Department of Ecology EIM Environmental Information Management

EIM Help – Freshwater Benthic Macroinvertebrate Identification and Numeration (Counts)

Version 2.0
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Freshwater benthic macroinvertebrates are organisms that live part or all of their lives in streams and rivers. Samples are collected and sent to labs for sorting, taxonomic identification, and counting. Macroinvertebrate count data provides an important source of information for assessment of stream health. Much of the assessment is through the use of statistical metrics. **This EIM data entry business rule describes how to enter only the raw count data, not metrics.**

It is very important to work with the laboratory that will be identifying and counting your samples to ensure that they provide all of the information necessary for your EIM data entry. They also need to provide you with the raw counts, not density estimates. If possible, meet with your lab prior to sampling to discuss if they can provide your data electronically in the required EIM format.

Prior to loading your data, you should compare your study's taxon list to EIM's taxon list (to download see Using the Online Reference Tables). Otherwise, you will probably get some loading errors due to taxon names not matching. Taxonomy labs are notorious for not being able to agree on taxon names. ☺
The Integrated Taxonimic Information System (ITIS) website is useful for checking for valid taxon names and Taxonomic Serial Numbers (TSN's) if you have taxon names that are not in EIM Taxon Reference list.

Composites

If you have composites, samples from more than one area that were combined in a single sample container, you also need to indicate how many samples were composited. EIM does not have a separate field specific only for this. **Therefore, for each composited sample you will need to enter an additional result with a Result Parameter Name of "*Number of Benthic Samples in Composite*".** For this result, enter the number of samples composited into the **Result Value** field. The rest of the fields for this result will be the same as you enter for the taxon count results except the **Field Collection Type**, **Result Value Units, Result Method,** and the **Result Lab Name** (enter as described in Required Fields section). You also won't need to fill out the taxon fields (columns BC-BH).

Composite Locations

Enter only one location into EIM for each unique set of composited samples. For example, if you composited samples from four areas in a stream, find the coordinates of approximately the middle of that stream reach and enter a single location with those coordinates. The Get Lat Long Coordinates and Elevations from EIM Map help document describes how to generate coordinates and build a downloadable table containing the coordinates of the sites you choose.

When entering your composite Locations, populate the **Horizontal Coordinates Represent** field (column AC in the Locations spreadsheet) with "*25*," (Centroid of Monitoring Area). Also, include in the **Location Description** field (column D) that the "*location represents the centroid of four sample collection sites*" (number of composites of four used as an example).

Required Fields (for Results data)

The fields and associated values listed below are required for this type of data. The remaining standard required fields not listed below that also need to be filled out are: **Study ID** (A), **Location ID** (B), **Study-Specific Location ID** (C), and **Field Collector** (E). All fields are described in detail in the Spreadsheet Help Documents downloadable from EIM Help Docs.

Field Collection Type (column D): enter "*Sample*" for the taxon count results OR enter "*Measurement*" for the "*Number of Benthic Samples in Composite*" result

Field Collection Start Date (F): required, MM/DD/YYYY format

Field Collection Start Time (G): optional, HH:MM:SS format, in 24 hour time

Field Collection End Date (H): required only if sampling unit was left in the stream and retrieved at a later date (ex. when sampling with "bug bags" that remain in the stream for days/weeks), MM/DD/YYYY

Field Collection End Time (I): optional, HH:MM:SS format, in 24 hour time

Field Collection Comment (J): required only for pool samples, not for riffles or transects. Add comment "*Sample collected from stream/river pool*"

Field Collection Area (K): enter the numeric collection area, for example, enter "*8*" if you had a kick area of 8 ft2. If multiple samples were composited into a single sample container, enter the summed area of all of the samples composited.

Field Collection Area Units (L): enter the units cooresponding to your collection area ("*ft2*" or "*m2*")

Field Collection Reference Point (M): populate if sediment sampling depth is pertinent to the study design, enter "*Sediment Surface*" and also populate the next three depth related fields

Field Collection Upper Depth (N): if pertinent to the study design, enter the distance from the Reference Point (M) to the upper boundary where sample was collected (ex. "*0*")

Field Collection Lower Depth (O): if pertinent to the study design, enter the distance from the Reference Point (M) to the lower boundary where sample was collected (ex. "*10*")

Field Collection Depth Units (P): enter "*cm*" or "*in*" if you populated the Field Collection Upper Depth (N) and Lower Depth (O)

Sample ID (R): use your field ID's or create a unique ID for each of your samples

Sample Composite Flag (V): enter "*N*" if samples were not composited OR "*Y*" if samples were composited (see Composite section on page one for more info)

Sample Matrix (X): enter "*Solid/Sediment*"

Sample Source (Y): enter "*Freshwater Taxonomy*"

Sample Collection Method (AA): enter the method used to collect the sample (ex. "*BUGBAG500UM"* or "*D-FRAMEKICKNET500UM*"), be sure the mesh size is included in the code, request a new code be added if yours is not in the EIM

Sample Percent Sorted (AG): enter the percent of the sample that the lab sorted, ex. enter "*50*" if they sorted half the sample (enter the numeric value only, don't include the percent sign)

Required Fields – cont.

Result Parameter Name (AH): enter "*Number of Individual Organisms*" for the taxa counts OR enter "*Number of Benthic Samples in Composite*"

Lab Analysis Date (AJ): because benthic samples are not ID'd and counted in one day, enter date accurate to the month or year, MM/DD/YYYY format

Lab Analysis Date Accuracy (AK): enter "*M*" for month or "*Y*" for year

Result Value (AM): enter the taxon count OR the number of samples in the composite (if this is the "*Number of Benthic Samples in Composite*" result)

Result Value Units (AN): enter "*Count*" for the taxon counts OR enter "*Number*" (if this is the "*Number of Benthic Samples in Composite*" result)

Result Method (AY): enter "*Count*" for the taxon counts OR enter "*Number*" (if this is the "*Number of Benthic Samples in Composite*" result)

Result Lab Name (BC): enter name of lab that identified and counted your taxa (leave this field blank if this is the "*Number of Benthic Samples in Composite*" result)

Result Taxon Name (BE) enter the taxon's scientific name (leave this field blank if this is the "*Number of Benthic Samples in Composite*" result)

Result Taxon TSN (BF): enter the Taxonomic Serial Number (leave this field blank if this is the "*Number of Benthic Samples in Composite*" result)

Result Taxon Unidentified Species (BG): use this field only if the lab was unable to positively identify a taxon and reports as SP1, SP2 etc. Enter the lab's SP# designation into this field and enter the next highest taxonomic level (usually genus) into the Result Taxon Name field. See Entering Unidentified Species Data help document.

Result Taxon Life Stage (BH): Leave blank for lavae, otherwise enter "*Adult*", "*Pupa*", "*Nymph*" or "*Egg*". Because freshwater macroinvertebrate samples contain mostly larvae, you only need to populate this field it's not larvae. This field is used to separate counts, for example when there are both adults and larvae with the same taxon name in an individual sample. If this field is not populated when the same taxon is listed more than once in the same sample (ex. more than one life stage), EIM will see them as duplicates and they will not load.

Related EIM Help Documents and Links

Get Lat Long Coordinates and Elevations from EIM Map - instructions on how to use EIM's Lat/Long Tool to generate coordinates and build and download a table of coordinate, elevation and EIM Location metadata fields for one or more points

Using the Online Reference Tables – describes how to search EIM's on-line reference tables that list permitted values for Methods, Parameters, Taxon, Lab, Tissue Type, Data Qualifiers, or Units

Composite Samples - describes the field and gives examples for different types of data

The Integrated Taxonimic Information System (ITIS) – a useful searchable database housing taxonomic names, TSN's, and their hierarchical classification

Revision History

Revision Date	Revision No.	Summary of Changes	Reviser(s)
11/06/09	1.0	Original Document	CL
8/16/13	2.0	Updated with new field names and permitted values per data model changes. Added new requirements or conditional requirements for sediment to enter Result Basis, Field Collection Ref Point, and Depth fields. Removed requirement to enter pool/riffle/transect info into old Ref Pt field and moved that requirement to FC Comment field. Added Result Method to the list of required fields. Added End Date requirement for certain data. Expanded descriptions for Unidentified Species and Life Stage fields. Added “prior to loading” info. Added Composite and Composite Locations sections. Added related help document links.	CL