Laurie Porth

FS RESEARCH DATA ARCHIVE

Making data discoverable, accessible, and usable
Forest Service Research Data Archive (FS-RDA)  
www.fs.usda.gov/rds/archive

• Purpose
  – Publish digital research data funded by
    • FS Research & Development
    • Joint Fire Science Program
    • APHIS National Wildlife Research Center
• What we publish
  – Long-term research data
  – Data from specific studies
  – Supplements to FS publications
  – Image libraries
What we will cover

• How to find and obtain data from the FS-RDA
• How to prepare files for submission to the FS-RDA
• How to submit and publish data in the FS-RDA
How to find and obtain data in the FS-RDA

Step 1: Go to Data Catalog

Step 2: Limit your search

OR

Do your own search

Step 3: Click on data publication title of interest

Making data discoverable...
How to find and obtain data in the FS-RDA

Step 4: View publication details & citation info

Publication Details

**Title:** Overstory tree and regeneration data from the "Silvicultural Effects on Composition, Structure, and Growth" study at Penobscot Experimental Forest (2nd Edition)

**Author(s):** Kenefic, Laura S.; Rogers, Nicole S.; Puhlick, Joshua J.; Waskiewicz, Justin D.; Brissette, John C.

**Publication Year:** 2015

**How to Cite:** These data were collected using funding from the U.S. Government and can be used without additional permissions or fees. If you use these data in a publication, presentation, or other research product please use the following citation:


**Abstract:** This data publication contains overstory tree measurements, regeneration data, and permanent sample plot location information collected between 1952 and 2014 under the study plan: FS-NRS-07-08-01 "Study Plan: Silvicultural effects on composition, structure and growth of northern conifers in the Acadian Forest Region: Revision of the Compartment Management Study on the Penobscot Experimental Forest" (see Methodology citation section). Data are available in six data sets. 1) Overstory tree measurement data include tree species, condition code (e.g., merchantability status and cause of mortality, if applicable), and diameter at breast height (dbh), 1952 to 2014. 2) Regeneration data include tree seedling species, presence, and count by height class, 1964 to 2014. 3) Spatial location data include location of a subsample of trees, 2000 to 2014. 4) Height and crown measurement data include tree height, height to crown base, and crown radii for a subsample of trees, 2000 to 2014. 5) Understory vegetation data include percent cover by substrate and non-tree vegetation categories, 2000 to 2014. 6) Permanent plot location data include the geospatial coordinates for permanent sample plots.

Note: We assign DOIs to internal data publications, which also helps meet journal requirements.
How to find and obtain data in the FS-RDA

Step 5: View documentation

Step 6: Download data - multiple options available
  • Zip file (most common)
  • Query database
  • Image library (new)
  • External repository

Note: Download options are specific to each data publication.
Example 1: Zip file

Download and unzip file

Fileindex explains contents

<table>
<thead>
<tr>
<th>File</th>
<th>Folder</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>_metadata_RDS-2012-0008-2.html</td>
<td></td>
<td>Metadata file in HTML format containing a description of the content, quality, and other characteristics of the data.</td>
</tr>
<tr>
<td>_metadata_RDS-2012-0008-2.xm</td>
<td></td>
<td>Metadata file in Extensible Markup Language (XML) format containing a description of the content, quality, and other characteristics of the data.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_HeightCrownData.csv</td>
<td>Data</td>
<td>Comma-delimited ASCII text file containing height and crown measurements for a subsample of USFS GFI plots, collected from 2000 through 2014.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_PlotLocationsData.csv</td>
<td>Data</td>
<td>Comma-delimited ASCII text file containing permanent sample plot location information.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_RegenerationData.csv</td>
<td>Data</td>
<td>Comma-delimited ASCII text file containing plot regeneration data from 1984 through 2014.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_SpatialTreeLocationData.csv</td>
<td>Data</td>
<td>Comma-delimited ASCII text file containing tree location data in relation to plot center from 2000 through 2014.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_UnderstoryVegData.csv</td>
<td>Data</td>
<td>Comma-delimited ASCII text file containing the understory vegetation data collected from 2000 through 2014.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_ActivityDates_INV_REGEN.csv</td>
<td>Supp</td>
<td>Comma-delimited ASCII text file containing dates of regeneration inventories in each management unit (MU) in the compartment management study (CMS).</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_ActivityDates_INV_TREE.csv</td>
<td>Supp</td>
<td>Comma-delimited ASCII text file containing dates of tree inventory in each management unit (MU) in the compartment management study (CMS).</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_ActivityDates_TRMT.csv</td>
<td>Supp</td>
<td>Comma-delimited ASCII text file containing numbers and dates of treatments in each management unit (MU) in the compartment management study (CMS).</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_DatabaseChangeV1toV2.pdf</td>
<td>Supp</td>
<td>Adobe Acrobat PDF file containing a list of changes between the previously published compartment study database and the current compartment study database.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_Kcodes.pdf</td>
<td>Supp</td>
<td>Adobe Acrobat PDF file containing descriptions of tree condition codes.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_Map.jpg</td>
<td>Supp</td>
<td>IPSE file containing an image showing the locations of management units in the Penobscot Experimental Forest Silvicultural Study.</td>
</tr>
<tr>
<td>PEF_CompartmentStudy_MUdose.pdf</td>
<td>Supp</td>
<td>Adobe Acrobat PDF file containing descriptions of management units.</td>
</tr>
</tbody>
</table>
Example 2: Query Database

Penobscot Research Data

Introduction
The mission of the Penobscot Experimental Forest (PEF) is to afford a setting for long-term research conducted cooperatively by USDA Forest Service scientists, university researchers, and professional forest managers in Maine; to enhance forestry education of students and the public; and to demonstrate how the timber needs of society are met from a working forest. Though owned by the University of Maine Foundation, the PEF has been a Forest Service experimental forest since 1956. Today the PEF is the site of a number of collaborative research programs.

Located 15 km north of Bangor, Maine, the PEF is in the Acadian Forest, a region covering much of Atlantic Canada and adjacent Maine. An ecotone between boreal and broadleaf biomes, the region is dominated by mixed conifers. Red spruce is the signature species of the Acadian Forest.

More information can be found on the Penobscot EF website.

Data Description
Scientific studies on the PEF have traditionally been focused on management of mixed conifer stands for timber. Over the past 30 years, research was broadened to include fundamental studies of tree growth and maturation, wildlife habitats, spruce budworm predation, biodiversity, root structure and function, forest weed material, economics, and growth and yield modeling, among other topics. The long term silvicultural experiment that is the basis for most of the Forest Service’s research on the PEF includes 10 replicated treatments representing a range of even- and uneven-aged prescriptions: clearcutting, variants of shelterwood, selection with three cutting cycles,

Penobscot Experimental Forest
Visitor count: 8,721

Penobscot > Silvicultural study > Height and crown

Height and crown

Output variables:
The following variables are always included:
- Experiment number
- Inventory
- Management unit
- Plot number
- Month
- Year

Filter criteria:
Inventory:
(11 to 25)
Minimum:
Maximum:

Management unit:
All
10
12
15
16
17

Optional variables:
- All
- Total tree height (ft)
- Height to base of live crown (ft)
- Crown radius (ft) at 0 Degree
- Crown radius (ft) at 90 Degree

Summarize data:
(Skip if you want to see raw data for your selected time period.)

Summary statistics:
- Mean
- Minimum
- Maximum

Summarize by factors:
- None
- Inventory
- Management unit
- Plot number
- Month
- Year

Penobscot > Silvicultural study

The data sets available for query/download are displayed below.
If you click the "Metadata" button, a new window will open that displays the metadata for that data set.
If you click the "Query/Download" button, you can extract all or a subset of the data and download it.

- Height and crown
- Plot locations
- Regeneration
- Spatial tree locations
- Tree data
Example 3: Image Library

Research Image Library

You are here: Home > Search Results

Limit your search
Search for: Search

Selected
Click to remove
- Collection: Fort Valley Experimental Forest Historic Images
- Photographer: Krauch, Hermann
- Subjects: grounds

Publication Year ➔
Locations ➔
Subjects ➔
Organisms ➔

Displaying Items 1 - 3 of 3
Sort by Date | Relevance

Collection: Fort Valley Experimental Forest Historic Images
Subjects: equipment personnel grounds
Location: Fort Valley, Coconino N.F.; AZ; United States
caption: Krauch, Talbot, and Forbes leaving tool shack for work.
date: 1913

ID: 9021
File name: ft00010.jpg
Caption: Krauch, Talbot, and Forbes
Subjects: equipment, personnel, grounds
Photographer: Hermann Krauch?
Collection Call no.: 10926A
Media: 3.5 in. x 4.5 in. black and white print
Collections: Fort Valley Experimental Forest Historic Images
Quality: 4
People: Hermann Krauch, M.W. Talbot, Forbes
Location: Fort Valley, Coconino N.F.-AZ, United States
Date(yy/mm): 1913

Download
Example 4: External Repository

**Publication Details**

**Title:** Stambaugh - Pine Camp - PIEC - ITRDB TN032

**Author(s):** Stambaugh, Michael C.; Guyette, Richard P.; Marschall, Joseph M.

**Publication Year:** 2013

**How to Cite:** These data were collected using funding from the U.S. Government and can be used without additional permissions or fees. If you use these data in a publication, presentation, or other research product please follow the citation:


**Abstract:** Fire scar histories are a critical fire data source because they form a foundation for understanding the fire climate. This data package contains crossdated tree-ring measurements used to date fire in Land Between the Lakes National Recreation Area in Tennessee from 1902 to 2005. These fire scars are part of a larger project to archive fire history data in the southern and eastern United States. Data are available online through the NCDC Paleoclimatology Data and Information Management System (PDIMS).

**Keywords:** Earth science; paleoclimate; tree-ring; ring width; Pinus echinata Mill.; shortleaf pine; NCDC-Paleoclimatology; geoscientific information; fire; fire detection; fire ecology; fire history

**Data Access:**

- View [metadata](#) (HTML)
- Access [data](#) (available via external archive)
How to prepare files for the FS-RDA

Step 1: Determine what files to include

• Raw research data files
  – Data directly associated with a particular publication
  – Observational or historical data related to a short or long-term study
  – Secondary data that has been substantially modified (with documented concurrence of originating sources)

• Supplemental files, examples include...
  – Maps
  – Photos
  – Unpublished reports
  – Lab notes
  – Study plan
  – Data analysis documentation (helps meet journal requirements)
How to prepare files for the FS-RDA

Step 2: Prepare data and supplemental files

• Ensure data are complete and correct
  – Data should have already gone through rigorous quality checks before submission, or the metadata must clearly note why.
  – Things to double-check (common issues we see)
    • Does your data contain outliers? If so, please note why if known.
    • Ensure all categorical variables have valid values and descriptions for each value.
    • Verify missing data are in fact missing and note why if known.
    • Ensure zeros, blank cells, and/or missing data are clearly defined and consistently used.

• Use transparent filenames
• Convert files to stable and usable format
  – Can be submitted in virtually any format and archivists can help with conversion
  – Common formats: CSV, XLSX, TXT, JPG, PDF or PDF/a
Step 3: Develop metadata

Data documentation (metadata) is required with all submissions. This document provides the user with the information needed to completely understand the data, why it was collected, how it was collected, the quality of the data, and who to contact if they have questions.

• Understand metadata standards
  – CSDGM
    • Federal Geographic Data Committee (FGDC): Content Standard for Digital Geospatial Metadata
    • Designed for geospatial data
  – BDP
    • Biological Data Profile: formally approved by FGDC as a superset of CSDGM
    • Additional elements: Taxonomy, Methodology, Analytical tools
    • Works for nearly all geospatial / non-geospatial data
How to prepare files for the FS-RDA

• Understand metadata contents
  1. Identification
     What data were collected, why collected, where collected, tools need to work with data
  2. Data Quality
     How data were collected, reliability of data, data omissions
  3. Spatial Data Organization
  4. Spatial Reference
  5. Entity and Attribute
     Description of all files, list and description of all variables within each file
  6. Distribution
     How to get data, data formats
  7. Metadata Reference
     Metadata currentness, responsible party
How to prepare files for the FS-RDA

- Use tools to generate metadata
  - ESRI ArcGIS
    - For geospatial data only – doesn’t understand BDP
    - May not be complete form of metadata
    - Default standard is ISO 19115, but knows CSDGM
  - Metavist software (Dave Rugg)
    - Free! User friendly!
    - Requires some knowledge of FGDC standards
    - Works for geospatial and non-geospatial data
    - Works for CSDGM or BDP metadata
    - Generates XML file, can export as HTML
  - Microsoft Word form
    - Easy to fill out
    - Requires no prior knowledge of FGDC standards
    - Works for all data (geospatial data will require additional info)
    - Works for CSDGM (except spatial sections) or BDP metadata
Citation for the data set

Author(s): Kenefic, Laura S.
Title: Overstory tree and regeneration data from the "Silvicultural Effects on Composition, Structure, and Growth" study at Penobscot Experimental Forest
Publication Date: 2015

Abstract:
The data publication contains overstory tree measurements, regeneration data, and permanent sample plot location information collected between 1952 and 2014 under the study plan: FS-NRS-07-08-01 "Study Plan: Silvicultural Effects on Composition, Structure, and Growth of Northern Conifers in the Aroostook Forest Region: Revision of the Compartment Management Study on the Penobscot Experimental Forest" (see Methodology section). Data are available in six data sets: 1) Overstory tree measurement data include tree species, condition code (e.g., merchantability status and cause of mortality, if applicable), and diameter at breast height (dbh), 1952 to 2014. 2) Regeneration data include tree seedling species, presence, and count by height class, 1964 to 2014. 3) Spatial location data include location of a subsample of trees, 2000 to 2014. 4) Height and crown measurement data include tree height, height to crown base, and crown radii for a subsample of trees, 2000 to 2014. 5) Understory vegetation data include percent cover by substrate and non-tree vegetation categories, 2000 to 2014. 6) Permanent plot location data include the geospatial coordinates for permanent sample plots.

Purpose:
The primary objective of the long-term silvicultural study, called the Compartment Management Study, conducted by the USDA Forest Service and the Penobscot Experimental Forest (PEF) is to quantify tree and stand response to silvicultural treatment. Response variables include regeneration, species composition, and tree and stand growth, productivity, and quality. Data provide information about the interaction of natural and human disturbances and their effects on forest stand dynamics. A secondary objective of the study is to provide a variety of forest stands at one location to be used as the framework for short-term experiments in ecology and silviculture.

Supplemental Information (Optional):
A number of revisions have been made to this long-term study over time, including but not limited to changes in silvicultural prescriptions (e.g., target residual basal areas, tree size thresholds for removals, and species composition goals), sampling protocols (e.g., numbers and sizes of sample plots, tree species and condition codes, and frequency of inventory), and response variables (e.g., overstory tree attributes, regeneration, and deadwood). The first edition of this data publication was published in 2012 (see Cross-Reference section). The second edition (published on 08/27/2015) includes three years of additional data and corrections to data errors. The metadata have been revised to reflect these changes and a complete list of differences between the first and the second edition is located in the supplemental files (available with the full data publication download). On 12/12/2016 the metadata were updated to include more details to the methods section and other minor metadata updates.

Time Period of Content:
The calendar is: Gregorian
Time Period(s): begin 1952 end 2014
Currentness Reference: Ground condition
Status:
Progress: Planned
Updating: As needed
Step 4: Sign submission forms (required to publish in FS-RDA)

- First author **must** sign form
  - There is a form for Forest Service (FS) authors and another for non-FS authors.
  - FS submission forms also require the signature of a supervisor.
- If first author is not a FS author, then we also need the first FS author to sign a submission form.

**Important Notes:**
- Electronic signatures are acceptable, please include the email showing the form being “signed” and forwarded.
How to prepare files for the FS-RDA

Step 5: Compile submission package

• Gather all files
  – Data set(s)
  – Metadata
  – Supplemental files

• Use directory structure to help organize files, this is structure we will use
  – “Data” – all data files will go in this folder, subfolders allowed
  – “Supplements” – all supplemental files will go in this folder, subfolders allowed

• Create a file index
  – List files in submission package and short description of their format and content
  – This can be submitted in any format (Excel, Word, text file, email, etc.)

You are now ready to submit package to the Archive Team!
How to submit and publish data in the FS-RDA

Step 1: Contact a member of the Archive Team and submit package for **thorough** review

Step 2: Archive Team reviews submission and sends authors questions and comments

Step 3: Archive Team finalizes package, assigns DOI, and data are published!

Reviews help ensure data are usable...
Additional Info
Need a DOI early for journal article?

• What is required
  – Signed submission form
  – Draft (or final) version of data
  – Draft (or final) version of metadata

• How it works
  – Submit submission form, data, metadata to Archive Team and request early DOI
  – DOI assigned early, will point to temporary out-of-stock page
  – Get final files to Archive Team, so they can begin review
  – Work with Archive Team to ensure data are published before journal article goes live
Benefits of publishing in FS-RDA

• FS RGEG direction says FS-RDA publications are refereed!
• Broad audience
  – ≈35,000 global customer visits in FY2020
  – 7,925+ downloads in FY2020 (>25% growth)
  – Domestic customer base composed of government agencies, academic institutions, K-12, variety of businesses
• Other repositories are providing access to FS-RDA
  – Ag Data Commons (USDA Nat. Ag. Library): catalog for all USDA scientific data
  – Data Citation Index: https://clarivate.com/webofsciencegroup/solutions/webofscience-data-citation-index/
Questions?