2. Appoint scientific integrity leaders for the PRRIP.

- a. Identify two Scientific Integrity Coordinators within the PRRIP, one from the EDO and one from the GC. The Scientific Integrity Coordinators can create training programs and provide guidance on how to report and investigate concerns about potential violations of scientific integrity policy.
- b. Establish a formal process for reporting, investigating, and addressing potential violations of scientific integrity.

3. Continue to use Structured Decision Making (SDM) to assist with decision making for complex issues.

We recommend that the Program continue to apply SDM to elucidate tradeoffs between alternative choices, as is described in the Extension Science Plan. Using SDM enhances the scientific integrity of the program by allowing for informed and transparent decisions.

4. Continue to consider all credible sources of scientific information.

In the case of differences of scientific opinion, continue to follow the process recommended in ISAC (2023) to resolve differences.

5. Continue to use best practices for data documentation, storage and release.

Formalize protocols for data accuracy, storage, and access to ensure full compliance with DOI standards. The ISAC recommends that all data continue to be properly documented with comprehensive metadata and a long-term storage and back-up plan. When data sets are released, they should be well documented, organized, and easily accessible. The program would benefit from annual reviews of data practices to ensure that the considerable investments in data collection continue to be available and useful for the Program.

6. Encourage and fund professional development for EDO employees.

The GC should prioritize allocating sufficient budget within the Program to allow EDO scientists to continue their professional development, attend conferences, and publish articles in peer-reviewed journals. Doing so will help maintain the high quality of Program science and ensure scientific integrity.

7. Review research-related laws and regulations.

If this isn't done already, review whether PRRIP research on humans and non-human animals is conducted in accordance with applicable laws and regulations.

8. Improve the PRRIP web page search feature.

Improve the search feature in the Program document library to allow efficient and accurate access to PRRIP documents.

Introduction

Below the ISAC reviews the degree of alignment between the implementation and use of PRRIP science with the Department of the Interior's Manual on the Integrity of Scientific and Scholarly Activities (DOI 2024a). Overall, the ISAC finds that PRRIP practices uphold a high standard of scientific integrity, acknowledging that this assessment pertains specifically to the aspects of the program within the ISAC's review scope and awareness.

Just prior to the submission of this report, the ISAC asked Chadwin Smith, Headwaters President, for an explanation why the PRRIP wanted the ISAC to review the Program's science practices. In a February 5, 2025 email he responded, "This Discussion Question was formulated by the PRRIP Signatories, and approved by the full Governance Committee (GC), in response to a request from the U.S. Fish and Wildlife Service (USFWS) for the ISAC to address a question like this as a look-ahead to future PRRIP science activities in the remainder of the Extension (as opposed to a look-back on past and current PRRIP science activities). The Discussion Question is intended to prompt ISAC thinking and discussion about whether PRRIP science processes and approaches, as understood by the ISAC, will generally continue to comport with the recently revised U.S. Department of the Interior Policy on the Integrity of Scientific and Scholarly Activities."

Section 3.2 of DOI (2024a) notes that the DOI manual is consistent with NSTC (2023) *A Framework for Federal Scientific Integrity Policy and Practice*. Both DOI (2024a) and NSTC (2023) use the following definition of scientific integrity: "*The adherence to professional practices, ethical behavior, and the principles of honesty and objectivity when conducting, managing, using the results of, and communicating about science and scientific activities. Inclusivity, transparency, and protection from inappropriate influence are hallmarks of scientific integrity.*"

The Department of the Interior manual on the Integrity of Scientific and Scholarly Activities (DOI 2024a) is 33 pages long. To streamline this report, we reference key parts of Section 3.6 of DOI

2024a (pages 3-10; policies) and Section 3.9 (pages 22-24; code of scientific and scholarly conduct) and briefly summarize the content of these components. However, the full text should be reviewed to understand the details of Sections 3.6 and 3.9 of DOI (2024a).

For each part of Section 3.6 of DOI (2024a), we answer the following four questions:

1. What PRRIP processes are applicable to this section?
2. Do these PRRIP processes align with the DOI policy in this section?
3. Does the implementation and use of PRRIP science align with the DOI policy in this section?
4. Does the ISAC have any recommendations for better alignment of PRRIP processes and this section of the DOI policy?

As described in Section 3.4 (page 2), the DOI policy on scientific integrity is applicable to all Department employees, outside parties (including contractors and other outside parties) when they are involved in Department scientific activities, communicate about these activities or use scientific information in making Department policy, management or regulatory decisions. Since the Bureau of Reclamation and US Fish and Wildlife Service have key decision-making roles on the Platte River and within the PRRIP, DOI policies on scientific integrity should generally be applicable to all those involved in the PRRIP, including the GC, TAC, other PRRIP committees, EDO and contractors. However, some components of DOI (2024a) apply only to DOI employees, and would not apply to non-DOI participants in the PRRIP.

We emphasize that the DOI science integrity policy includes valuable insights for all PRRIP participants. PRRIP policies that were included in the ISAC documents for this review relate primarily to the generation of high-quality information using a scientific process (e.g., EDO focused). The DOI policy also includes language about integrity in using high-quality science specifying that the onus is not only on the scientist to possess integrity, but also on information users and policy makers (e.g., PRRIP decision makers including the GC and other PRRIP participants like members of the TAC) to apply information with integrity. The DOI policy covers the entire scientific process, including implementation. Development of a Program scientific integrity policy that covers actions of science users, if currently absent, would better align PRRIP and the recent DOI policy.

In this report, the ISAC recommends several additions to improve alignment with the DOI code of scientific and scholarly conduct. While we recommend new training and identification of key PRRIP contacts with regards to scientific and scholarly conduct, the ISAC proposals are not intended to be prescriptive or onerous. One advantage of PRRIP is that it has generally avoided burdensome bureaucratic steps. Some ISAC members are concerned that some of the recommendations will add bureaucracy which could delay scientific progress. Thus, we encourage careful thought and planning before undertaking any of these recommendations. PRRIP should aim to continue to be streamlined, open and focused on the program goals through continued use of the SDM process.

Alignment of PRRIP Science with Section 3.6 of DOI (2024a)

Section A. Promoting a Culture of Scientific Integrity (pg. 3-4 in DOI 2024a)

Section A emphasizes promoting and modelling a culture of scientific integrity, not suppressing scientific findings, complying with the code of conduct in Section 3.9, fulfilling legal obligations to

Tribes, providing training in scientific integrity policy and providing a professional environment that is equitable, inclusive, safe and free from harassment and discrimination.

ISAC responses:

1. What PRRIP processes are applicable to this section?
 - a. Applicable PRRIP processes include meetings (e.g., GC, TAC, Science Plan Reporting Sessions, ISAC); the design, implementation and application of applied science activities; the documentation of results in various forms (presentations, reports, publications); peer review of draft PRRIP products; and decision making by the GC based on these scientific products.
 - b. The ISAC is not aware of identified collaborations with Tribes along the Platte River. Are there any Tribal lands or water rights within the PRRIP system that would necessitate such collaboration according to the DOI policy?
2. Do these PRRIP processes align with the DOI policy in this section?
 - a. **YES.**
 - In all of the meetings that the ISAC has attended since 2009, we have encountered a strong culture of scientific integrity, underpinned by high-quality work, and a free and open exchange of opinions on technical matters. Since 2023, all EDO-ISAC meetings have been made accessible to all stakeholders, promoting transparency (PRRIP 2024).
 - In reviewing draft documents, journal manuscripts and presentations, the ISAC has consistently observed a strong commitment to scientific integrity. Previous ISAC recommendations for improved experimental designs, monitoring, modeling or data analyses have been carefully considered by the EDO. These recommendations have either been implemented or, when not adopted, accompanied by a well-reasoned and transparent rationale.
 - The PRRIP peer review process is discussed under Section B below.
3. Does the implementation and use of PRRIP science align with the DOI policy in this section?
 - a. Geomorphology and Sediment Augmentation

We note the Program's use of external and independent peer review for documents related to geomorphology and sedimentation (e.g., 2024 Sediment Augmentation and Data Synthesis Compilation). We additionally recognize the open-ended nature of Requests for Proposals (RFPs) related to geomorphic restoration or monitoring (see, for instance, "Reconnaissance Level Investigation of Sediment Augmentation Alternatives" RFP from July 2024). While such RFPs define the broad scope of scientific inquiry, they are free from pre-ordained conclusions or management recommendations.
 - b. Whooping Crane, Least Tern and Piping Plover science

The Program emphasizes the need for external and independent peer review. After advisory committees, such as the Technical Advisory Committee and the ISAC, are given the opportunity to provide input in development of scientific products, key documents have been subjected to additional review. Some of the documents in relation to listed birds that were subject to Program and/or external review include [Tern and Plover Habitat Synthesis Chapters \(EDO, 2015\)](#) and Whooping Crane Riverine Roost Site Selection Update (EDO, 2024).
 - c. Pallid Sturgeon science

The findings from the UNL pallid sturgeon project have been openly shared with the PRRIP at both the Science Plan Reporting Session (SPRS), ISAC meetings, and GC meetings. Capacity challenges in achieving some of the original objectives have been candidly

discussed by the principal investigators and their graduate students, and hard decisions made collaboratively on what to prioritize. In the ISAC's view, this effort has demonstrated a healthy culture of scientific integrity.

4. Does the ISAC have any recommendations for better alignment of PRRIP processes and this section of the DOI policy?
 - a. Scientific Integrity Training: We don't know whether PRRIP provides training in scientific integrity and the [DOI Code of Scientific and Scholarly Conduct](#). Training would be a good idea for all participants in the PRRIP, since the results of PRRIP science are potentially used by DOI agencies for decision making. Some of the ethical aspects of DOI policy may already be covered by PRRIP participants who are members of professional associations (e.g., Ecological Society of America [Code of Ethics](#), American Ornithological Society [Code of Conduct & Ethics Policy](#), and American Geophysical Union [Scientific Integrity Code of Conduct and Professional Ethics](#)). Outside contractors, including university researchers, should either provide evidence of similar training in scientific integrity or participate in the PRRIP training.
 - b. PRRIP Orientation for PRRIP participants: The ISAC acknowledges PRRIP's impressive history of conducting and implementing high quality science going back several decades. While adopting industry-standard integrity training would meet formal requirements, giving new PRRIP members and EDO staff an orientation on the history and science of the Program could offer additional benefits. Specifically, such an orientation could a) familiarize new members with the extensive work already accomplished, providing valuable context for current and future work, and b) instill an appreciation for the culture of rigorous science that has been a cornerstone of the Program's success. Such an orientation could emphasize the importance of sound science in the Program's success to date and ensure that a strong culture of scientific integrity continues.
 - c. Some resources for training materials:
 - American Geophysical Union (AGU)
AGU Scientific Integrity Code of Conduct and Professional Ethics:
https://www.agu.org/-/media/Files/Learn-About-AGU/AGU_Scientific_Integrity_and_Professional_Ethics_Policy_document.pdf
 - Ecological Society of America (ESA)
ESA Code of Ethics <https://esa.org/about/code-of-ethics/>
 - American Ornithological Society (AOS)
AOS Code of Conduct & Ethics Policy
<https://americanornithology.org/about/governance/code-of-professional-conduct/aos-code-of-conduct-ethics-policy/>
 - National Science Foundation (NSF)
NSF web pages on Ethical Conduct of Research:
<https://new.nsf.gov/policies/responsible-research-conduct>
and Scientific Integrity: <https://new.nsf.gov/policies/scientific-integrity>
 - United States Geological Survey (USGS)
USGS Science Quality and integrity training: <https://www.usgs.gov/office-of-science-quality-and-integrity/training>

Section B. Protecting Scientific Processes (pg. 4-5 in DOI 2024a)

Section B of DOI (2024a) notes that scientific integrity fosters “honest scientific investigation, open discussion, refined understanding, and a firm commitment to evidence” (OSTP 2010), enables appropriate scientific dissent, includes peer review, and shields all steps in the implementation and use of science from inappropriate influence. All parties engaged in scientific activities need to: conduct their work free from reprisal or concern for reprisal; ensure the accuracy of scientific records; represent scientific results fairly and accurately; complete independent reviews to ensure scientific integrity; prohibit scientific misconduct; design, conduct, manage, review, approve, evaluate and report scientific activities honestly and thoroughly; conduct research on humans and non-human animals in accordance with applicable laws and regulations; and ensure recognition of and prompt actions to address and prevent violations of the policy on scientific integrity.

ISAC responses:

1. What PRRIP processes are applicable to this section?
 - a. As in Section A, this includes PRRIP meetings (GC, TAC, SPRS, ISAC); the design and conduct of applied science activities; the documentation of results in various forms (presentations, reports, publications); peer review of draft PRRIP products; and decision making by the GC based on these scientific products.
 - b. Management of EDO staff and contractors conducting applied PRRIP research.
 - c. The PRRIP Signatory Science Process Q&A (PRRIP 2024) provides a detailed explanation of the roles and responsibilities of the Executive Director (ED) including making recommendations on which science activities to prioritize, the criteria for selecting between the EDO and independent contractors for implementation, recommendations for peer review and publication, as well as transparency and objectivity in the science process. Appendix A of the Program Document (Scientific Peer-Review Guidelines, PRRIP 2006) describes the PRRIP peer-review process.
 - d. Internal processes implemented by the EDO and PRRIP contractors to ensure the accuracy of scientific records.
2. Do these PRRIP processes align with the DOI policy in this section?

For those processes on which the ISAC is able to comment, generally **YES**. The exception is that the ISAC is not familiar with (1) any PRRIP processes for training in scientific integrity and (2) a process for reporting and addressing possible violations of integrity.

 - a. As noted in Section A, all PRRIP meetings attended by the ISAC have a strong culture of scientific integrity, with high-quality work, and a free and open exchange of opinions on technical matters. Scientists are free to admit what they don't know, to correct earlier analyses that had technical flaws and to collaboratively brainstorm alternative approaches to challenging questions. In multiple conversations with Program scientists, we have never been told that anyone was being pressured to produce a particular conclusion. EDO staff have spoken of time pressures, which are a reality of having many tasks to complete within a tight schedule.
 - b. As noted in Section A, the ISAC has witnessed a high commitment to scientific integrity in written documents and in responses to our recommendations.
 - c. A summary of the PRRIP Science process was provided by Jason Farnsworth (PRRIP Signatory Science Process Q&A, PRRIP, 2024) - hereafter 'PRRIP Science Process document'. The ISAC feels that this document generally aligns with Section B of DOI (2024a).

- d. It is not clear how a PRRIP participant should report any concerns about possible violations of the DOI policy on scientific integrity or how alleged violations would be investigated and adjudicated.
 - e. ISAC (2013) evaluated the PRRIP peer review process (excerpt in Appendix A of this report), which has been more recently described in PRRIP (2024). ISAC (2013) concluded that the PRRIP peer review process is consistent with USFWS guidelines for information quality and peer review (USFWS 2012), as well as peer review guidelines from the Office of Management and Budget (OMB 2004), the National Research Council (2002), Meffe et al. (1998) and Turner (2009) [these references are listed in Appendix A of this report].
 - f. The ISAC's experience with PRRIP peer review processes since our 2013 report has been very positive, including how the EDO responds to peer review comments from the ISAC, peer review comments by hired external reviewers, and peer reviews by journals.
 - g. The ISAC does not review how data are checked and stored by the EDO or PRRIP contractors, nor the protocols used for monitoring animals (piping plovers, bird predators, whooping cranes, pallid sturgeon) so we cannot fully evaluate how these aspects the Program align with DOI policy (2024).
3. Does the implementation and use of PRRIP science align with the DOI policy in this section?
- a. Geomorphology and Sediment Augmentation
 - i. As mentioned above, the use of independent peer review for geomorphic and sediment-related reports demonstrates clear alignment with the DOI policy. The evaluation of the sediment augmentation in the J2 Channel serves as a strong example of the Program's commitment to an open, honest, and adaptive scientific process. Between 2017 and 2023, significant scientific analyses were devoted to the sediment augmentation strategy. The ISAC is encouraged by the rigorous efforts underway to design a thorough monitoring plan in response to the GC decision to suspend sediment augmentation for a period of time.
 - b. Whooping Crane, Least Tern and Piping Plover science
 - i. During the first increment, the Program conducted extensive research to address significant questions concerning the three avian species under investigation. Of the 10 Big Questions identified in the First Increment, nine pertained to these species. From 2009 to 2022, the ISAC performed annual evaluations of PRRIP studies designed to respond to these questions, and the Program made iterative adjustments based on the insights gained. The assessment conducted in 2019, detailed in the Extension Science Plan, consolidates the findings (PRRIP 2022, p. 14). Since 2009, ISAC reports have consistently commended the Program for its high-caliber scientific investigations with conclusions drawn from the most current data regarding these species.
 - ii. ISAC does not review whether birds are handled in accordance with applicable laws and regulations. It is our understanding that the EDO coordinates their study protocols and management of these species with the US Fish and Wildlife Service.
 - c. Pallid Sturgeon science
 - i. The PRRIP has funded work on pallid sturgeon, which is being carried out by the University of Nebraska at Lincoln (UNL) and Southern Illinois University (SIU). The EDO Science Coordinator (Dr. Malinda Henry) has served on graduate student committees to maximize the relevance of the work to PRRIP objectives, which in the ISAC's view is appropriate. The design and implementation of the pallid sturgeon work aligns well with the DOI policies described in Section B. Capacity challenges in implementing the original research design (e.g., active tracking of reproductively

- ready adults; capturing age-0 sturgeon) have been openly acknowledged, leading to collaborative decisions on which objectives should be the primary focus.
- ii. As with science activities for piping plovers and whooping cranes, the ISAC does not review how pallid sturgeon are handled or how data are stored. Protocols for surgically inserting telemetry tags into pallid sturgeon are consistent with those used by the Missouri River Recovery Program (MRRP), as described by USGS [here](#).
4. Does the ISAC have any recommendations for better alignment of PRRIP processes and this section of the DOI policy?
 - a. Our recommendation under Section A, namely to conduct training in scientific integrity policy and the DOI code of conduct, is also applicable to Section B.
 - b. Review research regulations: While ISAC cannot fully evaluate whether PRRIP research on humans and non-human animals is conducted in accordance with applicable laws and regulations, it may be useful for the Program to review these practices. We assume that EDO-conducted or supported vertebrate research is reviewed and approved by an Institutional Animal Care and Use Committee ([IACUC](#)), which is a requirement of the USDA for all research on vertebrate animals in accordance with the federal [Animal Welfare Act](#).
 - c. Establish a formal process for reporting, investigating, and addressing potential violations of scientific integrity.
 - d. Formalize protocols for data accuracy, storage, and access to ensure full compliance with DOI standards. The program would benefit from annual reviews of data practices to ensure that the considerable investments in data collection continue to be available and useful for the Program. The ISAC recommends that all data continue to be properly documented with comprehensive metadata and a long-term storage and back-up plan. When data sets are released, they should be well documented, organized, and easily accessible.

Section C. Ensuring the Free Flow of Scientific Information (pg. 5-7 of DOI 2024a)

Section C of DOI (2024a) contains policies to facilitate the free flow and dissemination of information; ensure that scientific findings and products are not suppressed, delayed or altered through inappropriate influence; give employees the option to review proposed DOI communications that use their research; encourage employees to communicate with the media in accordance with DOI policies; provide communications support to employees; efficiently resolve disputes regarding decisions to proceed or not proceed with media interviews and releases of public information; ensure that the work and conclusions of employees are accurately represented in DOI communications; adhere to DOI technical review procedures for scientific products (e.g., manuscripts for scientific journals, presentations for workshops, conferences and symposia); and ensure that responses to Congressional inquiries accurately represent the science.

ISAC responses:

1. What PRRIP processes are applicable to this section?
 - a. Peer review process, described in ISAC (2013; see Appendix A) and PRRIP (2024).
 - b. The PRRIP has made extensive efforts at public outreach, including on the PRRIP website, through publications summarizing program activities and in newspaper articles.
 - c. Management of EDO staff and contractors conducting applied PRRIP research.
2. Do these PRRIP processes align with the DOI policy in this section?
 - a. For those processes on which the ISAC is able to comment, **YES**.

- i. Peer review: As noted under Section B, the ISAC believes that the current PRRIP peer review process (see Appendix A) is adequate. The ISAC does not consider it worthwhile to have external peer-review of conference presentations, although internal review is valuable. Such external review procedures can be cumbersome for presentations; rather, a simple disclaimer in the talk slides (e.g., “preliminary results; not for citation or distribution”) may be sufficient.
- ii. Public communication: The ISAC doesn’t review the process by which information is communicated to the public. Public outreach information that we’ve seen has been accurate, engaging and well written.
- iii. Data releases: The ISAC commends that PRRIP data have been made available to outside entities and that this is noted on the PRRIP webpage (<https://platteriverprogram.org/scientists>).

While preparing this report, the ISAC asked Chadwin Smith about the PRRIP data practices. He replied in a 1/17/2025 email:

“Most data (particularly species monitoring data) are stored behind a password firewall on the PRRIP website which includes originally created databases for data storage. Other data (such as the LiDAR imagery) is stored on internal servers that we maintain for the Program. We use best practices for all data storage but don't have a document that explains it all. In terms of data release, all PRRIP data is public and fully available to anyone that requests it (with the exception of real-time species location data or anything else like that prohibited for release by the Service). We ask anyone requesting data to give us a written summary of what they are using the data for just so we can keep track of what's going on, but otherwise everything is open to anyone from the public who requests data.”

Given this statement, the ISAC feels that the PRRIP has an adequate plan for data storage and release. We make recommendations for improvements below.

- 3. Does the implementation and use of PRRIP science align with the DOI policy in this section?
 - a. With respect to peer review, **YES**.
 - b. With respect to data releases, the steps described in Chadwin Smith’s 1/17/2025 email appear to be in alignment with DOI policy, but data practices could be formalized and improved.
- 4. Does the ISAC have any recommendations for better alignment of PRRIP processes and this section of the DOI policy?
 - a. Our recommendation under Section A (to conduct training in scientific integrity policy and the DOI code of conduct) is also applicable to Section C.
 - b. With regards to data management and releases, see our recommendations under Section B.

Section D. Supporting Decision Making Processes (pg. 7-8 of DOI 2024a)

Section D of DOI (2024a) outlines policies to ensure the quality, accuracy, and transparency of scientific information used to support policy and decision making. This includes using well-established scientific processes, review by qualified experts (adhering to OMB and DOI guidelines for peer review), communicating scientific information appropriately and accurately, and making information used for policy decisions publicly available online. Section D also encourages

employees to express differing scientific opinions (including writing opinions that disagree with the data, interpretations or conclusions used for Department policy decisions) and provides a transparent mechanism for resolving differences. Finally, Section D requires consent of Tribal Nations and Indigenous Peoples prior to including Indigenous Knowledge in federal policy, research or decisions.

ISAC responses:

1. What PRRIP processes are applicable to this section?
 - a. As described on page 6 of the Adaptive Management Plan of the Program Document, and summarized in PRRIP (2024), the GC makes policy decisions to implement the Program and makes all decisions related to adaptive management, unless expressly delegated to the EDO. Thus, all processes that provide the GC with information to support their PRRIP decisions (by the EDO, TAC or ISAC) are applicable to Section D.
 - b. PRRIP peer review processes are relevant to Section D.
 - c. Processes used by the EDO and TAC to clarify and resolve differing scientific opinions apply to Section D.
 - d. With regards to release of scientific information, PRRIP documents are generally available on the PRRIP webpage (<https://platteriverprogram.org/program-library>).
2. Do these PRRIP processes align with the DOI policy in this section?
 - a. For those processes on which the ISAC is able to comment, **YES**.
 - i. The EDO, TAC and ISAC all work diligently to simplify technical information relevant to GC decisions. The form of reporting to the GC (e.g., in presentations at GC meetings and State of the Platte Reports) has evolved over time to present information more concisely, while maintaining accuracy.
 - ii. The EDO and TAC engages in a collaborative process with the GC to define Big Questions that are relevant to management decisions, develop a Science Plan for rigorously addressing those questions (PRRIP 2022), and annually report on progress through the Science Plan Reporting Sessions and State of the Platte Reports (e.g., PRRIP 2019). Note, the ISAC was unable to find the 2024 State of the Platte report online using standard web search practices.
 - iii. Consistent with other major Adaptive Management (AM) programs for rivers across North America¹, the EDO has utilized Structured Decision Making (SDM) to help the GC understand the consequences and tradeoffs among competing objectives for alternative management actions. Tradeoffs in AM experiments are discussed extensively by Walters and Green (1997).
 - iv. Dealing with differing scientific opinions, particularly information from studies done outside of the PRRIP, has been a challenge, as evidenced by the Ecotope article (discussed on pages 5-6 of PRRIP 2024). The ISAC (2023) addressed the issue of PRRIP vs non-PRRIP science. Our views are described in Appendix B, an excerpt from our 2023 report. Our conclusion is that all science potentially relevant to Program decisions, whether funded by PRRIP or from outside the Program, should be judged on its own merits. Where different conclusions emerge from different teams of investigators, the ISAC recommended that systematic comparisons

¹ Examples of major AM programs on rivers using SDM or decision analysis include the Snake River (Peters and Marmorek 2001), Columbia River (Alexander et al. 2006), Sacramento River (Alexander et al. 2018), Bridge River (Gregory et al. 2006), Missouri River (Fischenich et al. 2018), and the Glen Canyon Dam Adaptive Management Program (Runge et al. 2015).

should be completed to determine the cause of those differences (e.g., different definitions, data sets, assumptions or analytical methods). The Program assembled a 6-person group to conduct a systematic comparison of two different analyses of whooping crane connections to wet meadows (WEST and Ecotope), summarized in Collaborative Research Group (2024). That comparison helped to clarify which methodological differences did or did not lead to differing conclusions; ultimately, the choice of the radius of available locations was the most critical factor leading to differing conclusions.

- v. PRRIP peer review processes were discussed under Section B.
 - vi. While PRRIP documents are available in the [Program document library](#), the search feature is cumbersome. Very specific searches for a particular document return many unrelated documents.
 - vii. Our experience at GC meetings is that the approach used by the EDO, TAC and ISAC in informing GC decision makers is consistent with Section D of the DOI policy.
3. Does the implementation and use of PRRIP science align with the DOI policy in this section?
 - a. For those processes on which the ISAC is able to comment, **YES**.
 4. Does the ISAC have any recommendations for better alignment of PRRIP processes and this section of the DOI policy?
 - a. We recommend that the Program continue to apply SDM to elucidate tradeoffs between alternative choices, as is described in the Extension Science Plan. Using SDM enhances the scientific integrity of the program by allowing for informed and transparent decisions.
 - b. With respect to differences of opinion between PRRIP and non-PRRIP science (or within the PRRIP-science domain), we recommend that the Program continue to follow the ISAC (2023) recommendation to perform systematic comparisons, as was done for the Ecotope paper in Collaborative Research Group (2024).
 - c. Improve the search feature in the [Program document library](#) to allow efficient and accurate access to PRRIP documents.

Section E. Ensuring Accountability (pg 8 of DOI 2024a)

Section E of DOI (2024a) describes various procedures for ensuring that the scientific integrity policy is implemented, and that alleged violations of the policy are reported, substantiated, and efficiently reviewed by designated officials in the Department.

ISAC responses:

1. What PRRIP processes are applicable to this section?
 - a. Peer review (discussed under Section B and Appendix A) and TAC review of EDO draft products are two important accountability mechanisms for ensuring scientific integrity.
 - b. Our experience on the ISAC (going back to 2009) is that a high level of scientific integrity and healthy scientific dialogue has been maintained, which implies that the Program's culture and careful hiring practices have been sufficient to maintain accountability.
 - c. Beyond open dialogue and various levels of peer review, the ISAC is not aware of any formal procedures that are used within the EDO and its staff to ensure accountability on various aspects of scientific integrity.
2. Do these PRRIP processes align with the DOI policy in this section?
 - a. For those processes on which the ISAC is able to comment, **YES**.

3. Does the implementation and use of PRRIP science align with the DOI policy in this section?
 - a. For those processes on which the ISAC is able to comment, **YES**.
4. Does the ISAC have any recommendations for better alignment of PRRIP processes and this section of the DOI policy?
 - a. The 1-page code of conduct developed by DOI ([2024b](#)) is a concise summary of Section 3.9 of DOI (2024a; pages 22-24). It would be valuable to distribute this code of conduct to the GC, TAC and EDO, and to have the GC discuss whether parts or all of it should be applicable to all people involved in the PRRIP. It would be valuable to have PRRIP members explicitly acknowledge that they have read and understand the DOI Code of Conduct.
 - b. Identify two Scientific Integrity Coordinators within the PRRIP, one within the EDO and one within the GC. These individuals can create training programs, provide guidance on how to report concerns about potential violations of scientific integrity policy, and recommend a process for resolving these concerns.

Section F. Protection (pg 8-9 of DOI 2024a)

Section F of DOI (2024a) describes policies and procedures to ensure the protection of employees and other covered parties from retribution, retaliation or reprisal. Section F also describes hiring and whistleblower protection.

ISAC responses:

1. What PRRIP processes are applicable to this section?

The ISAC isn't aware of what policies and procedures exist with the PRRIP and EDO that are relevant to Section F of DOI (2024a). We therefore are unable to comment on the alignment of the Program with Section F of DOI (2024a).

Section G. Professional Development for Department Employees (pg 9-10 of DOI 2024a)

Section G of DOI (2024a) describes various processes to encourage DOI employees and other parties to interact with the broader scientific community, through publication in peer-reviewed journals, attendance at conferences and other meetings, serving as peer reviewers or editors, and participating in professional scientific organizations

ISAC responses:

1. What PRRIP processes are applicable to this section?
 - a. EDO staff are encouraged to publish the results of their work in peer-reviewed journals, and have done so to an impressive extent, given the time-consuming nature of preparing, submitting and revising manuscripts on top of regular duties.
 - b. EDO staff are encouraged and supported to attend conferences, and have helped to organize such meetings (e.g., 2024 [meeting of the National Conference on Ecosystem Restoration in Albuquerque NM](#)).
 - c. The ISAC is not familiar with what policies exist within the EDO for supporting other forms of professional development.
2. Do these PRRIP processes align with the DOI policy in this section?

For those processes on which the ISAC is able to comment, **YES**.

3. Does the implementation and use of PRRIP science align with the DOI policy in this section?

For those processes on which the ISAC is able to comment, **YES**.

4. Does the ISAC have any recommendations for better alignment of PRRIP processes and this section of the DOI policy?
- Individual Development Plans: The career goals and development needs of each EDO scientist are unique; some might want to learn the intricacies of publishing, others might want to present at a conference, others might want to get additional training related to their position. If it's not already offered, the EDO might consider developing individual development plans that are tailored to each EDO scientist's goals and knowledge gaps.
 - Professional Development Budget: The GC should ensure the allocation of sufficient budget with the Program to allow EDO scientists to continue their professional development, attend conferences, and publish articles in peer-reviewed journals. Doing so will help to maintain the high quality of Program science and ensure scientific integrity.

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Appendix A – Excerpt from ISAC 2013 Report to PRRIP (pages 11-13)

E) Do all reports, documents, or other reference materials need to be published in refereed journals in order to be considered useful for making policy decisions?

Reference Documents –PPRIP Adaptive Management Plan (2006), Appendix A – Peer Review Guidelines including Attachments A-E; PRRIP – ED OFFICE FINAL 02/06/2008, Peer Review Process Flow Chart

No. The primary attribute of PPRIP products for them to be useful in making policy decisions should be the quality of the work informing the decision, not the outlet where they are disseminated. Rigorous independent scientific review (ISR) can help ensure that decisions and policy making reflect the best scientific knowledge available. Meffe et al (1998) identified seven criteria of an ISR to meet this goal:

1. the best available scientific knowledge is brought into the decision- or policymaking process;
2. the influences of bias and special interests are minimized in environmentally relevant decisions or policy making;
3. science is separated clearly from nonscientific issues;
4. decisions or policies are achieved in an open and transparent manner;
5. all relevant information is considered and evaluated;
6. all conclusions drawn are consistent with the available scientific information, and assumptions are made explicit; and
7. the risks associated with different interpretations of data or alternative management decisions are articulated

The ISAC feels that the current PPRIP peer review process meets these criteria. We recommend that the Program consider three nested types of Program documents, and two levels of peer review (for document types 2 and 3, as illustrated in Figure 1):

1. All program documents (green box in Figure 1).
2. Draft documents subject to PRRIP independent peer review (red box in Figure 1). This Program review process should only be applied to the subset of documents which have important implications for management decisions. Programmatic peer review should continue *in parallel* with production of executive summary reports, so that it does not slow down learning and feedback to the GC. The Program's current emphasis on rapid data analysis and evaluation, motivated by the annual AMP reporting sessions, is essential. It's more critical to have peer review of draft final reports as you move from a one thumb to two thumbs conclusion on the big questions, and is less critical for scratchy head or one thumb conclusions.
3. Subsequent publication of a journal version of a subset of the final, peer-reviewed documents (blue box in Figure 1). Manuscripts submitted for publication should be those which:
 - a. are appropriate for journal publication (i.e., the paper presents innovative information that significantly advances science/management, or provides insightful information about currently important issues that are of more than regional interest) and

- b. are potentially valuable to other recovery / restoration programs; or
- c. if published would have incremental benefits to the Program in terms of greater “weight” in future decisions, including Biological Opinions.

Some studies that are not decision-critical could be submitted to a journal for publication (with Program approval), without having to go through prior independent peer review by PRRIP (i.e., arrow in Figure 1 from the green box to blue box, bypassing the red box). For studies which the Program would like to ultimately publish, it would be prudent to consider this ultimate objective in how the scope of work is crafted for a given study. The ISAC wishes to emphasize that the internal peer review process in the red box of Figure 1 can be as stringent, or more stringent, and more relevant than the peer review process applied by many journals. Other recent papers emphasize the limitations of the journal peer review process (e.g., Conroy et al. 2006, Bohannon 2013). This point was also raised by OMB (2004):

“Publication in a refereed scientific journal may mean that adequate peer review has been performed. However, the intensity of peer review is highly variable across journals. There will be cases in which an agency determines that a more rigorous or transparent review process is necessary. For instance, an agency may determine a particular journal review process did not address questions (e.g., the extent of uncertainty inherent in a finding) that the agency determines should be addressed before disseminating that information. As such, prior peer review and publication is not by itself sufficient grounds for determining that no further review is necessary.” [page 22 in OMB 2004]

“Section III(4) requires agencies to provide reviewers with sufficient background information, including access to key studies, data and models, to perform their role as peer reviewers. In this respect, the peer review envisioned in Section III is more rigorous than some forms of journal peer review, where the reviewer is often not provided access to underlying data or models.” [page 25 in OMB 2004]

The process outlined here is consistent with that recommended by the National Research Council (2002; pg. 44-45) who suggested that “... increasing ‘project magnitude’ and ‘project risks’ warrant an increasing degree of independence of review, with an increased depth and complexity of review, and an increased scope and diversity of the expertise of the reviewers”, which is illustrated in Figure 2.

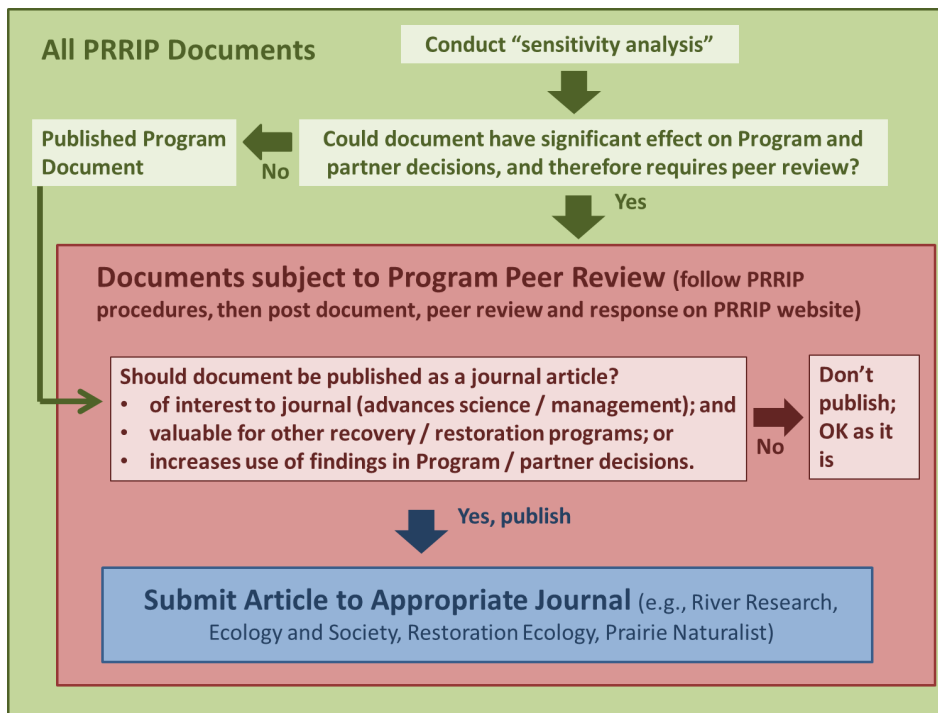


Figure 1. ISAC’s recommended framework for thinking about the different types of Program documents, and the criteria for deciding if they warrant Program review or publishing.

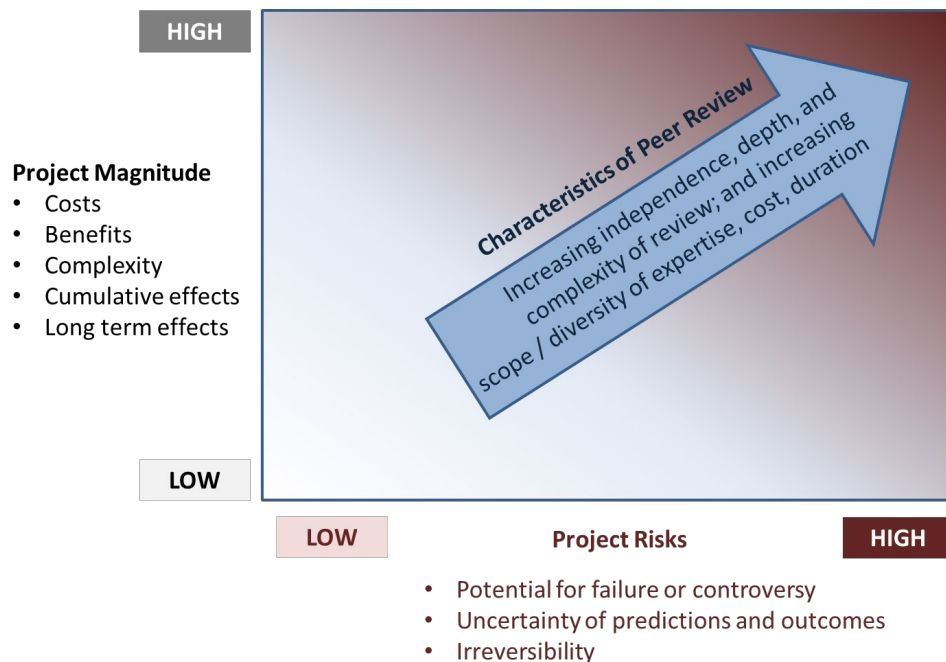


Figure 2. Illustration of how increasing *project magnitude* (y-axis) and *project risks* (x-axis) warrant a higher level of independent peer review (i.e., darker shades further along diagonal arrow) with an increasing degree of independence, depth, and complexity of the peer review, and an increasing

scope / diversity of reviewer expertise. In the lower left hand part of the diagram (low project magnitude and risks), independent peer review is likely not required. Adapted from Figure 4.2 on page 45 in NRC (2002).

F) Does the ISAC recommend any improvements to the Program’s peer review process?

See above answer to question E. We do not recommend any major improvements to the Program’s peer review process, but we do recommend improved documentation of this process. Our evaluation of Program documents indicated that the present peer review process (shown below in Table 1) has improved over what was published in PRRIP Adaptive Management Plan (2006), Appendix A – Peer Review Guidelines including Attachments A-E. Consequently, we recommend that Program ‘Scientific Peer- Review Guidelines’ be revised to reflect current practices as outlined in Table 1. PRRIP guidelines as shown in Table 1 are consistent with peer review guidelines from OMB (2004) and USFWS (2012). They are also consistent with the recommendations for peer review in Meffe et al. (1998), National Research Council (2002) and Turner (2009). If the Program peer review follows PRRIP guidelines and authors respond thoroughly to peer reviewer comments in the judgment of the EDO (acting like an editor of a journal to assess comments from multiple reviewers), then Program peer review will be adequate.

An effective peer review process occurs when the peer reviewers thoroughly understand the work, and the investigators thoroughly respond to the peer review. We believe that face to face dialogue between peer reviewers and investigators to clarify questions is always beneficial. It increases the reviewers’ understanding of the details of what work was done, and minimizes the risk of having peer reviewers misunderstand the scope and consequently recommend approaches that are not relevant to the objectives or have already tried and rejected.

Table 1: Comparison of PRRIP peer-review process with OMB (2004) and USFWS (2012). Source: EDO, based on documents supplied by ISAC.

OMB Final Information Quality Bulletin for Peer Review December 2004	
OMB Peer Review Guidelines Feature	Present in PRRIP Peer Review Strategy?
Peer reviewers selected based on expertise, experience, and skills	Yes
Avoid conflicts of interests with peer reviewers	Yes
Reviewers are independent and did not participate in development of work product	Yes
Peer reviewer report includes verbatim copy of comments	Yes
May commission independent entities to manage peer review process and selection of peer reviewers	Yes (Atkins)
Develop clear “charge” or plan of work for peer reviewers	Yes (specific scope of work)

U.S. Fish and Wildlife Service Information Quality Guidelines and Peer Review June 2013	
Service Peer Review Guidelines Feature	Present in PRRIP Peer Review Strategy?
List all peer reviewers	Yes
Results of peer review maintained in the public record	Yes
Can utilize management assistance for peer reviews	Yes (use Atkins, which is a firm under contract through 2017 to provide similar services to DOI)
Peer reviewers are external and independent	Yes
Select the best, most qualified peer reviewers with expertise in the subject area	Yes
Can review draft documents	Yes (PRRIP does review draft documents and process allows changes in response to peer review)
Can review final documents (peer review comments evaluated and addressed by Service staff)	Yes (PRRIP does review final documents and process allows comments to be evaluated and addressed)
Utilize standing panel evaluations when necessary	Yes (ISAC)
Keep a running record of peer reviews to be completed or underway; update every six months	Generally (keep an annual record, could do a six-month update)
Responses to peer review comments are included in the official record and made available to the public	Yes

References Cited in Pages 11-13 of ISAC (2013)

Bohannon, J. 2013. Who's afraid of peer review? Science (342): 60-65.

Conroy, M.J., P. Beier, H. Quigley, M.R. Vaughn. 2006. Improving the Use of Science in Conservation:

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Meffe, G.K., P.D. Boersma, D.D. Murphy, B.R. Noon, H.R. Pulliam, M.E. Soule and D.M. Waller. 1998. Independent scientific review in natural resource management Cons. Biol. (12):268-270.

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<http://www.nap.edu/openbook.php?isbn=030908508X>

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<http://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2005/m05-03.pdf>

Turner, R.S. 2009. Best Practices in Peer Review Assure Quality, Value, Objectivity. J. Nat. Grants. Mgmt. Assoc. 17(1): 43-47.

U.S. Fish and Wildlife Service. 2012. Information Quality Guidelines and Peer Review. June 2012. 15 pp. http://www.fws.gov/informationquality/topics/InformationQualityGuidelinesrevised6_6_12.pdf

Appendix B – Excerpt on Non-Program Science from ISAC 2023 (pg. 9-11)

Summary of the Process for Science Funded by the Program. The PRRIP has developed a strong collaborative process to ensure high quality applied science that directly addresses big questions and management hypotheses linked to Program decisions. This process involves review of science proposals, reports and draft manuscripts by various entities, potentially including the TAC, ISAC, outside experts and peer reviewers selected by journal editors. Some applied science products (e.g., modeling analyses of the effects of different combinations of management actions on habitat metrics) may be very relevant to Program decisions, and have been reviewed by the ISAC, but due to their content or length aren't suitable for publication in peer-reviewed journals. The ISAC (2013) provided some guidance to the PRRIP in how to determine which documents require peer review, and which are / aren't suitable for journal articles (Figure 1). Our recommendations have generally been followed by the Program. State of the Platte Reports have provided the GC, TAC, ISAC and public with a concise synthesis of applied science related directly to big questions, and the ISAC has performed multiple reviews of each State of the Platte Report as well as key component publications cited therein.

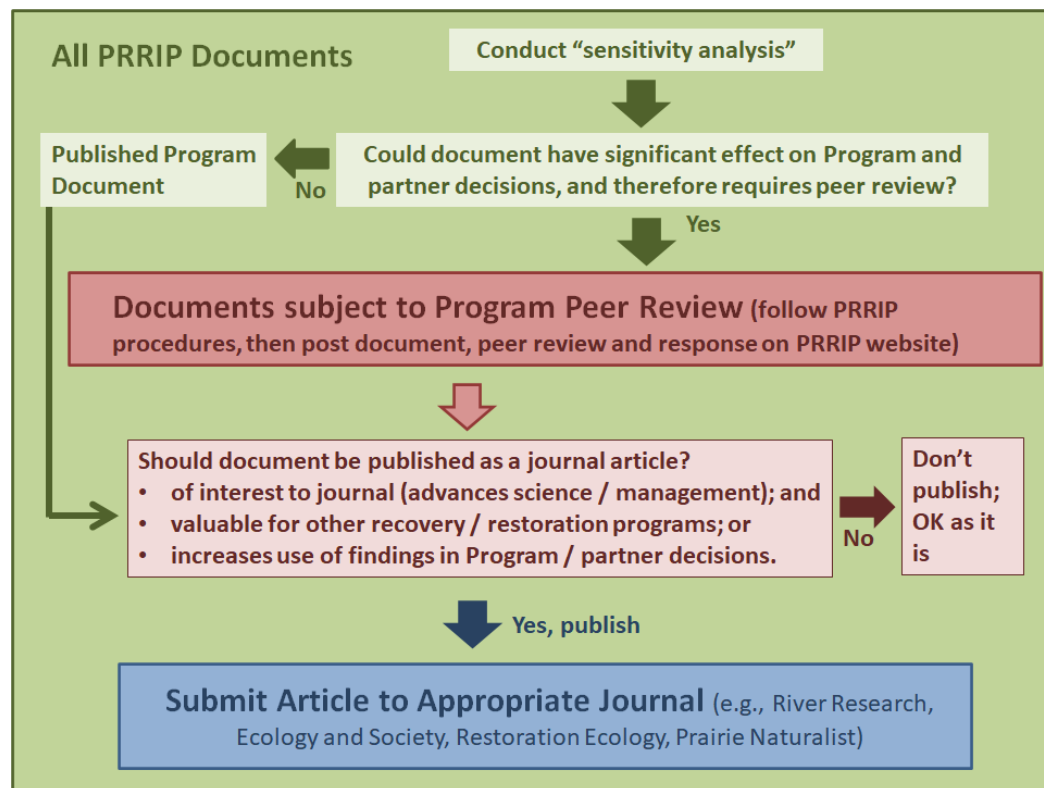


Figure 1. ISAC's recommended framework for thinking about the different types of Program documents, and the criteria for deciding if they warrant Program review or publishing. Slightly modified from ISAC (2013) for clarity.

Concerns. The Program is now wrestling with how to meld science funded by the Program with other science developed and published outside of the Program ("non-Program science"). There are at least three concerns which have emerged: how to determine the relevance to the PRRIP of non-Program science, how to deal with multiple competing data sets and analytical approaches, and lack of collaboration. With respect to the issue of relevance, there are concerns that non-Program science may not have proceeded through the same set of collaborative scoping and review steps as Program science, may not be well integrated with Program science, and may consequently be less relevant to PRRIP decisions. The second concern is that while some non-Program science may address questions that are directly relevant to Program management decisions, scientists outside the Program may have used different datasets and analytical approaches to address these questions, so the GC may be presented with a confusing array of competing datasets, models and conclusions. The third concern is that science efforts outside the Program which proceeded without collaboration may have misinterpreted or misapplied Program data, methods and conclusions. The overarching consequence of these concerns is the GC may be reluctant to make a decision because the science is not unanimous or certain. As in the past, it may be helpful for the GC to apply Structured Decision Making to reconcile competing recommendations. Often, differing assumptions, data sets and analyses affect the magnitude of predicted outcomes across all actions, but don't affect the relative performance of different actions (e.g., Marmorek and Peters 2001).

Recommendations. The EDO, in collaboration with the TAC, proposed that the best way to deal with the above concerns is to have non-Program science proceed through the same systematic process as Program science. The ISAC feels strongly that this is an infeasible solution to the above-described concerns, and would likely backfire, leading to accusations that the Program is attempting to control how science is done outside of the Program. Instead, each potentially relevant peer-reviewed publication should be judged for its actual relevance, data quality, analytical methods and defensibility of its conclusions, *regardless of its origin*. The PRRIP should strongly encourage (but not attempt to force) strong collaboration between Program and non-Program scientists, including data sharing agreements, systematic comparisons of alternative data sets and analytical approaches, joint conferences, and co-authorship of journal papers and reports. The Governance Committee should ask all program entities to make the Program aware of new scientific endeavors and products that may have value and relevance to Program activities, science, and decisions, and to provide periodic updates. All Program products (e.g., technical reports, journal papers, State of the Platte Reports) should systematically consider and review **all** relevant peer-reviewed publications, regardless of their origin, and rigorously weigh the strengths and weaknesses of each publication (or reference a recently completed literature review). In particular, the State of the Platte Report should be a comprehensive synthesis of all published science directly relevant to PRRIP Big Questions and management hypotheses. This will provide a helpful synthesis for other entities, including the U.S. Fish and Wildlife Service when they prepare their Biological Opinions. Remaining uncertainties generated by competing analyses that may affect management decisions can form alternative hypotheses to be systematically evaluated by Program science and/or structured decision making.

Useful Guidelines. Meffe et al. (1998, cited in ISAC 2013) identified seven criteria of an independent scientific review to ensure that decisions and policy making reflect the best scientific knowledge available: 1) the best available scientific knowledge is brought into the decision- or policy making process; 2) the influences of bias and special interests are minimized in environmentally relevant decisions or policy making; 3) science is separated clearly from nonscientific issues; 4) decisions or policies are achieved in an open and transparent manner; 5) all relevant information is considered and evaluated; 6) all conclusions drawn are consistent with the available scientific information, and assumptions are made explicit; and 7) the risks associated with different interpretations of data or alternative management decisions are articulated. These criteria are also helpful in guiding how Program scientists synthesize all available information for Program management decisions. Ideally, non-Program scientists would also follow these criteria.