



## **U.S. Fish and Wildlife Service Data Management**

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# **Public Access to Results of U.S. Fish and Wildlife Service-Funded Scientific Research**

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Prepared for:

U.S. Department of the Interior

By U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service's data are the foundation of conservation success. As Service employees, we will produce data that are rigorous, discoverable, documented, accessible, and secure.

## Version History

<b>Version Number</b>	<b>Release Date</b>	<b>Notes</b>
1.0	August 2023	Submitted to OSTP for review
2.0	December 2024	Will be simultaneously submitted to OSTP and posted on FWS.gov

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## Purpose

This document describes the U.S. Fish and Wildlife Service's (FWS) plan to increase public access to: 1) scientific and scholarly publications produced with FWS funding as a primary purpose of and required deliverable for that funding or by FWS staff during duty hours, 2) the underlying scientific data associated with those publications, and 3) any other scientific data produced with FWS funding that is a required deliverable for that funding or by FWS staff during duty hours unassociated with any publication in accordance with the Department of the Interior's (Department) Public Access Plan (2023), White House Office of Science and Technology Policy (OSTP) requirements (2022), and the Evidence Act (2018).

## Background

The mission of the FWS is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.<sup>1</sup> We strive to responsibly steward public data, treating it as a strategic asset (274 FW 1, 1.1) that advances our mission and informs decision-making. We recognize transparent information management and enhanced public access are essential for improving organizational efficiency and fostering public trust. Producing, using, and communicating science in a manner that aligns with the Department Of Interior [Code of Scientific and Scholarly Conduct](#) (305 DM 3.9) is integral to successfully achieving the FWS mission. This Code sets expectations and standards for important topics including but not limited to data management, data quality, responsible publishing, and public access.

In 2013, OSTP required public access to Federally funded research through the [Memorandum on Increasing Access to the Results of Federally Funded Research](#). Two additional Acts of Congress have further increased public access to federal research and data, [Foundations for Evidence-based Policymaking Act of 2018](#) (Evidence Act) and the [Geospatial Data Act of 2018](#). On August 25, 2022, OSTP issued a new memorandum titled, [Ensuring Free, Immediate, and Equitable Access to Federally Funded Research](#). In accordance with this memo, the Department released a Public Access Plan that requires its Bureaus to each develop a public access plan.

Therefore, the FWS will submit a public access plan to the Department to:

1. Ensure scholarly publications and the supporting data resulting from FWS funded research are publicly accessible without an embargo on their free and public release;
2. Establish transparent procedures that ensure scientific and research integrity is maintained in public access policies; and,
3. Coordinate with the Department to ensure timely and equitable delivery of Federally funded research results and data.

## Scope

This plan applies to scientific and scholarly activities (e.g., data and publications) produced in whole or part with FWS funding per [2024 Departmental Memo 305 DM 3](#). This includes FWS funding awarded under certain financial assistance awards (generally cooperative agreements)

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<sup>1</sup> U.S. Fish and Wildlife Service, undated, <https://fws.gov/about/mission-and-vision>, accessed August 15, 2023

as well as contracts. These scholarly publications and data may be produced in whole or in part by the FWS, its Programs and Offices, contract employees, financial assistance recipients, other contractor entities, and volunteers. This includes both official and independent scholarly publications authored or co-authored by FWS employees during their official duty hours or while using government equipment. This plan applies unless otherwise prohibited by law, regulation, or policy.

## Out of Scope

Research data that are outside of the scope of this plan include:

- Data from secondary sources (i.e., secondary outside data) over which FWS parties do not have control.
- Partner data used in scientific research but not funded by FWS, and not proprietary.
- Per privacy laws (e.g., [NIST SP 800-53 Rev 5](#)), data assets that include personally identifiable information, alone or in combination with other publicly available information that may identify an individual.
- Proprietary data assets without permission for release.
- Data assets designated as [Controlled Unclassified Information](#) (CUI).
- Other data assets whose release is limited by law, regulation, contract, agreement, national security requirements, or policy (e.g., classified data or dual-use research data).
- Data covered by a [FOIA exemption](#), or data subject to legal proceedings (e.g. law, court actions such as legal holds, regulations, contracts, agreements).
- Federal source code: the release of federal source code is governed by OMB's [Federal Source Code Policy](#) and DOI's Open Source [Software Policy](#).
  - While out of scope, increasing access to the code that supports scientific data aligns with the intent of public access requirements.

This scope acknowledges and abides by memoranda, policies, regulations, and laws as of the date of finalization and is therefore subject to change.

## Definitions

For the purposes of this Plan, the following terms are defined:

**Accepted manuscript** - A manuscript that has been accepted for publication that includes all modifications from the peer review process but may not include the final formatting of the Version of Record (VoR).

**Data** – Refers to FWS funded scientific data. FWS Manual Chapter 274 FW 1 defines data as “recorded information, regardless of form or the media on which they are recorded ([Coordination of Federal Information Policy, 2019](#)). This information can be unprocessed or processed and represented as text, numbers, or multimedia.” However, for the purposes of this Public Access Plan, data references fall under OSTP’s definition of “scientific data,” which is described as “the recorded factual material commonly accepted in the scientific community as of sufficient quality to validate and replicate research findings. Such scientific data do not include laboratory notebooks, preliminary analyses, case report forms, drafts of scientific papers, plans for future

research, peer-reviews, communications with colleagues, or physical objects and materials, such as laboratory specimens, artifacts, or field notes.”

**Extramural Research** – Research performed by outside institutions in whole or in part with FWS funds to meet an FWS need.

**Independent Works** – Defined in FWS Manual Chapter 117 FW1 as scientific information written by an FWS employee during official duty hours or written based primarily on knowledge acquired during duty hours; also, scientific information based on scientific activities that the FWS funded in whole or in part, that includes the author’s FWS position title, or refers to the author’s FWS duty station in the author affiliations. These works are not official FWS works, can be published in any outlet, and must include the disclaimer that: *“The findings and conclusions in this article are those of the author(s) and do not necessarily represent the views of the U.S. Fish and Wildlife Service.”*

**Information Product** – Compilation of scientific knowledge such as facts, data, or interpretations in any medium (e.g., print, digital, web) or form (including textual, numerical, graphical, cartographic, and audiovisual) for release and dissemination by the FWS or a non-FWS entity to an external audience. The term information product may be referred to by other terms used in the Bureau, including but not limited to scientific publication, data product, software product, and map product.

**Intramural Research** – Research performed by scientists working directly for the FWS.

**Proprietary Data** – Proprietary data are information for which the rights of ownership are restricted so that the ability to freely distribute the data is limited.

**Scholarly publication**- Refers to peer-reviewed research articles or final manuscripts published in scholarly journals, and may include peer-reviewed book chapters, editorials, and peer-reviewed conference proceedings published in other scholarly outlets that result from Federally funded research (OSTP, 2022).

**Secondary Outside Data** – Data that is collected by someone other than the primary user. Primary data, by contrast, are collected by the investigator conducting the research.

**FWS-funded** – Supported by any FWS-affiliated funds including appropriated and reimbursable.

## Requirements

This plan identifies existing tools and updated practices aligned with the 2022 OSTP memorandum that affect both FWS intramural and extramural activities funded by the FWS upon its effective date of December 31, 2025. Specifically, this plan identifies the tools and practices that enable FWS employees to ensure that an electronic copy of either the final

accepted manuscript or the version of record, and the underlying data be available free-of-charge for public access, prior to or at the publication date. These practices and future policy updates will ensure data that support a scholarly publication is released commensurate with or prior to the release of the publication. As the FWS continues to develop supportive data infrastructure for employees, data (as defined for this document), even if not supporting a scholarly publication, will be released as soon as practicable after acquisition, unless the USFWS determines that a demonstrated special circumstance prevents the data from being made publicly available (e.g. sensitive species locations). Specific legal exemptions to public access are described in 274 FW 1, 1.11B.

This plan also affirms FWS's requirement that data management plans (DMPs) are provided for all new FWS research and science efforts performed by FWS employees during duty hours. FWS DMPs must describe how data collected with Federal funds will be released to the public free-of-charge. This DMP requirement has been effective since October 2020 for both FWS intramural scientists and FWS-funded extramural scientists.

## Applicability

Relevant FWS policies will be updated in accordance with this plan by December 31, 2025. Upon the effective date of those policy updates, any new requirements will apply to scholarly publications of research results and digital data arising from FWS funding, unless otherwise prohibited by law, regulation, or policy. These information products and data must be provided to the public free-of-charge.

## Authority

Pursuant to the 2013 [Memorandum on Increasing Access to the Results of Federally Funded Research](#), the 2018 [Foundations for Evidence-based Policymaking Act of 2018](#) (Evidence Act) and the [Geospatial Data Act of 2018](#), and the 2022 [Ensuring Free, Immediate, and Equitable Access to Federally Funded Research](#) memo, federal data must be made publicly accessible. The 2022 memo further required that all Federal bureaus engaging in research must establish a Public Access Plan. This FWS Public Access Plan is established in accordance with:

- [FWS Manual Chapter 274 FW 1 Data Management](#) requires all data collected, acquired, or distributed by or for the FWS to have a data management plan, be documented with metadata following an applicable metadata standard, stored in a Data Governance Board (Board) approved repository, and be made publicly accessible by default.
- [FWS Manual Chapter 274 FW 2 Adopting, Developing, and Maintaining Data Standards](#) outlines the process and requirements for developing, adopting, and maintaining data standards for FWS use. A list of active and retired FWS Data and Metadata standards is maintained on the FWS Data Management SharePoint site (FWS Data Management, 2024). The policy also clearly mandates the use of adopted data standards, when applicable, to all FWS data and metadata.
- [FWS Manual Chapter 212 FW 7 Scientific Integrity and Scholarly Conduct](#) addresses the FWS's policy to ensure scientific and research integrity of employees who engage, supervise, manage, or apply the information resulting from scientific and scholarly



activities. This policy established scientific and scholarly ethical standards, a code of conduct, and processes for handling alleged violations.

- [FWS Manual Chapter 117 FW 1 Policy Review Guidance for Scientific Publications](#) addresses the FWS's policy to not review scientific publications for policy purposes. This policy requires authors use a disclaimer on the publication and provide a copy of the draft publication to their supervisor to ensure the supervisor is aware of it. Supervisory policy review or approval of the scientific information is not implied or required; however, the use of duty hours to advance independent works does require supervisory approval.
- Information Disclosure Policy from [Memorandum 061994](#) signed May 9, 2016, requires the scientific data and analyses that are foundational to FWS rulemaking for the Endangered Species Act be made available on Regulations.gov concurrently with the corresponding Federal Register publication. Rulemakings include proposed and final listings, critical habitat designations, delistings, reclassifications, section 4(d) and 4(e) rules under and section 10(j) rules., reclassifications, section 4(d) and 4(e) rules under and section 10(j) rules.
- [2 CFR § 200.315 Intangible Property](#) provides the Federal awarding agency the right to reserve a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use any work that is subject to copyright and was developed, or for which ownership was acquired, under a Federal award for Federal purposes, and to authorize others to do so; and pursuant to 2 CFR § 200.315 Intangible Property, the Federal government has the right to: (1) Obtain, reproduce, publish, or otherwise use the data produced under a Federal award; and (2) Authorize others to receive, reproduce, publish, or otherwise use such data for Federal purposes.

## Further Policy Development

FWS plans to update or will review the following policies to identify any needed updates in the context of increasing public access to federally funded research:

117 FW 1 [Policy Review Guidance for Scientific Publications](#)

203 FW 1 [FOIA Roles and Responsibilities](#)

204 FW 1 [Privacy Program](#)

212 FW 7 [Scientific Integrity and Scholarly Conduct](#)

274 FW 1 [Data Management](#)<sup>[OOB]</sup>

301 FW 2 [Acquisition Planning](#)

301 FW 4 [Procurement Procedures](#)

310 FW 1 [Policy, Responsibilities, and Terms for Personal Property Management](#)

310 FW 2 [Acquisition of Personal Property](#)

310 FW 6 [Management Controls for Personal Property](#)

- 515 FW 1 [Responsibilities for Grants and Cooperative Agreements](#)
- 517 FW 10 [State Wildlife Grants - Mandatory Subprogram](#)
- 517 FW 13 [Multistate Conservation Grant Program](#)
- 518 FW 1 [WSFR - Authorities and Responsibilities](#)
- 518 FW 8 [National Survey of Fishing, Hunting, and Wildlife-Associated Recreation](#)
- 519 FW 2 [Compliance Requirements Summary](#)
- 520 FW 1 [Federal Grant Coordination](#)
- 521 FW 1 [Eligibility Standards For Wildlife Restoration](#)
- 521 FW 2 [Eligibility Standards For Sport Fish Restoration](#)
- 521 FW 3 [Coastal Wetlands Conservation Grant Program](#)
- 521 FW 4 [Endangered Species](#)
- 524 FW 1 [North American Wetlands Conservation Act \(NAWCA\) Grants](#)
- 525 FW 1 [Neotropical Migratory Bird Conservation Act \(NMBCA\) Grants](#)
- 530 FW 1 [Authority and Responsibilities - International Activities](#)

## Overview of FWS Repositories

The 2022 OSTP memo outlined key recommendations for improving public access to federally funded research. Within the U.S. Fish and Wildlife Service, many of these recommendations can be addressed by updating expectations for using our three primary repositories and their catalogs, where applicable. FWS has two repositories which are "FWS approved" repositories (ServCat and ScienceBase) and one anticipated to be approved in the future (ECOSphere).

### ServCat (Service Catalog)

ServCat serves as a central hub for preserving and sharing information related to FWS. This repository ensures publicly accessible FWS data appears on Data.gov and supports a range of metadata and file types, including PDFs, machine-readable formats, and tabular data. ServCat plays a crucial role in the FWS's commitment to public data access.

### ScienceBase

ScienceBase is a collaborative data management platform that provides public access to machine-readable data and metadata. While FWS primarily uses ScienceBase for data from its Science Applications program, the platform is available to all FWS programs through an MOU with the USGS. ScienceBase allows scientists to contribute new and original data content in any file format, providing advanced access and integration capabilities for certain types of formats.

ScienceBase is designed to integrate within the FWS data management lifecycle and offers features for project teams to develop and manage data securely and to facilitate final review and approval for public release.

## ECOS/ECOSphere

ECOS/ECOSphere is a data management platform that supports and streamlines FWS workflows. ECOSphere meets industry standards for data management and provides modern security features. It houses both public-facing species data and internal regulatory workflows. While ECOS is transitioning to ECOSphere—a more secure and expanded version—the platform is not yet approved as a formal FWS repository. By 2025, ECOSphere is expected to share data with the Department of the Interior’s Enterprise Data Inventory (EDI), which is harvested for Data.gov.

Data sharing across the FWS repositories involves several platforms and policies aimed at increasing public access and transparency:

- **Data Harvesting to EDI:** Data from ECOS is currently harvested to the Department of the Interior Enterprise Data Inventory (EDI), which is shared through Data.gov. ECOSphere, the enhanced version of ECOS, is planned to integrate with EDI by 2025. In contrast, ScienceBase does not currently send data to EDI. ServCat contributes data and metadata to EDI but excludes scholarly publications and their associated metadata.
- **Data Management Standards:** Policies 274 FW 1 and 2 define how data is managed and shared across the FWS, emphasizing compliance with current standards. To support implementation, the FWS has developed a set of [minimum metadata standards](#) for use across all approved repositories. These standards, guided by the FWS Data Science Committee’s Metadata Implementation Workgroup, will ensure consistent and efficient data discovery and sharing. FWS also has a formal process to approve data repositories, aligning closely with CoreTrustSeal requirements. While both ServCat and ScienceBase are already approved, ECOS/ECOSphere is not yet included.
- **Primary Data Access Platforms:** ServCat and Data.gov serve as the primary mechanisms for public web access to FWS data, including datasets linked to publications. ECOSphere’s planned improvements for 2025 will greatly expand public access to FWS data, particularly species data. Public access to scholarly publications will also be supported by ServCat and the *Journal of Fish and Wildlife Management*. Data stored in ScienceBase is made available to the public directly from the repository and through the [Science Catalog](#) on FWS.gov.

These efforts represent ongoing advancements to align FWS data practices with federal data-sharing initiatives and enhance public accessibility to FWS resources.

## Roles and Responsibilities

FWS entities responsible for implementing the actions outlined in this Plan include:

### Office of the Science Advisor

- **Maintains** FWS Scientific Integrity and Quality policy and practice.

- **Ensures compliance** with and **advises on the execution** of the FWS Public Access Plan and related policies, in collaboration with the FWS Assistant Directors and Regional Directors.

### **Information Resources and Technology Management**

- **Administers** specific repositories and archives.

### **Ecological Services Program**

- **Administers** of FWS ECOSphere.

### **National Wildlife Refuge System Program**

- **Administers** of FWS ServCat.

### **Science Applications Program**

- **Coordinates** with USGS on FWS use of ScienceBase.

### **Office of Conservation Investment<sup>2</sup>**

- **Communicates requirements** for FWS financial assistance programs, including specific award terms and conditions for DMPs and delivery to the FWS digital versions of published manuscripts and associated data.

### **National Conservation Training Center**

- **Administers** a national centralized library, the U.S. Fish and Wildlife Service Library.

### **FWS Library**

- **Administers** the Journal of Fish and Wildlife Management.
- **Supports** the scientific and scholarly publications workflow.

### **Assistant Directors and Regional Directors**

- **Coordinates** with FWS Office of the Science Advisor on execution and compliance with the FWS Public Access Plan.

### **Management Staff**

- **Ensures** employees follow the FWS Public Access Plan requirements, including public access to federally funded publications, data, and information products.

### **Employees**

- **Complies** with FWS Public Access Plan requirements, including the creation and adherence to DMP and making federally funded publications, data, and information products publicly accessible.

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<sup>2</sup> The Office of Conservation Investment was formerly known as the Wildlife and Sportfish Restoration Program (WSFR)

## Implementation

### Data Management

The FWS has long recognized that proper Data Management is the foundation of data and information quality, scientific integrity, and evidence-based decision-making. Our commitment to quality, transparency, and accessibility has driven the FWS to pursue building the necessary culture and infrastructure to support Data Management improvements since 2014. This work, which pre-dates larger government initiatives, has charted the necessary path forward to advance our data management/data quality practices to the level that meets many emerging public access standards. The FWS Manual mandates that all data collected, acquired, or distributed by the agency must have a data management plan, include metadata, be stored in approved repositories, and be publicly accessible by default (274 FW 1). Additionally, it establishes processes for adopting and maintaining data standards, requiring adherence to these standards for all FWS data and metadata, with details available on the FWS Data Management SharePoint site (274 FW 2). To further meet FWS obligations for public access:

#### **The FWS Data Governance Board (DGB) will:**

- 1) Evaluate Service repositories and identify those which are "FWS approved".

#### **All FWS personnel will:**

- 1) Publish all final data/information products from federally funded research to a FWS approved repository<sup>3</sup>.
- 2) Ensure all final data/information product entries within repositories have sufficient detail<sup>4</sup> to be found in searches on Data.gov.
- 3) Ensure that all final data/information products are:
  - a) In accessible formats per Section 508 of the Rehabilitation Act of 1973 as amended in 1998.
  - b) Available free of charge without embargo.
  - c) Properly attributed using persistent identifiers.

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<sup>3</sup> Currently ServCat and ScienceBase, and soon ECOSphere.

<sup>4</sup> Metadata including descriptions of the data/information, its use and limitations including FWS Discovery-Level Metadata Elements.

- 4) Ensure a Data Management Plan is completed, filed, and maintained for FWS research and that this plan includes details for all phases of the data management lifecycle including data preservation.

To aid in plan success, the **Service's Enterprise Data Management Team will:**

- 1) Maintain the DM SharePoint with information related to adhering to the plan and provide updates to aid personnel.
- 2) Maintain the FWS adopted data standards listing to facilitate its use.
- 3) Develop, present, and maintain training materials related to implementing this plan.

To ensure clarity and adherence to this plan **FWS Data Science Committee will:**

- 1) Accomplish quarterly DMP reviews against a checklist.

To ensure compliance for scholarly publications in financial assistance, the **Office of Conservation Investment, Division of Financial Assistance Support and Oversight will:**

- 1) Work with the Data Science Committee to issue any policy, guidance, process, or specific award terms and conditions updates needed to implement this plan.

### Scientific and Scholarly publications

Many of the organizational and technological resources needed to ensure complete compliance with expectations of timely public access to FWS-funded scientific and scholarly publications do not already exist within the FWS. However, the FWS has identified options to make scholarly publications publicly available using our existing tools and practices until a corporate solution is developed. Employees can facilitate free public access to scholarly publications funded by FWS by using one of two FWS Data Governance Board-approved repositories, ServCat or ScienceBase, or by publishing in the FWS-sponsored, peer-reviewed, open access Journal of Fish and Wildlife Management. The FWS has formed a Publications Working Group that will determine the details of this workflow and support related policy development. FWS peer-reviewed publications (e.g. journal articles) can currently be made publicly accessible by:

- Publishing through the FWS-sponsored open access journal, *Journal of Fish and Wildlife Management*, or
- Publishing in the publication of the researchers' choice and linking to an open access copy of the publication in ServCat or ScienceBase, or
- Self-archiving an accepted manuscript copy in ServCat or ScienceBase.

There is currently no solution for harvesting scholarly publications or associated metadata to enterprise or external catalogs, including EDI, although scholarly publications distributed via ScienceBase may be harvested to and made discoverable by the Science Catalog in the future.

### Objectives for Public Access to Scholarly Publications

The following objectives describe the FWS plan to provide public access to scientific and scholarly publications:

#### *Timely digital access to publications*

By default, FWS publications and supporting data resulting from federally funded research will be made publicly available. Government works will be made available with zero license or copyright restrictions as public domain works. Extramural research will be made publicly available without embargo through the authority of the federal purpose license (2 CFR § 200.315 Intangible Property). Any non-FWS entity may not assert or attempt to assert copyright or any other intangible or intellectual property right in the final accepted manuscript or in the version of record and in the respective data that would otherwise prevent, encumber, or frustrate release thereof without an embargo on their free and public release.

#### *Timely digital access to scientific data associated with publications*

Data associated with scholarly publications is required to be shared per 274 FW 1 Data Management, which facilitates public discovery and access to data.

FWS will ensure all new scientific and scholarly reports are available in accessible formats per Section 508 of the Rehabilitation Act of 1973, as amended in 1998. The FWS will provide free of charge online access to scientific reports published by FWS in ServCat or ScienceBase publicly searchable databases. The full text of scholarly publications can be made accessible either by attaching an accepted manuscript copy to the reference in ServCat or ScienceBase, or linking to the open access full text final manuscript on the publisher's website. Both ScienceBase and ServCat include publicly searchable catalogs for discovery, and ScienceBase information products from the FWS are also discoverable via the Science Catalog. ServCat and ScienceBase allow for machine-readable formats such as JSON and XML to be attached to references for scholarly publications.

For scholarly publications in financial assistance, the FWS's Publications Working Group and the Office of Conservation Investment, Division of Financial Assistance Support and Oversight will work together to update policy, guidance, and award terms and conditions as needed to implement public access requirements.

#### *Metadata Associated with Publications*

ServCat collects metadata for scholarly publications such as title, author, date published, among other required and optional elements, but does not yet conform with FWS required minimum discovery-level metadata elements, as it is missing the element "language." ScienceBase also collects similar metadata for scholarly publications in full support of the FWS discovery-level metadata standards ServCat and ScienceBase allow users to harvest XML metadata and linked digital files via REST API (Representational State Transfer Application Programming Interface).

The *Journal of Fish and Wildlife Management* utilizes CrossRef to register publication metadata and facilitates the sharing and discovery of author information through integration with ORCID (Open Researcher & Contributor Identification).

#### *Public-private collaborations*

The FWS supports public-private collaboration by allowing third parties to easily harvest metadata records and links from ServCat and ScienceBase that may then be used in external discovery and repository systems. The public facing information of ECOS/ECOSphere makes regulatory and scientific publications and data about species publicly available, where consistent with the conservation of fish, wildlife, plants, and their habitat.

#### *Attribution to authors, journals, and publishers*

The FWS participates in Crossref, using persistent identifiers designed to promote access to research publications and Datacite for the discovery of data, though an enterprise-solution, workflows, and guidance for persistent identifiers (e.g. digital object identifiers/DOIs, ORCIDs) is not yet in place.

With limited existing organizational and technological resources, FWS will strive to develop policy, guidance, and processes to require that persistent identifiers be applied to all scholarly publications and that persistent identifiers, including those such as DOIs and ORCIDs in addition to the existing persistent identifiers available in ServCat and ScienceBase, are applied to all authors of scientific publications and associated data.

#### *Unauthorized Distribution*

ServCat, ECOS/ECOSphere, and ScienceBase do not provide a feature that enables mass downloading of multiple publication files, which assists in limiting unauthorized distribution.

#### *Archiving*

When creating a data management plan, researchers are required to determine the Records Schedule, Records Types, and Records Disposition for information products and data. Data custodians are responsible for electronic records transfers to the National Archives and Records Administration (NARA). A completed data management plan may identify when an electronic data record will be archived with NARA. The FWS's Records and Information Management (RIM) staff will work directly with the data custodian to review the metadata and transfer electronic files to NARA.

## Data

### *Objectives for Maximizing Public Access to Digital Scientific Data*

The following objectives describe the FWS plan to provide public access to digital scientific data:

#### *Timely digital access to data*

The Department of Interior has developed a metadata catalog known as the Enterprise Data Inventory, or EDI. EDI harvests from bureau repositories nightly. Nightly harvesting allows for data assets to quickly be made available to Data.gov. While only ServCat is currently being harvested by EDI, both ECOSphere and ScienceBase are anticipated to be harvested by EDI in



the near future. Access to data is also provided through ServCat's and ScienceBase public interfaces, Science Catalog, some current ECOS public interfaces, and many planned ECOSphere public interfaces.

#### *Metadata associated with data*

The FWS has created a list of discovery-level metadata elements as a data standard, [U.S. Fish and Wildlife Service Discovery-Level Metadata Elements<sup>\(OBJ\)</sup>](#). Discovery-level metadata allows a resource to be uniquely identified and indexed by various catalogs. Users attempting to locate a resource rely on discovery-level metadata when searching catalog entries, generally assessing if results are appropriate for their purposes, and potentially accessing more details about a resource. By adopting this standard, FWS staff will be able to consistently describe, catalog, and search for projects and products. staff will be able to consistently describe, catalog, and search for projects and products.

#### *Data management plans (DMPs)*

FWS has a robust Data Management Plan infrastructure in place. FWS Manual Chapter 274 FW 1 *Data Management* requires all data collected, acquired, or distributed by or for the FWS to have a data management plan. Data Management Plans follow a national template with required metadata elements and are reviewed by the Data Management Branch. The FWS's Data Science Committee and the Joint Administrative Operations Program worked together to create guidance on creating contracts that implement FWS policies [274 FW 1](#) and [274 FW 2](#). Templates for data purchased through contracts, require data management plans, require documented metadata with specified metadata standards, assert government data rights, and denote that there are no data or publishing embargoes.

#### *Evaluation of data management plans*

DMPs are submitted through a Microsoft PowerApps interface which requires many essential metadata elements and does not allow submission of plans that do not meet all required fields. Additionally, every DMP is individually reviewed by a member of the Data Management Branch staff against a checklist. These individual reviews are conducted quarterly.

#### *Data management compliance*

Current FWS policy requires the development and use of Data Management Plans using the National Template for both intramural and FWS-funded extramural researchers. Standard language has been created for use in contracts to inform extramural researchers of their data management obligations.

#### *Data repositories and databases*

The FWS's Data Governance Board has approved criteria and a review process for designating Board approved repositories for 'archiving' FWS data (Allstadt, 2023). Criteria for inclusion comprise or consist of identifying a pathway to include or integrate metadata in a FWS metadata catalog so that these data assets can be discovered by FWS staff and the public when designated. The criteria closely align with the [CoreTrustSeal](#) data repository requirements.

### *Public-private collaboration*

The FWS encourages public-private collaboration by allowing third parties to easily harvest metadata records and links from the FWS approved repositories such as ScienceBase and ServCat, that may then be used in external discovery and repository systems. The FWS provides multiple options for accessing and extracting metadata records including via machine Application Programming Interfaces (APIs) and in downloadable formats including RIS, CSV, TSV, Excel, RSS, and JSON.

### *Attribution in scientific datasets*

FWS data repositories store author citation information within the metadata record. Metadata records are harvested to EDI and Data.gov and retain this information at every step. ServCat and ScienceBase assign every reference, including datasets, a unique numerical code. While not currently required, authors may include their ORCID or other unique identifier within the metadata as well.

DOIs, which are optional metadata in FWS repositories in addition to required persistent identifiers (PIDs) generated for each reference, enhance attribution to authors by providing persistent links to ensure consistent citation, increasing discoverability across various platforms, enabling cross-referencing and linking to related works, and facilitating integration with ORCID or other unique scholarly identifiers.

## Training, education, and workforce development

- The FWS's Enterprise Data Management Team operates a centralized, comprehensive Data Management SharePoint where FWS staff can find all resources related to data.
- The FWS maintains a comprehensive list of adopted [data standards](#) available to FWS staff and the public. Data standards are documented with the designated Data Standard Steward as well as information about implementation.
- Training materials on data management topics are made available to FWS employees by multiple avenues, including a bi-annual workshop, a regularly updated Data Management Handbook, recorded webinar-style trainings, live virtual trainings, and informational SharePoint pages. An FWS workgroup is creating additional training materials and updating existing materials.

## Data preservation

Data preservation plans are outlined for individual projects within the project's Data Management Plan. Data Management Plan (DMP) authors are required to consult the Records & Information Management branch to determine the appropriate retention schedule for records, including data, that are produced as part of their project. The DMP will also indicate what individual or project role will be responsible for managing the preservation and archiving for that project.

## Metrics, compliance, and evaluation

### Scholarly Publications in Financial Assistance

The Office of Conservation Investment, Division of Financial Assistance Support and Oversight is responsible for FWS financial assistance policy, internal controls, and compliance monitoring. Programs funding scholarly publications subject to public access requirements are responsible for monitoring recipient compliance with all related award terms and conditions. Recipients out of compliance with award terms and conditions are subject to the [Remedies for Noncompliance in 2 CFR 200 Subpart D](#).

### Employee-generated

Providing access to scholarly publications and data is a responsibility shared by all FWS employees per [2024 Departmental Memo 305 DM 3](#). It is the responsibility of FWS authors and data producers to ensure that the products they develop are valid and robust. Furthermore, it is the responsibility of FWS employees to continually enhance the discoverability, accessibility, and usability of the Bureau's scholarly publications and data in accordance with FWS policies [274 FW 1](#) and [274 FW 2](#). The FWS will develop clearer publication policy requirements and procedures that ensure scientific quality, integrity, and public access to FWS data as directed in the [Memorandum on Increasing Access to the Results of Federally Funded Research](#). To ensure compliance, the FWS will include guidance and training on the new requirements as part of our existing Scientific Integrity training. Compliance to these requirements can be measured and evaluated for continuous improvement.

### Contracted

Scientific integrity and public access for FWS-funded research is vital to Bureau activities under which scientific research, data, summaries, syntheses, interpretations, presentations, and/or publications are developed and used. All work performed must comply with the [2024 Departmental Memo 305 DM 3](#). FWS can ensure compliance with extramural data management requirements by requiring, as a term and condition of the contract award, periodic reporting to contracting officer representatives and project officers as a part of regular contract management.

### Plan Status Reporting

Upon request, FWS will report to OSTP on the status of this plan and policy implementation and will develop institutional guidance and processes that will enable us to report on the scholarly publications and data subject to the requirements of this plan.

## Engagement with Tribal Governments, Outside Organizations, and Interagency Coordination

FWS engages with federally recognized Tribes both formally (such as during government-to-government consultation in accordance with [512 DM 4](#)) and informally (such as during co-stewardship, co-management, and collaborative coordination) in accordance with the [FWS Native American Policy 510 FW 1](#). Researchers are encouraged to discuss plans for Tribal

engagement with their Regional Native American Liaison or Headquarters Native American Program..

The FWS is an active participant in OSTP-sponsored interagency working groups on public access and related activities. This includes the OSTP Subcommittee on Open Science and associated working groups, where FWS collaborates with other Federal agencies on policy and implementation to make Federal publications and data more widely accessible to the public.

FWS coordinates and seeks collaboration on matters regarding public access to federally funded scholarly publications and data with the Department of the Interior and its bureaus. FWS also engages with various outside organizations and the public in a variety of ways.

In coordination with other Federal agencies, FWS will strive to adopt a process for assigning digital persistent identifiers to scientific research and development awards and intramural research protocols to enable proper reference of funding source from metadata associated with publications and data. The FWS will continue to improve integration and interoperability across the Federal community through consultation with the scientific community and with other Federal agencies and facilitate the establishment of best practices and standards for identification, description and citation of resources, terms of use, information exchange, data integration, and trusted repositories. Using existing systems and relationships with other Departments and Bureaus as models, the FWS will explore the development of a research data commons, a federated system of research databases for storage, discoverability, and reuse of data, with a particular focus on making the data underlying the conclusions of peer-reviewed scholarly publications resulting from federally funded scientific research available for free at the time of publication.

## Public Notice

The FWS does not intend to publish this Plan for public notice/comment in the Federal Register. To facilitate transparency, this plan will be posted publicly on the FWS website and a link to the plan will be included on the Interior Open Government Web page.

## Timeline for Implementation

Within approximately **one year** the FWS will increase our ability to:

1. Ensure all new scientific and scholarly reports are available in accessible formats per Section 508 of the Rehabilitation Act of 1973, as amended 1998.
2. Provide online access to scientific reports published by the FWS in machine-readable formats.
3. Develop guidance for researchers to ensure federally funded publications are made freely available upon publication.

Within approximately **two years** of the publication of this plan the FWS will:

4. Develop guidance for FWS to ensure publications resulting from federally funded programs can be made freely available upon publication, including providing reasonable costs to external cooperators.

Within **three to five years** of the publication of this plan the FWS will endeavor to:

5. Ensure scientific and scholarly publications are published with open licensing.
6. Establish consistent submission, review, and approval-for-release process for authors.
7. Ensure repositories have consistent and complete metadata to improve discoverability.

## Resources

The OSTP memorandum calls for the “identification of resources within the existing agency budget to implement the plan”. Both budget and personnel resources will be needed to implement this FWS Public Access Plan, and the lack of identified resources is a critical risk.

The FWS is endeavoring to improve policies, practices, and technologies to support successful implementation of this Plan; however, significant Bureau-wide resources will be necessary to support the increased number of datasets being placed in Bureau repositories and to make scholarly publications publicly accessible with no embargo period. Many elements of this plan are in place, operational, and using existing funding, while other aspects of this plan, such as expansion of digital archives and repositories and modification of Intelligent Printer Data Stream data input and output mechanisms and workflows, will require additional resources beyond those currently committed in related budgets. Overall funding needs and priorities for implementation will be reflected in future budget submissions. This Plan is not a budget document and does not imply support of approval of any specific action or investment.

## Risks

Similar to other Departmental bureaus, the FWS identifies several operational or institutional risks that may hinder execution of this plan:

- Lack of dedicated funding or trained personnel required to implement the plan
- Lack of cohesion and coordination of resources across organizational units within the FWS
- Lack of adequately funded and fully curated Bureau-level data repositories.
- Lack of capacity of outside entities to meet requirements of plan could lead to reduced collaboration with FWS on scientific and scholarly activities.

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