

Research Data Camp: Data Publishing and Repositories



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January 9, 2024



Center for Research Data & Digital Scholarship

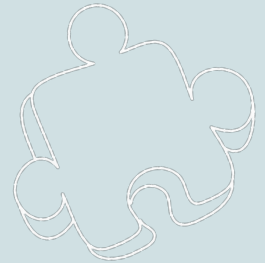
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Agenda

1. What is data publishing?
2. Why publish data?
3. How to publish data
 - a. Intro to FAIR principles
 - b. Top considerations
 - c. CU Scholar/Dryad examples
4. Questions and wrap-up



2. What is data publishing?



Working definition

- Making research data and metadata/documentation publicly available (or with appropriate access controls) via a formal web-based repository/database
- Preferably in adherence with [FAIR data principles](#) and/or other standards for data, metadata, and repository quality

Related terms

- Data sharing
- Data curation
- Data archiving
- Data preservation

3. Why publish data?



Why publish data?

1. Scientific and public good
 - a. Advance scientific innovation
 - b. Address reproducibility
2. Journal/publisher requirements
 - a. “Data availability statements”
 - b. FAIR repositories with citations via persistent IDs
3. Funder requirements
 - a. Part of NSF data management plans since 2011
 - b. Part of NIH data management and sharing policy since 2023

Thinking Ahead

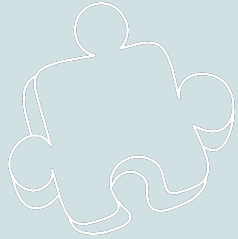


**Open, accessible, and
reproducible data
advancing the public good**

**Data management
planning and
protocols**

**FAIR data
publication
principles**

4. How to publish data



Introduction to FAIR data principles ([Wilkinson et al., 2016](https://doi.org/10.1007/978-3-319-23211-1))

FAIR DATA PRINCIPLES

AH!



FINDABLE



ACCESIBLE



INTEROPERABLE



REUSABLE

Findable (F)

- Apply a globally unique and persistent identifier
- Describe your data in a data repository

FINDABLE

Unique identifiers and metadata are used to allow data to be located quickly and efficiently



Accessible (A)

- Consider what will be shared, and share via a open, free, and universally implementable protocol
- Metadata are valuable and accessible, even when the data are no longer available

ACCESSIBLE

Data is open, free
and universally
available for
research
discovery efforts



Interoperable (I)

- Use:
 - Open formats
 - Consistent vocabulary
 - Common metadata standards

INTER- OPERABLE

A common programming language is used to allow use in a broad range of applications



Reusable (R)

- Origin, context, history, and who to credit/cite are all crucial for data reusability
- Consider permitted used and apply the appropriate license

REUSABLE

All data is clearly described and outlines associated data-use standards



Top Considerations for You # 1

Have clear documentation and a data management plan from square one.

- Think ahead about repositories and requirements for a finished project
- Document throughout the process/project: how data was created/gathered/used/etc.
- R (Reusable) in FAIR is very hard to achieve just at the end of the project; important to think about from the beginning

Top Considerations for You # 1

Before you start collecting data, think about:

- How much of your data will you/can you share?
- How and where will you share your data?
- When will you share your data?
- With whom will you share your data?

Top Considerations for You # 2:

Select a FAIR-aligned data repository

- CU Scholar
 - FAIR-aligned public access repository for CU Boulder-affiliated researchers (i.e., have a CU IdentiKey)
 - Has CoreTrustSeal certification
 - Review and curation of all data sets
 - DataCite DOIs registered for all data sets
 - Public access to large data sets via Globus and PetaLibrary



DRYAD

Top Considerations for You # 2:

Select a FAIR-aligned data repository

- [Dryad @ CSU](#)
 - [Dryad](#) is a non-profit FAIR-aligned data repository
 - Data preserved in CoreTrustSeal-certified repository
 - Review and curation of all data sets
 - DataCite DOIs registered for all data sets
 - Free to deposit up to 300 GB per dataset for CSU affiliated researchers
 - Requires ORCID for login
 - Over 400 CSU datasets published in Dryad

Top Considerations for You # 2:

Select a FAIR-aligned data repository

- General repositories (e.g., [Dryad](#), [Dataverse](#), [Zenodo](#))
 - Open to anyone to deposit
 - Minimal review/curation of deposits
 - Typically provide DataCite DOIs and usage metrics
 - Size limits and/or additional fees for large data
- Domain repositories:
 - [Re3data](#) repository registry
 - Level of review/curation varies
 - Ability to deposit varies
 - May be recommended/required for certain data types by funders/publishers (e.g., [Springer-Nature's list](#))



Top Considerations for You # 3:

Consider copyright and licensing of your data set

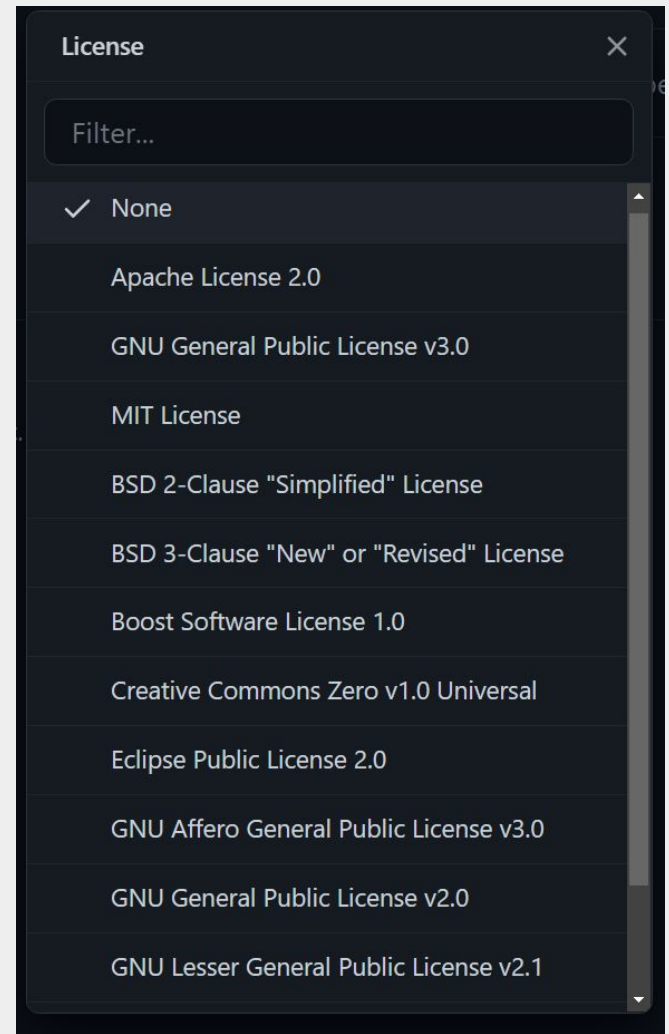
- The license that is selected facilitates sharing and reuse of the data set
 - [Creative Commons](#)
 - CC BY: Creative Commons Attributions License
 - CC 0: When an owner wishes to waive their copyright and/or database rights
 - Public Domain mark (PDM): It is used to mark works that are in the public domain, and for which there are no known copyright or database restrictions.

Top Considerations for You # 3:

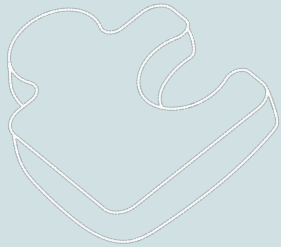
Consider copyright and licensing of associated software/code

- Many licenses available for software/code

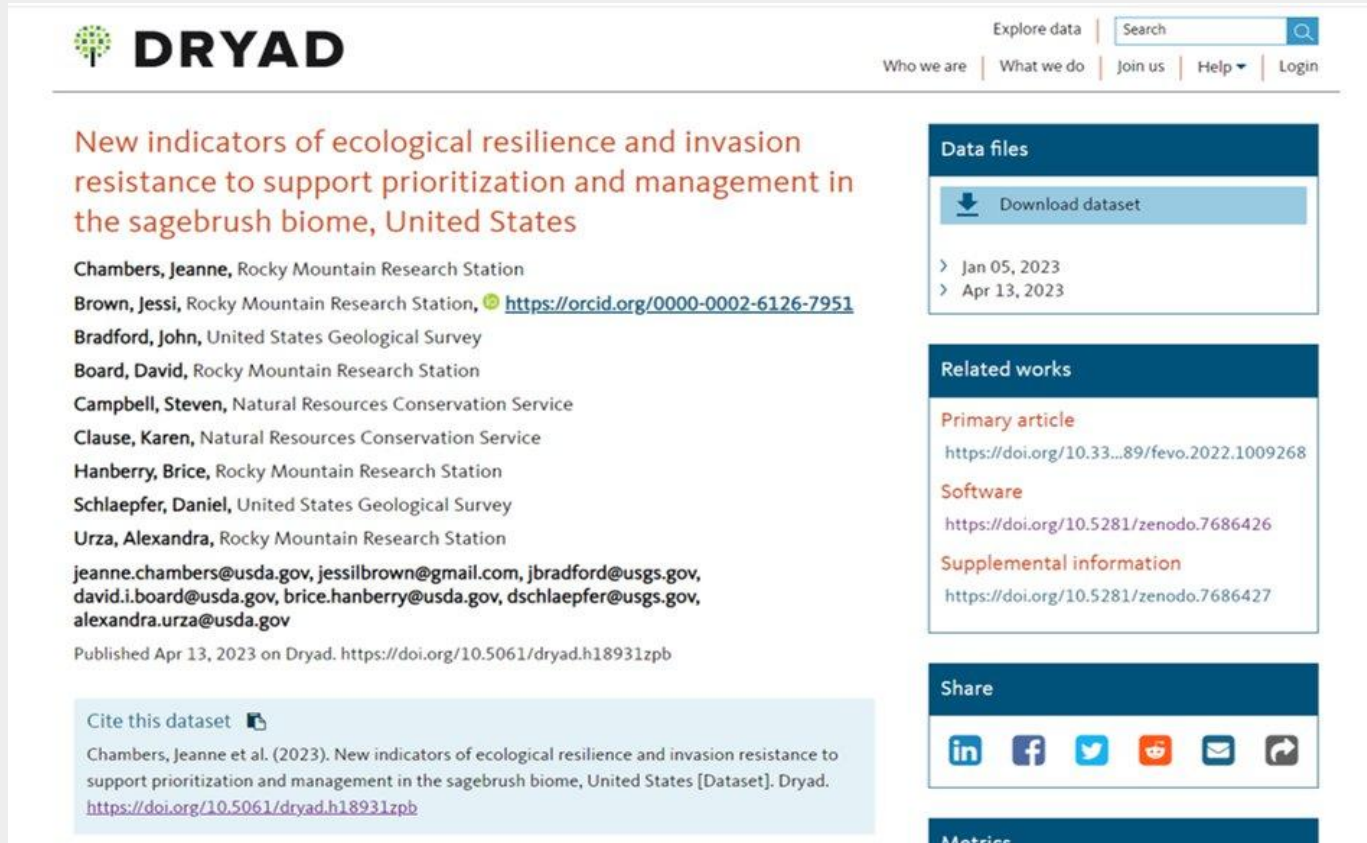
GitHub



CU Scholar/Dryad Examples



Example Dataset in Dryad



The image shows a screenshot of a Dryad dataset page. At the top left is the Dryad logo, a stylized tree. To its right is the text 'DRYAD'. Further right is a navigation bar with links for 'Explore data', 'Who we are', 'What we do', 'Join us', 'Help', and 'Login'. A search bar is also present. The main content area features a title in orange: 'New indicators of ecological resilience and invasion resistance to support prioritization and management in the sagebrush biome, United States'. Below the title are the names of the authors: Chambers, Jeanne; Brown, Jessi; Bradford, John; Board, David; Campbell, Steven; Clause, Karen; Hanberry, Brice; Schlaepfer, Daniel; and Urza, Alexandra. Each name is followed by their affiliation. Below the authors are their email addresses. The publication date is 'Apr 13, 2023' and the DOI is 'https://doi.org/10.5061/dryad.h18931zpb'. On the right side, there are three sections: 'Data files' with a 'Download dataset' button and dates 'Jan 05, 2023' and 'Apr 13, 2023'; 'Related works' with links to a 'Primary article', 'Software', and 'Supplemental information'; and 'Share' with social media icons for LinkedIn, Facebook, Twitter, YouTube, Email, and Print. At the bottom left, there is a 'Cite this dataset' section with a citation template and the DOI link.

DRYAD

Explore data | Search | Who we are | What we do | Join us | Help | Login

New indicators of ecological resilience and invasion resistance to support prioritization and management in the sagebrush biome, United States

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Published Apr 13, 2023 on Dryad. <https://doi.org/10.5061/dryad.h18931zpb>

Cite this dataset

Chambers, Jeanne et al. (2023). New indicators of ecological resilience and invasion resistance to support prioritization and management in the sagebrush biome, United States [Dataset]. Dryad. <https://doi.org/10.5061/dryad.h18931zpb>

Data files

Download dataset

> Jan 05, 2023
> Apr 13, 2023

Related works

Primary article
<https://doi.org/10.33...89/fevo.2022.1009268>

Software
<https://doi.org/10.5281/zenodo.7686426>

Supplemental information
<https://doi.org/10.5281/zenodo.7686427>

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Metrics

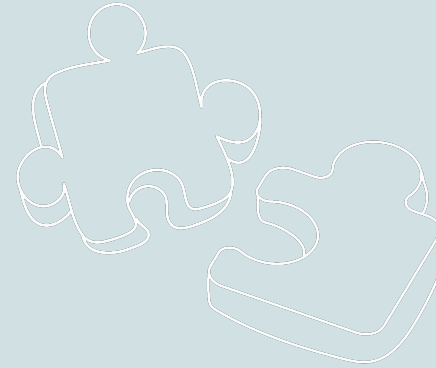
<https://doi.org/10.5061/dryad.h18931zpb>

CSU & Dryad Resources

- CSU Libraries Data Management website:
<https://lib.colostate.edu/services/data-management/dryad/>
- Dryad best practices guide:
https://datadryad.org/stash/best_practices
- CSU Open Data guide:
<https://libguides.colostate.edu/openaccess/opendata>

Thank you!

Comments? Questions?



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