# Instructions for the EML assembly line

Original Author: Colin Smith (EDI)

## IEP test-case comments Brittany Davis

Expect to take about a day to become familiar with the EML assembly line R package.

Edits by Rosemary Hartman, CDFW 7 Dec 2018

Edits by Ryan Mckenzie, USFWS 21 April 2020

Edits by Rosemary Hartman DWR 23 June 2021

## Overview

The EML assembly line will help you create high quality metadata for your dataset. Below is a set of step-by-step instructions for making EML metadata for tabular data and other data, including spatial vector, spatial raster, and images.

## Installation (periodic reinstallation is recommended)

The assembly line is under constant revision and improvement. Please reinstall the assembly line periodically to ensure a successful experience. Installation from GitHub requires the `devtools` package.

```
# Install devtools
install.packages("devtools")

# Load devtools
library(devtools)

# Install and load EMLassemblyline
install_github("EDIorg/EMLassemblyline")
library(EMLassemblyline)
```

## Step 1: Create a directory for your dataset

Create a new directory for your dataset. This is where the metadata parts created in the assembly line process will be stored and available for editing should you need to change the content of your EML.

Name this directory after your dataset. Replace spaces with underscores (e.g. `name of your directory` should be `name_of_your_directory`).

*R does not communicate well with the OneDrive, consider working more easily on the Desktop.

## Step 2: Move your dataset to the directory

Move copies of the final versions of your data tables into this directory. These should be the final versions of the data you are ready to publish. Make sure you have done all your QAQC checks, formatted your tables so that each row contains one observation and each cell contains one value. Convert your files to non-proprietary formats (.csv instead of .xlsx) if possible.

## Step 3: Select an intellectual rights license

There are 2 options for intellectual rights licenses:

1. **CC0** the most accomodating of data reuse … This data package is released to the "public domain" under Creative Commons CC0 1.0 "No Rights Reserved". It is considered professional etiquette to provide attribution of the original work if this data package is shared in whole or by individual components. A generic citation is provided for this data package on the website (herein "website") in the summary metadata page. Communication (and collaboration) with the creators of this data package is recommended to prevent duplicate research or publication. This data package (and its components) is made available "as is" and with no warranty of accuracy or fitness for use. The creators of this data package and the website shall not be liable for any damages resulting from misinterpretation or misuse of the data package or its components. Periodic updates of this data package may be available from the website. Thank you.

2. **CCBY** requires attribution … This information is released under the Creative Commons license - Attribution - CC BY. The consumer of these data ("Data User" herein) is required to cite it appropriately in any publication that results from its use. The Data User should realize that these data may be actively used by others for ongoing research and that coordination may be necessary to prevent duplicate publication. The Data User is urged to contact the authors of these data if any questions about methodology or results occur. Where appropriate, the Data User is encouraged to consider collaboration or co-authorship with the authors. The Data User should realize that misinterpretation of data may occur if used out of context of the original study. While substantial efforts are made to ensure the accuracy of data and

associated documentation, complete accuracy of data sets cannot be guaranteed. All data are made available "as is." The Data User should be aware, however, that data are updated periodically and it is the responsibility of the Data User to check for new versions of the data. The data authors and the repository where these data were obtained shall not be liable for damages resulting from any use or misinterpretation of the data. Thank you.

IEP can create a customized CC statement and alter in the uploaded text box

## Step 4: Identify the types of data in your dataset

Currently, the assembly line only works for tabular data and .zip directories. If you have other types of data you can include them as “other data entities”.

**table**

A flat file composed of columns containing variables and rows containing observations. Column names must follow these rules:

- replace symbols with words
- replace parentheses with underscores
- replace periods with underscores
- replace blank spaces with underscores

e.g. `land.cover.use (%)` should be `percent_land_cover_use`

**.zip directory**

A .zip directory containing anything you want to put into it. .zip directory name should follow the same naming rules as for a table.

## Step 5: Import the core metadata templates

Run the function `template_core_metadata` in the RStudio Console to populate the directory with the core metadata templates for you to complete. You will need to supply a few arguments to this function:

1. **path** A path to your dataset working directory.
2. **license** The license for your dataset ("CC0" or "CCBY").

3. **file.type** File type for abstract, methods, and additional info metadata templates. Can be: '.txt' (plain text), '.docx' (MS Word), or '.md' (markdown).

```
# First load the EMLassemblyline package
library(EMLassemblyline)

# View documentation for this function
?template_core_metadata

# Import .txt file core templates for an example dataset licensed under CC0.
template_core_metadata(
  path = 'name_of_your_directory ',
  license = 'CC0',
  file.type= ‘.txt’)
```

## Step 6: Script your workflow

Open `my_workflow.R` in RStudio. This is a blank script for you to build an assembly line workflow, which can be revisited or modified for future assembly line runs.

**You will have already started an R workflow, hence at this point save yours in the appropriate working directory.

## Step 7: Abstract

Open the file `abstract.txt` and write an abstract for your dataset. The abstract should cover what, why, when, where, and how for your dataset. Write your abstract in plain text.
Do not use special characters, symbols, formatting, or hyperlinks (URLs are acceptable). The reason for this is that the EML schema only allows characters that are apart of the unicode character set.

NOTE: You can create your abstract in Microsoft Word and then copy over to `abstract.txt` but first you will need to remove any non-unicode characters. To do this go to this web service and paste your abstract into the window. Click the button "Remove Diacritics" to remove these non-compliant characters, then copy the resultant text into `abstract.txt`. You will want to give your abstract one last look over after performing this operation to ensure no information has been lost.

## Step 8: Methods

Open the file `methods.txt` and describe the methods for your dataset. Be specific, include instrument descriptions, or point to a protocol online. If this dataset is a synthesis of other datasets please specify dataset origins, preferably their DOI or URL plus general citation information.

Do not use special characters, symbols, formatting, or hyperlinks (URLs are acceptable). The reason for this is that the EML schema only allows characters that are apart of the unicode character set.

NOTE: You can create your methods in Microsoft Word and then copy over to `methods.txt` but first you will need to remove any non-unicode characters. To do this go to this web service and paste your methods into the window. Click the button "Remove Diacritics" to remove these non-compliant characters, then copy the resultant text into `methods.txt`. You will want to give your methods one last look over after performing this operation to ensure no information has been lost.

Alternatively, you can include your methods a separate PDF as part of your data package, or include tables in the 'methods' section (such as gear specifications) as data entities.

Format methods following the IEP metadata standards. These are the sections recommended by IEP

1. Data collection methods: Metadata must include enough information on methods to make the data usable. Minimum methods information should be similar to the "methods" section of a scientific paper. This may include diagrams and pictures of sampling equipment.
2. Link to blank datasheet (if available)
3. Instrument and equipment specifications, including QAQC methods and frequency. This may include references to external SOPs instead of included in metadata
4. Analysis methods & SOPs: Any analyses done to produce the data set (such as CPUE calculations). This is not analyses done to produce later publications.
5. Link to SOPS: Specific SOPs used to generate the data. It is understood that not all programs will have this information available right away, but should be prepared to provide them within three years.
6. Project history: List of any changes in methods and sampling locations, with dates changes were implemented
7. QA/QC – Methods and protocols for quality assurance during data collection, data entry, and data analysis

8. Contractor information: Chain of custody procedures and contact information for any outside labs used to produce the data.
9. External review process: Any other review of data done by entities other than the PI to help with quality assurance. (A description of the process, not the reviews themselves)
10. Methods references: Citations for publications from which methods were drawn.

## Step 9: Additional information

`additional_info.txt` is a good place for text based information about your dataset that doesn't fall under the scope of the abstract or methods (e.g. a list of research articles or theses derived from this dataset). If you have this information and would like to share it then open `additional_info.txt` in a text editor and add it. You can delete this file if you won't be using it, or you can keep it around in case you change your mind.
Do not use special characters, symbols, formatting, or hyperlinks (URLs are acceptable). The reason for this is that the EML schema only allows characters that are apart of the unicode character set.

NOTE: You can create your additional information in Microsoft Word and then copy over to `additional_info.txt` but first you will need to remove any non-unicode characters. To do this go to this web service and paste your additional information into the window. Click the button "Remove Diacritics" to remove these non-compliant characters, then copy the resultant text into `additional_info.txt`. You will want to give your additional information one last look over after performing this operation to ensure no information has been lost.

## Step 10: Keywords

Open the tab delimited file `keywords.txt` in a spreadsheet editor and list the keywords that best describe your dataset. DO NOT edit this file in a text editor. Consult the LTER controlled vocabulary for keywords. In addition to keywords describing the data, you may want to include keywords that describe your lab, station, and project (e.g. OBFS, LTREB, etc.).
Definitions for columns of this file:

- **keyword** A keyword describing your dataset.
- **keywordThesaurus** A keywordThesaurus (i.e. a controlled vocabulary like the resource listed above) corresponding to the keyword listed in the keyword

column. If the keyword is not from a thesaurus or controlled vocabulary, leave corresponding entry in the keyword Thesaurus column blank.

Include IEP key term “Interagency Ecological Program for the San Francisco Bay Delta Estuary” and “IEP”

You can check to see if the keywords are in the LTER Thesaurus by leaving the keywordThesaurus column blank and running the “validate_keywords” function:

validate_keywords(path = getwd(), cv = 'lter')

The function will automatically fill-in the “keywordThesaurus” column for any words in the LTER vocabulary

### Step 11: Personnel

Open the tab delimited file `personnel.txt` in a spreadsheet editor and enter information about the personnel associated with this dataset.
Definitions for columns of this file:

- **givenName** First name of person.
- **middleInitial** Middle initial of person.
- **surName** Last name of person.
- **organizationName** Name of organization the person is associated with.
- **electronicMailAddress** Email address of person.
- **userId** ORCID of person (not required). A valid entry for userId is the 16 digit ORCID number separated by dashes (i.e. XXXX-XXXX-XXXX-XXXX). An ORCID is like a social security number for scientists and links your dataset with your ORCID. Create one here.
- **role** Role of person with respect to this dataset. Valid entries for role are:
    - **creator** Dataset creator (required; at least 1 creator must be listed for your dataset).
    - **PI** Principal investigator associated with this dataset (not required).
    - **contact** Dataset contact (required; at least 1 contact must be listed for your dataset). The contact may be a person or a position at an organization. We recommend listing the contact as a person rather than a position. To list a position as a contact (e.g. Data Manager), Enter the

position name in the `givenName` column and leave `middleInitial` and `surName` blank.
    - Any other entries into the 'role' column are acceptable and will be defined under the associated party element of this dataset with whatever value is entered under role.
    - If a person serves more than one role, duplicate this person's information in another row but with the additional role.
    - Similarly, if a role is shared among many people, list the individuals with the shared role on separate lines.
- **projectTitle** Title of the project this dataset was created under (optional). Project titles are only listed on lines where the personnel role is PI. If an auxiliary project was involved in creating this dataset then add a new row below the row containing the primary project and list the project title and associated PI. Do this for each auxiliary project.
- **fundingAgency** Name of the entity funding the creation of this dataset (optional). Only include an entry in this column for rows where role PI.
- **fundingNumber** Number of the grant or award that supported creation of this dataset (optional). Only include an entry in this column for rows where role PI.

  *Creators are the only ones that will actually be listed as the cited authors. See the metadata word document for more notes on how to manipulate the table to get other entries imported (e.g. having IEP listed in the SurName). The order of personnel in the table will be the order listed in the citation.

## Step 12: Create and fill-in Attribute templates

Run the function `template_table_attributes` in the RStudio Console to populate the directory with the attribute templates for your data tables. You will need to supply a few arguments to this function:

1. **path** A path to your dataset working directory.
2. **data.table** A character string of a table name. If more than one, then supply as a vector of character strings (e.g. data.table = c('nitrogen.csv', 'decomp.csv')).

```
# Import .txt file core templates for an example dataset licensed
under CC0.
template_table_attributes(
              path = '.',
      data.table = c("YBFMP_fish_and_water_quality_data_07252018_QA.csv",
                     "YBFMP_Fish_Taxonomy.csv",
                     "YBFMP_Trap_Effort.csv",
                     "YBFMP_Site_locations_latitude_and_longitude.csv"))
```

After running the function, an `attributes_datatablename.txt` file has been created for each of your data tables. Edit each of these tab delimited files in a spreadsheet editor. DO NOT edit this file in a text editor or you will end up with problems. You will see this file has been partially populated with information detected by the `template_table_attribute` function. You will have to double check values listed in all the columns except `attributeName`.
Instructions for completing the attribute table are as follows:

- **attributeName** Enter attribute names (i.e. column names) as they appear in the data table and in the same order as listed in the data table.

- **attributeDefinition** Enter definitions for each attribute. Be specific, it can be lengthy.

- **class** Enter the attribute class. This is the type of value stored under the attribute. Valid options for class are:

    - **numeric** For numeric variables.
    - **categorical** For categorical variables.
    - **character** For variables containing text or symbols that are not categorical.
    - **Date** For date time variables.
    - If an attribute has class of `numeric` or `Date`, then all values of this attribute must be either numeric or date time. If any character strings are present in an otherwise `numeric` attribute, this attribute must be classified as `character`. Similarly, if any values of a "Date" attribute do not match the date time format string (details below), then this attribute must be classified as `character`.
- **unit** If an attributes class is numeric, then you must provide units. If the attribute is numeric but does not have units, enter `dimensionless`. If the attribute class is categorical, character, or Date then leave the unit field blank. If

the attribute is numeric and has units search the standard unit dictionary for the unit of interest and enter the unit name as it appears in the dictionary (unit names are case sensitive). Open the dictionary by running these lines of code in the RStudio console window:

-

```
# View and search the standard units dictionary
view_unit_dictionary()
```

- If you cannot find a unit in the dictionary, create one and add it to `custom_units.txt`. Open this tab delimited file in a spreadsheet editor. DO NOT edit this file in a text editor. If you have no custom units to report you may delete this file, but may also keep it around if you think it may be of future use. Valid custom units must be convertible to SI Units (i.e. International System of Units). If it cannot be converted to SI then list it in the attribute defintion and enter "dimensionless" in the unit field. To create a custom unit define the:
    - **id** This is equivalent to the unit name.
    - **unitType** The type of unit being defined. Reference the dictionary for examples.
    - **parentSI** The SI equivalent of the id you have entered.
    - **multiplierToSI** This is the multiplier to convert from your custom unit to the SI unit equivalent.
    - **description** A description of the custom unit. Reference the dictionary for examples.
- **dateTimeFormatString** Enter the date time format string for each attribute of "Date" class. Remember, a class of "Date" specifies the attribute as a date, time, or datetime. Enter the format string in this field. If the attribute class is not "Date", leave this field blank. Below are rules for constructing format strings.
    - **year** Use `Y` to denote a year string (e.g. 2017 is represented as `YYYY`).
    - **month** Use `M` to denote a month string (e.g. 2017-05 is represented as `YYYY-MM`).
    - **day** Use `D` to denote a day string (e.g. 2017-05-09 is represented as `YYYY-MM-DD`).

    - **hour** Use `h` to denote a hour string (e.g. 2017-05-09 13 is represented as `YYYY-MM-DD hh`).
    - **minute** use `m` to denote a minute string (e.g. 2017-05-09 13:15 is represented as `YYYY-MM-DD hh:mm`).
    - **second** use `s` to denote a second string (e.g. 2017-05-09 13:15:00 is represented as `YYYY-MM-DD hh:mm:ss`).
    - **Time zone format strings:** use + or - along with a time string to denote time zone offsets (e.g. `2017-05-09 13:15:00+05:00` is represented as `YYYY-MM-DD hh:mm:ss+hh:mm`).

- **missingValueCode** If a code for 'no data' is used, specify it here (e.g. NA, -99999, etc.). Only one missingValueCode is allowed for a single attribute.

- **missingValueCodeExplanation** Define the missing value code here.

*Depending on the data and time string format chosen, you may get a warning in the final production report on EDI, but you will still be able to make the eml in R and publish.

## Step 13: Close files

Make sure all files of your dataset directory are closed. Some functions will error out if these files are open.

*If you edit any text file or recall in templates, they will not re-write the ones already in the working directory and you will get a message in the console that the files already exist.

## Step 14: Categorical variables

If your data tables contain any attributes with the categorical class, you will need to supply definitions for the categorical codes. Use the function `template_categorical_variables` to do this. `template_categorical_variables` searches through each attribute file looking for attributes with a categorical class. If found, the function extracts unique categorical codes for each attribute and writes them to a file for you to define.

```
# View documentation for this function
?template_categorical_variables

# Run this function for your dataset
```

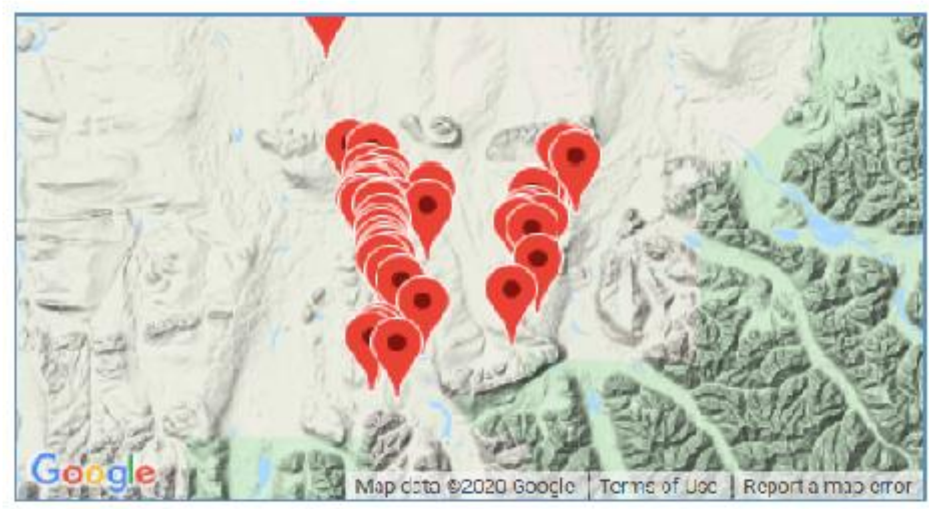
```
template_categorical_variables(path = ".")
```

A tab delimited **catvars_datatablename.txt** will be created for each of your data tables containing categorical variables. Open these in a spreadsheet editor and add definitions for each code.

## Step 15: Geographic coverage

Often an EDI data user will search for data within a geographic area. There are two ways you may display your data spatially on the portal. You will have to decide on one of these options, as including the coding for both will cause errors when you try to make the EML.

### Geographic points



If you want your dataset to display more than one sampling point or area (see above), then you will want to add this information to your metadata. Run the function template_geographic_coverage to extract the unique latitude, longitude, and site name combinations from your data and write to file. template_geographic_coverage requires specific inputs that may require altering the latitude and longitude format of your data. See documentation for details.

Arguments required by this function are:

1. **path** A path to the dataset working directory containing the data table with geographic information.
2. **data.file** Name of the input data table containing geographic coverage data.

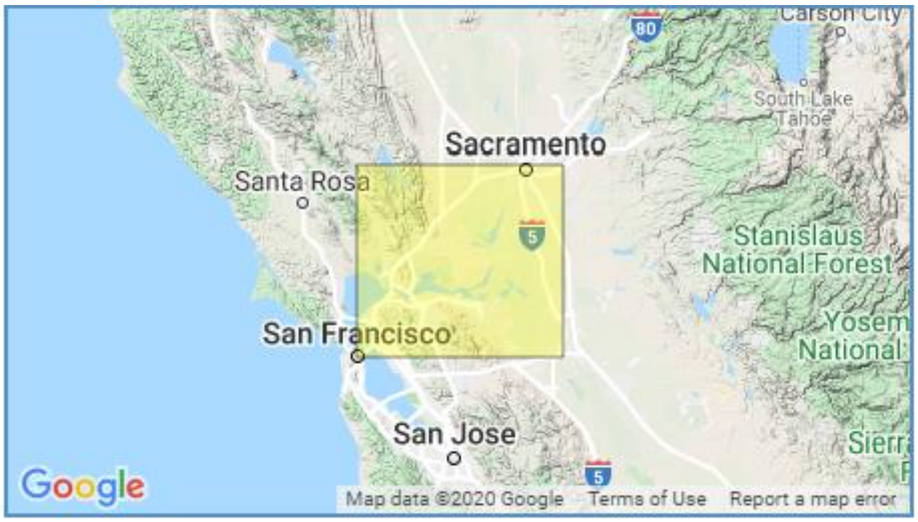
3. **lat.col** Name of latitude column. Values of this column must be in decimal degrees. Latitudes south of the equator must be prefixed with a minus sign (i.e. dash, "-").
4. **lon.col** Name of longitude column. Values of this column must be in decimal degrees. Longitudes west of the prime meridian must be prefixed with a minus sign (i.e. dash, "-").
5. **site.col** Name of site column. This column lists site specific names to be associated with the geographic coordinates.

```
# View documentation for this function
?template_geographic_coverage

# Run this function for your dataset
template_geographic_coverage (path = "working directory",
                    data.file = "lake_characteristics.csv",
                    lat.col = "lake_latitude",
                    lon.col = "lake_longitude",
                    site.col = "lake_name")
```

This function outputs a tab delimited file named `geographic_coverage.txt` to your dataset directory. You may edit this in a spreadsheet editor if you'd like, but if the data table this information has been extracted from is accurate, then there is no need for editing.

### Geographic area



If you want your dataset to display one general area polygon (see above), then you will skip the template_geographic_coverage function step to create the geographic_coverage.txt metadatafile.
The coordinates for the bounding box are created using the make_eml in the next step.

## Step 16: Make EML

Now you are ready to synthesize your completed metadata templates into EML. This step is relatively simple, but requires several arguments:

1. **path** A path to the dataset working directory.
2. **dataset.title** A character string specifying the title for your dataset. Be descriptive (more than 5 words). We recommend the following format: `Project name: Broad description: Time span` (e.g. "GLEON: Long term lake chloride concentrations from North America and Europe: 1940-2016").
3. **data.table** A list of character strings specifying the names of the data files of your dataset.
4. **data.table.description** A list of character strings briefly describing the data files listed in the data.files argument and in the same order as listed in the data.files argument.
5. **data.table.quote.character** A list of character strings defining the quote characters used in your data files and in the same order as listed in the data.files argument. If the quote character is a quotation, then enter `"\""`. If the quote character is an apostrophe, then enter `"\'"`. If there is no quote character then don't use this argument when running `make_eml`.
6. **data.table.url** A character string specifying the URL of where your data tables are stored on a publicly accessible server (i.e. does not require user ID or password). The EDI data repository software, PASTA+, will use this to upload your data into the repository. If you will be manually uploading your data tables, then don't use this argument when running `make_eml`.
7. **other.entity** (character; optional) Name of other.entity(s) in this dataset. Useother.entity for all non-data.table files. other.entity(s) should be stored at data.path. If more than one, then supply as a vector of character strings (e.g. other.entity = c('ancillary_data.zip', 'quality_control.R')).

8. **other.entity.description** (character; optional) Description(s) of `other.entity`(s). If more than one, then supply as a vector of descriptions in the same order as listed in `other.entity`.
9. **temporal.coverage** A list of character strings specifying the beginning and ending dates of your dataset. Use the format `YYYY-MM-DD`.
10. **geographic.coordinates** (character) Coordinates of datasets geographic extent. Coordinates are listed in this order: North, East, South, West (e.g.geographic.coordinates = c('28.38', '-119.95', '28.38', '-119.95')). Longitudes west of the prime meridian and latitudes south of the equator are negative. **********Don't use this argument if geographic coverage is supplied by geographic_coverage.txt.
11. **geographic.description** A character string describing the geographic coverage of your dataset.
12. **maintenance.description** A character string specifying whether data collection for this dataset is "ongoing" or "completed".
13. **user.id** A character string specifying your EDI data repository user ID. If you don't have one, contact EDI (info@edirepository.org) to get one, or don't use this argument when running `make_eml`.
14. **package.id** A character string specifying the package ID for your data package. If you don't have a package ID, then don't use this argument when running `make_eml`. A non-input package ID defaults to "edi.101.1".

```
# View documentation for this function
?make_eml

# Run this function
make_eml(path = ".",
         dataset.title = "Interagency Ecological Program: Fish catch
and water quality data from the Sacramento River floodplain and
tidal slough, collected by the Yolo Bypass Fish Monitoring Program,
1998-2018.",
         temporal.coverage = c("1998-01-01", "2018-06-30"),
         geographic.description = "Yolo Bypass tidal slough and
seasonal floodplain in Sacramento California USA",
         geographic.coordinates = c("38.79395205", "-121.5368316",
"38.23466149",                                "-121.8073699"),
         maintenance.description = "ongoing",
         data.table =
c("YBFMP_fish_and_water_quality_data_1998_2018.csv",
                        "YBFMP_Fish_Taxonomy.csv",
                         "YBFMP_Trap_Effort.csv",

"YBFMP_Site_locations_latitude_and_longitude.csv"),
         data.table.description = c("Fish catch and water quality
data from the Yolo Bypass Fish Monitoring Program",
                                    "Taxon table for species
including native or invasive classification",
                                    "Table of hours fished for
effort estimations",
                                    "Site location table including
coordinates"),
         data.table.quote.character = c("\"", "\"","\"","\""),
         data.table.url = c("","","",""),
         user.domain ="EDI",
         user.id="iep",
         package.id="edi.233.1")
```

Your EML file will be written to your data directory with the name `packageID.xml`. If your EML is valid you will receive the message: `EML passed validation!`. If validation fails, open the EML file in an XML editor and look for the invalid section. Often a minor tweak to the EML can be made manually to bring it into compliance with the EML schema.

## Step 17: Upload your data package to the EDI repository

Your data and metadata form a package that may be uploaded to the EDI data repository. Contact EDI for login credentials.

The last thing steps before publishing include "staging" and "production" which includes 1) reserving a package ID number, 2) previewing your metadata (this could be cyclical and re-running the eml in R to get exactly what you want), 3) evaluating the eml and all data (generation of a large report for each table), 4) uploading the data and eml, and GOING LIVE with a DOI!!

1. Familiarize yourself with the portal with this Youtube Video overview
2. You need to contact EDI to obtain a login username and password.
    - Corinna Gries, Mark Servilla (PASTA+), and Colin Smith (EMLassemblyLine)
    - If you would like to use the IEP login and password, contact Rosemary Hartman

3. Work in the staging environment first. Work in the staging platform to run validation checks and prepare for the DOI publication. Data is not public during the staging site.
    - Here is the staging environment
    - The website title page will be highlighted in orange and say "**EDI Staging Environment"**
    - Play around in the site for familiarity.
    - You will see the package page will have a water mark
4. How to upload data:
    - Get a package identifier. To get a data package identifier, go to "Tools" -> "Reservations" -> "Data Package Identifier Reservations". This will give you the number for the "package.id" value in the last line of the "make_eml" function. You will need to add the version number to the package ID before building the EML. (example: EDI will tell you your package ID is "edi.999", you will have to update it to "edi.999.1" for version 1.)
    - Create your metadata, using the package identifier you have reserved
    - Preview your metadata "Data Packages" -> "Preview Metadata". Choose the file you made with the EML assemplyline. It should automatically have been named with your package ID (example: edi.999.1.xml). This lets you see if you like how the metadata looks before you start uploading stuff for real.
    - Now upload your data Tools -> Evaluate/Upload Data Packages
    - Choose EML file, click "I want to manually upload the data", and click "Evaluate"
    - EML file must have the first version number on it. For example, YBFMP was "eml.233" you must name the file as "eml.233.1" as it's the first version. All version after have to increase, 2, 3, etc.
    - Select appropriate data table files
    - Click Evaluate
    - Report will be generated with the # of quality checks, # valid (green), #information (blue), #warnings (orange), and #errors (red).
    - Click "view" on report table to find out what is being flagged and if fixed are required.
    - You can publish with warnings, but you cannot with any errors, they will need to be fixed and cycle through the steps again for "Evaluating" package. You may need to fix in EML code in R or text and data files.
    - Once you've cleared all the errors, hit "upload" instead of "evaluate".
    - Your data package should now be ready, but with the "staging environment" watermark.

5. Work in the production platform to run final evaluation checks and upload EML and data for DOI publication. Data will be public after the “upload” step.

- Here is the production environment
- The website title page will be highlighted in orange and say “**EDI Data Portal**”
- Login
- Get a new package identifier (see above). Unfortunately, the one you got for the staging environment won’t transfer. Re-make the metadata file with the new package identifier.
- Follow Steps 3 and 4 (above) the same as you did for the staging environment, but this time it’s for real!
- Once report is clean and you are happy, instead of clicking evaluate, now click “upload”.
- The completion of this will end in the live publication and DOI assignment.