­­­­NPS Metadata Template (2024)­­­

Purpose and Introduction

Metadata is key component of a data package, as it helps others to understand your data and assess whe­ther it’s a good fit for a particular purpose. This template can help organize all the bits of information that must come together to create metadata inside of your data package. Overall guidance on metadata and data packages can be found on the Data Publication Best Practices SharePoint.

Data Package Title

(Include **what, where,** and **when**. E.g. “Monthly Water Quality Data from Horsetooth Reservoir, Colorado: 2010-2019”)

|  |
| --- |
| Aquatic Invertebrate Monitoring for the Heartland Inventory and Monitoring Network: 2005-2023 - Data Package |

Metadata Filename

(Similar to Data Package Title, should be informative. Be sure it ends in **\_metadata** to comply with data package specifications. This will become the file name of your .xml. Example: RMNP\_Mammals\_2020\_metadata)

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| --- |
| HTLN\_aqinverts\_thru2023\_metadata |

Data Files, Names, and Descriptions

(List your data files, give them an informative name and description. Descriptions should be unique and about 10 words long)

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| **Data File**  **(e.g. SEUG\_crustClassData.csv)** | **Informative Name**  **(e.g. SEUG LTVM Biocrust Data)** | **Description**  **(e.g. Biological soil crust development class data)** |
| HTLN\_aqinvert\_counts\_thru\_2023.csv | HTLN aquatic invertebrate counts | Aquatic invertebrates in rivers and small streams – HTLN parks |
| HTLN\_gauge\_station\_discharge.csv | HTLN park USGS gauge station data | USGS gauge discharge rates near HTLN sample sites |
| HTLN\_location\_details.csv | HTLN aquatic invertebrate sample sites | Location codes and descriptions for HTLN sample sites |
| HTLN\_measured\_discharge.csv | HTLN river and stream discharge rates | Discharge, depth and other characters of sampled rivers and streams |
| HTLN\_periods\_events.csv | HTLN sampling period and event dates | Sampling period codes, event codes and associated dates |
| HTLN\_reach\_coordinates.csv | HTLN reach spatial coordinates | Spatial coordinates at start of river and stream reaches |
| HTLN\_riffle\_cover\_class.csv | HTLN riffle cover classes | Cover class definitions for riffle cover types |
| HTLN\_riffle\_sample\_details.csv | HTLN riffle characteristics | Substrate and other measured characteristics of sampled riffles |
| HTLN\_riffle\_water\_quality.csv | HTLN measured water quality | In-stream measures of water quality |
| HTLN\_taxa\_info.csv | HTLN taxa levels and taxa sampled | Sampled taxa and associated taxonomic categories |

Taxonomic Information

(List the data file(s) with your taxonomic information, including the scientific name field within that data file. We suggest using [DarwinCore](https://dwc.tdwg.org/terms) for column names, such as “scientificName”. If your data package does not have taxonomic data, skip this step.)

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| **Data File**  **(e.g. qry\_Export\_AA\_VegetationDetails.csv)** | **Scientific Name Column**  **(e.g. scientificName)** |
| HTLN\_taxa\_info.csv | TaxonCode |

Geographic Information

(List the data file(s) that contain geographic information. Please ensure your geographic information is in **decimal degrees**. If your coordinates are in UTMs, the the [convert\_utm\_to\_ll()](https://nationalparkservice.github.io/QCkit/reference/convert_utm_to_ll.html) function in [QCkit](https://nationalparkservice.github.io/QCkit/) can help. If your data package does not have geographic information, you can skip this step.)

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| **Data File**  **(e.g. qry\_Export\_AA\_points.csv)** | **Decimal Latitude Column**  **(e.g. decimalLatitude)** | **Decimal Longitude Column**  **(e.g. decimalLongitude)** | **Site Name Column** **(e.g. Point\_ID)** |
| HTLN\_reach\_coordinates | YstartDD | XstartDD | ReachID |

Content Units

(These are the park units where data were collected. If the data package includes data from more than one park, they can all be listed. For instance, if data were collected in all network park units, each unit should be listed separately rather than by the network code.)

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| BUFF, EFMO, GWCA, HEHO, HOME, HOSP, OZAR, PERI, PIPE, TAPR, WICR |

Producing Units

(This is the unit(s) responsible for generating the data package. It may be a single park (ROMO) or a network (ROMN). It may be identical to the units listed in the previous step, overlapping, or entirely different.)

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| HTLN |

Data Collection Status

Ongoing  Complete

Timeframe

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| **Begin Date** | **End Date (leave empty for ongoing)** |
| 11/29/2005 |  |

Abstract

(Include what, why, where, when, and how.)

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| This monitoring dataset consists of aquatic invertebrate community data for Buffalo National River, Ozark National Scenic Riverways and multiple prairie stream park units throughout the Midwest. The dataset includes invertebrate counts, site conditions, water quality and habitat measures, and stream discharge data for aquatic invertebrate communities in Heartland Inventory and Monitoring Network Parks. The dataset includes approximately 82,000 individual observations covering approximately 330 taxa of aquatic invertebrates observed at 11 NPS park units taken between 2005 and 2023. The overall goals of Heartland Inventory and Monitoring Network aquatic invertebrate community program are to monitor temporal changes in aquatic invertebrate communities and relations between the invertebrate communities and environmental factors. This monitoring information can be used by park managers to evaluate the effects of past and future activities and management decisions (either by park managers or others) on aquatic invertebrate communities. The specific objectives for aquatic invertebrate community monitoring are to assess the natural and anthropogenic processes influencing invertebrate communities, and to incorporate the spatial relationship of benthic invertebrates with their local habitat, including discharge rates, substrate size and embeddedness and water quality parameters (temperature, dissolved oxygen, pH, specific conductance, and turbidity). |  |

Methods

(Describes the data creation methods. Includes enough detail for future users to correctly use the data. Be specific about the study design and field and lab methods for collecting and processing the data. Protocol can be cited. It may also be appropriate to cite the datasets that were ingested to generate the data package, software (e.g. R), packages (e.g. dplyr, ggplot2) or custom scripts.)

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| Aquatic invertebrate samples, associated habitat, water quality data and water discharge rates were collected in 2 large river parks, Buffalo National River and Ozark Scenic Riverways and at multiple small stream parks. Procedures for collecting aquatic invertebrate samples and documenting habitat data involved selecting riffles to sample, collecting invertebrate samples, taking habitat measures, and measuring water quality and water discharge variables. Invertebrate samples were collected using a Slack Surber sampler (rectangular benthic net) at three sample sites in each riffle. Habitat measurements included percent embeddedness of substrate, percent vegetation, percent periphyton, and percent filamentous algae. Dominant substrate size was measured and categorized using the Wentworth scale. Water quality measures included temperature, specific conductance, pH, and dissolved oxygen. Water discharge rates also included distance from bank, depth, and velocity. Complete methods for of aquatic invertebrate community monitoring in large rivers are given in Bowles DE and Others. 2020. https://doi.org/10.36967/nrr-2282172; and for small streams, in Bowles DE and Others. 2021. https://doi.org/10.36967/nrr-2284622 |

Creators

**(These are the people who will show up as authors in the dataset citation.** These are the individuals who have provided intellectual or other significant contributions to the creation of this dataset, much like the authors of a research paper. Valid EML requires at least one person with a **creator** role.)

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| --- | --- | --- | --- | --- | --- | --- |
| **First Name** | **Middle Initial** | **Last Name** | **Organization** | **Email address** | **ORCID ID (optional)** | **Role in project** |
| David | E | Bowles | NPS - HTLN | NA |  | Creator |
| Hope | R | Dodd | NPS - HTLN | Hope\_Dodd@nps.gov |  |  |
| Cameron |  | Cheri | NPS - HTLN | Cameron\_Cheri@nps.gov |  |  |
| Janice | A | Hinsey | NPS - HTLN | NA |  |  |
|  |  |  |  |  |  |  |

Other personnel names and roles

(Who should a data user contact with questions about these data? You **must** enter a person or organization name to serve as the **contact** for this dataset. If this is the same person as the creator, list that person twice. You may also list other personnel who participated in the project (such as field crew, lab tech, data entry etc.) Persons serving more than one role are listed on separate lines. Other roles (e.g. Field Technician) will be listed as associated parties to the data. Their specific role (e.g. “Field Tech” will also be listed in metadata))

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| **First Name** | **Middle Initial** | **Last Name** | **Organization** | **e-mail address** | **ORCID ID (optional)** | **Role in project** |
| Gareth | A | Rowell | NPS - HTLN | Gareth\_Rowell@nps.gov |  | Contact |
| James | R | Brown | NPS - HTLN | James\_Brown@partner.nps.gov |  | Contact |
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Dissemination Level

(Select a Dissemination Level based on the CUI status of your dataset. This is a required step. You can choose from one of five dissemination codes. Watch out for the spaces!)

PUBLIC *(Does NOT contain CUI.)*

FED ONLY *(Contains CUI. Only federal employees should have access.)*

FED CON *(Contains CUI. Only federal employees and federal contractors should have access.)*

NOCON *(Contains CUI. Federal, state, local, or tribal employees may have access, but contractors cannot.)*

DL ONLY *(Contains CUI. Should only be available to a named list of individuals.)*

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| **DL ONLY Names** |
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More information about these codes can be found at: <https://www.archives.gov/cui/registry/limited-dissemination>).

Intellectual Rights Statement

(The EMLeditor tool can assist in modifying the intellectual rights statement that is embedded in metadata. Government works shared with the public are usually public, i.e. public domain, or CC0, and anything with CUI should be set to ‘restricted’.)

Public *(Does not contain CUI. The intellectual rights will read: “This work is in the public domain. There is no copyright or license.”)*

CC0 *(Does not contain CUI. The intellectual rights will read: “The person who associated a work with this deed has dedicated the work to the public domain by waiving all of his or her rights to the work worldwide under copyright law, including all related and neighboring rights, to the extent allowed by law. You can copy, modify, distribute and perform the work, even for commercial purposes, all without asking permission.”)*

Restricted (*Contains CUI.*)

Keywords

(List keywords below and separate with commas. Using keywords from a controlled vocabulary (CV) will improve the future discovery and reuse of your data. The LTER CV is a good source for keywords. Access the LTER CV [here](http://vocab.lternet.edu/vocab/vocab/index.php). Also, please determine one or two keywords that best describe your park, station, and/or project (e.g., Trout Lake Station, NTL LTER).)

|  |
| --- |
| River aquatic invertebrate communities, spring aquatic invertebrate communities, small stream aquatic invertebrate communities, aquatic invertebrate habitat, water quality, stream discharge; Buffalo National River, Ozark National Scenic Riverways, prairie streams |

Data Table(s)

(Provide a Table Name, Table Description, and description of each column in your data table):

* **Column Name**: This name must be exactly as it appears in the dataset. Please avoid special characters (like & or \), dashes and spaces. Underscores are permissible. Do not begin a column name with a number.
* **Description**: Please give a specific definition of the column name. This can be lengthy.
* **Class:** Column class. Valid options are **numeric**, **categorical**, **character**, and **date**.
* **Unit:** Identify units for all numeric variables. Please avoid special characters and describe units in this pattern: e.g., microSiemenPerCentimeter, microgramPerLiter, absorptionPerMolePerCentimeter
* **Date Time Format**: Please tell us exactly how the date and time is formatted: e.g. mm/dd/yyyy hh:mm:ss plus the time zone and whether or not daylight savings was observed. ISO 8601 date format of YYYY-MM-DD or YYYY-MM-DD hh:mm:ss is preferred.
* **Missing Value Code**: If a code for ‘no data’ is used, please specify: e.g., -99999
* **Missing Value Code Explanation**: Definition of missing value code.

**Table name:** HTLN\_aqinvert\_counts\_thru\_2023.csv

**Table description:** HTLN aquatic invertebrate samples from 2005 - 2023

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| **Column name** | **Description** | **Class** | **Unit** | **Date Time Format** | **Missing Value Code** | **Missing Value Code Explanation** |
| ParkName | National Park name | character |  |  |  |  |
| ParkCode | Park 4 letter designation | Character |  |  |  |  |
| LocationID | Foreign key to HTLN\_location\_details | Character |  |  |  |  |
| PeriodID | Sampling season code | Character |  |  |  |  |
| EventID | Foreign key to HTLN\_periods\_events | Character |  |  |  |  |
| RiffleNo | Sampled riffle number | Numeric |  |  |  |  |
| Replication | Replication count number | Numeric |  |  |  |  |
| TaxonCode | Foreign key to HTLN\_taxa\_info | Character |  |  |  |  |
| LargeRare | Considered large or rare | Numeric |  |  |  |  |
| RepCount | Sample count for replicate | Numeric |  |  |  |  |
| Note | Observation notes | character |  |  |  |  |

(Copy this table to document more than one data table.)

**Table name:** HTLN\_gauge\_station\_discharge.csv

**Table description:** HTLN park USGS gauge station data

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| **Column name** | **Description** | **Class** | **Unit** | **Date Time Format** | **Missing Value Code** | **Missing Value Code Explanation** |
| ParkName | National Park name | Character |  |  |  |  |
| ParkCode | Park 4 letter designation | Character |  |  |  |  |
| LocationID | Foreign key to HTLN\_location\_details | Character |  |  |  |  |
| PeriodID | Sampling season code | Character |  |  |  |  |
| EventID | Foreign key to HTLN\_periods\_events | Character |  |  |  |  |
| GaugeSiteNo | Gauge station reference number | Numeric |  |  |  |  |
| StreamName | Stream name | Character |  |  |  |  |
| GaugeLocation | Location description | Character |  |  |  |  |
| Discharge\_cms | Discharge rate | Numeric | cubic meters/second, |  |  |  |
| Comments | Comments | Character |  |  |  |  |

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**Table name:** HTLN\_location\_details.csv

**Table description:** HTLN aquatic invertebrate sample sites

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| **Column name** | **Description** | **Class** | **Unit** | **Date Time Format** | **Missing Value Code** | **Missing Value Code Explanation** |
| ParkName | National Park name | Character |  |  |  |  |
| ParkCode | Park 4 letter designation | Character |  |  |  |  |
| LocationID | Foreign key to HTLN\_location\_details | Character |  |  |  |  |
| LocationType | "Mainstem", "Tributary", "Spring" | Character |  |  |  |  |
| LocationDescription | Description of location | Character |  |  |  |  |
| StreamName | Name of river, small stream, or spring | Character |  |  |  |  |
| TributaryName | Name of tributary sampled in watershed of river parks | Character |  |  |  |  |
| County | County location | Character |  |  |  |  |
| StretchNumber | Number associated with the Stretch | Numeric |  |  |  |  |
| ReachID | ID for sampling reach | Character |  |  |  |  |

(Copy this table to document more than one data table.)

**Table name:** HTLN\_measured\_discharge.csv

**Table description:** (Add brief description of table contents)

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| **Column name** | **Description** | **Class** | **Unit** | **Date Time Format** | **Missing Value Code** | **Missing Value Code Explanation** |
| ParkName | National Park name | Character |  |  |  |  |
| ParkCode | Park 4 letter designation | Character |  |  |  |  |
| LocationID | Foreign key to HTLN\_location\_details | Character |  |  |  |  |
| PeriodID | Sampling season code | Character |  |  |  |  |
| EventID | Foreign key to HTLN\_periods\_events | Character |  |  |  |  |
| Discharge\_No | Discharge number: 1 to 20 | Numeric |  |  |  |  |
| DistanceFromBank | Distance from bank | Numeric | meters |  |  |  |
| Depth | Water depth | Numeric | centimeters |  |  |  |
| Velocity | Water velocity | Numeric | meters/sec |  |  |  |
| Comments | comments | Character |  |  |  |  |

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**Table name:** HTLN\_periods\_events.csv

**Table description:** (Add brief description of table contents)

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| **Column name** | **Description** | **Class** | **Unit** | **Date Time Format** | **Missing Value Code** | **Missing Value Code Explanation** |
| ParkName | National Park name | Character |  |  |  |  |
| ParkCode | Park 4 letter designation | Character |  |  |  |  |
| PeriodID | Sampling season code | Character |  |  |  |  |
| Season | Year at beginning of sampling period (required for overwinter sampling) | Date |  | YYYY |  |  |
| Period\_StartDate | Start date of sampling period | Date |  | mm/dd/yyyy |  |  |
| Period\_ EndDate | End date of sampling period | Date |  | mm/dd/yyyy |  |  |
| EventID | Unique event code (primary key) | Character |  |  |  |  |
| Event\_StartDate | Start date of sampling event | Date |  | mm/dd/yyyy |  |  |
| Event\_ EndDate | End date of sampling event | Date |  | mm/dd/yyyy |  |  |

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**Table name:** (A short name for this table)

**Table description:** (Add brief description of table contents)

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Categorical Variables (Catvars)

(Describes categorical variables of a data table (if any columns are classified as categorical in table attributes).)

* **Attribute Name**: Column name
* **Code**: Categorical variable
* **Definition :** Definition of categorical variable

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| **Attribute** | **Code** | **Definition** |
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Data Release Report (DRR)

(Indicate whether there is an associated DRR with your data package.)

No  Yes, it already exists  Yes, plan to generate one with the Data Strike Team

(If you have a DRR and there is an existing reference for it on DataStore, fill out the table below. Otherwise, you can skip this step.)

|  |  |
| --- | --- |
| **DRR Title** | **DRR Reference Number (from DataStore)** |
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Additional notes and comments

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