EIM Help – Benthic Invertebrate Identification and Counts

Version 1.1
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What are benthic invertebrates?

The *benthic zone* is the ecological region on or just beneath the sediment surface of oceans, lakes, rivers, or streams. Small, spineless organisms that inhabit this zone are called benthic invertebrates or *macro*invertebrates.

Researchers collect benthic invertebrate samples and send them to labs for sorting, taxonomic identification, and counting. They use counts to calculate biological metrics and indices, a measure of marine, lake, river, and stream health.

What data should I enter into EIM?

Enter your **raw count data**.

Don't enter metrics or density estimates.

How do I know if my taxa values are in EIM?

We have a long list of taxa in EIM, but not all taxa! We recommend that you upload your dataset and run Check Data to find missing EIM taxa values. Give a list to your EIM Data Coordinator and we will add them to EIM. To see EIM's taxa values, go to the EIM Help Center.

What if I have other types of counts data?

If you are

- Identifying and counting aquatic vertebrates, download our help for Aquatic Vertebrate and Shellfish Counts.

- Identifying and counting periphyton, download our help for Periphyton Counts.

- Benthic Macrofaunal Size Classification and Biomass, see the section below

How do I enter benthic counts data?

Use this table and the Result help document for entering your data.

Column	Field Name	*Valid Values* and Requirements
D	Field Collection Type	*Sample*
F	Field Collection Start Date	MM/DD/YYYY
H	Field Collection End Date	Enter only if you left the sampling device in the stream and retrieved later. An example is a "bug bag" that remains in the stream for days or weeks.
J	Field Collection Comment	Optional
K	Field Collection Area	Enter the numeric collection area. For example, enter "8" if you had a kick net area of 8 square feet. If you composited multiple samples into a single sample container, enter the summed area of all of the samples you composited.
L	Field Collection Area Units	Examples: *ft2* *m2*
M	Field Collection Reference Point	Enter this info if pertinent to your study design. Common for marine benthic sampling. Download our Field Collection Depth or Height document for help.
N	Field Collection Upper Depth	
O	Field Collection Lower Depth	
P	Field Collection Depth Units	Examples: *in* *cm*
V	Sample Composite Flag	*Y* or *N*
X	Sample Matrix	*Solid/Sediment*
Y	Sample Source	*Freshwater Taxonomy* or *Salt/Marine Taxonomy*
AA	Sample Collection Method	Examples: *D-FRAMEKICKNET500UM* *VANVEEN.10* Search EIM for Method valid values and descriptions. If you need a method added, contact your EIM Data Coordinator.

Column	Field Name	*Valid Values* and Requirements
AB	Sample Preparation Method	Required if applicable. Examples: *ID-COUNT-PREP500* *BENTH.5MIC* *SIEVE-0.5MM* *SIEVE-1.0MM* Search EIM for Method valid values and descriptions. If you need a method added, contact your EIM Data Coordinator.
AG	Sample Percent Sorted	Enter the percent of the sample the lab sorted, such as "50" if they sorted half the sample. Enter the numeric value; don't include the percent sign. Usually "100" for marine samples.
AH	Result Parameter Name	*Number of Individual Organisms*
AJ	Lab Analysis Date	Enter a date accurate to the month or year (benthic samples aren't identified and counted in one day). MM/DD/YYYY format.
AK	Lab Analysis Date Accuracy	*"M" for month or "Y" for year.*
AM	Result Value	Enter the number of individual organisms counted for each taxon.
AN	Result Value Units	*Count*
AY	Result Method	Examples: General protocol: *ID-COUNT* Specific protocols – see Methods for descriptions: *ID-COUNT-LEVEL1* *ID-COUNT-LEVEL2* *ID-COUNT-LEVEL3* Search EIM for Method valid values and descriptions. If you need a method added, contact your EIM Data Coordinator.
BE	Result Taxon Name	Search EIM for Taxa valid values.
BF	Result Taxon TSN	

Column	Field Name	*Valid Values* and Requirements
BG	Result Taxon Unidentified Species	Use this field only if the lab wasn't able to positively identify a taxon and reported 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.** [Download our Unidentified Species Data document](#) for more help.
BH	Result Taxon Life Stage	Important! Populate this field if there is more than one life stage for a taxa in a sample, otherwise EIM will see the records as duplicates. **Freshwater taxonomy:** Because freshwater macroinvertebrate samples contain mostly larvae, only populate this field if it's <u>not</u> larvae. **Salt/Marine Taxonomy:** Because marine benthic samples contain mostly adult taxa, you only need to populate this field if it's <u>not</u> adults. **Valid values:** *Adult* *Egg* *Juvenile* *Larva* *Megalopa* *Nauplius* *Nymph* *Pupa* *Unknown* *Zoea*

Benthic macrofaunal size classification and biomass

Benthic biomass is a measure of the amount of benthic organisms present at any given time, expressed as mass per unit area or volume of habitat. Benthic organism biomass estimate measurements which follow a well-documented SOP, such as Ecology's Environmental Assessment Program's (EAP) EAP126-1.2 *Benthic Macrofaunal Size Classification and Biomass,* can be entered into EIM. If you have followed a different SOP, contact your EIM Data Coordinator with the details of your SOP prior to submitting data.

For data following EAP126-1.2, wet-weight biomass of all identified macrofaunal benthos except colonial organisms are estimated. Organisms are separated into five species-specific size classes based on length: small,

medium, large, x-large, and megafauna. They are then assigned wet-weight estimates. Megafaunal organisms (those weighing > 2 g) are analyzed separately. Note: Biomass estimates are averages of size-specific weights of reference specimens for each taxon. These averages are continually updated with new weight data for infrequently occurring taxa and more data for common taxa, so the biomass estimates will change slightly over time as more accurate estimates are generated.

How do I enter benthic macrofaunal size classification and biomass?

Use this table and the Result help document for entering your data.

Column	Field Name	*Valid Values* and Requirements
D	Field Collection Type	*Sample*
F	Field Collection Start Date	MM/DD/YYYY
J	Field Collection Comment	Optional
K	Field Collection Area	Example: 0.1
L	Field Collection Area Units	Example: *m2*
V	Sample Composite Flag	*N*
X	Sample Matrix	*Solid/Sediment*
Y	Sample Source	*Freshwater Taxonomy* or *Salt/Marine Taxonomy*
AA	Sample Collection Method	Example: *VANVEEN.10* Search EIM for Method valid values and descriptions. If you need a method added, contact your EIM Data Coordinator.
AB	Sample Preparation Method	Required if applicable. Example: *SIEVE-1.0MM* Search EIM for Method valid values and descriptions. If you need a method added, contact your EIM Data Coordinator.
AC	Sample Method Other	If applicable Example: EAP-SOP043-1.2
AG	Sample Percent Sorted	Usually "100" for marine samples.
AH	Result Parameter Name	Benthic Biomass, estimated

Column	Field Name	*Valid Values* and Requirements
AJ	Lab Analysis Date	Enter a date accurate to the month or year (benthic samples aren't identified and counted in one day). MM/DD/YYYY format.
AK	Lab Analysis Date Accuracy	"M" for month *or* "Y" for year.
AM	Result Value	Enter the total estimated wet weight of the taxon identified in the sample
AN	Result Value Units	*g*
AV	Result Basis	*wet*
AY	Result Method	Examples: EAP-SOP126-1.2 Search EIM for Method valid values and descriptions. If you need a method added, contact your EIM Data Coordinator.
AZ	Result Comment	Enter the comment: *Biomass estimates are averages of size-specific weights of reference specimens for each taxon. These averages are continually updated with new weight data for infrequently occurring taxa and more data for common taxa, so the biomass estimates will change slightly over time as more accurate estimates are generated.*
BE	Result Taxon Name	Search EIM for Taxa valid values.
BF	Result Taxon TSN	

Document revision history

Revision Date	Revision No.	Summary of Changes	Reviser(s)
01/25/19	1.0	Combined 2 help documents into one: "Freshwater Benthic Macroinvertebrate Identification and Numeration (Counts)" & "Marine Benthic Organisms – Identification and Numeration (Counts)". Updated information throughout on how to enter data.	KC
12/07/20	1.1	Added section on benthic macrofaunal size classification and biomass	KC