DEPARTMENT OF
ECOLOGY
State of Washington

EIM | Environmental Information Management

EIM Help – Aquatic Vertebrate and Shellfish Counts

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Background

Aquatic biological communities are sensitive to chemical, physical, and biological stressors and reflect changes to the environment. Scientists assess these communities to determine their health, known as biological integrity, and consequently the health of the environment. Scientists measure organism characteristics such as taxonomic counts and life stage and use them to calculate metrics like species abundance. When compared to reference conditions, these metrics help determine biological integrity.

This document explains **how to enter aquatic vertebrate and shellfish counts and their associated length, weight, and life stage information** into EIM. For related data entry help, see:

- Benthic Invertebrate Identification and Counts
- Periphyton Counts
- Fish and Shellfish Tissue Data

Field Sampling Overview

Scientists collect vertebrate or shellfish samples from their study area using methods such as nets, traps, or electrofishing. The organisms are normally placed alive in containers to await identification and measuring. For each organism, scientists identify the taxon (e.g., Rainbow Trout - *Oncorhynchus mykiss)* and life stage (adult, juvenile, or unknown), measure the length and weight (if required by their study), and record any anomalous features. Most organisms are then returned to the waterbody to continue their quest in life. A few are sometimes retained for quality-control purposes.

After sampling, the number of individuals within each taxon/life-stage group are counted. If lengths or weights were measured, the min/max (and sometimes the mean depending on study objectives), are calculated for each taxon/life-stage group. These counts and length and weight min/max/means are what we enter into EIM.

Entering Your Data

The fields and associated values listed below are required for aquatic vertebrate and shellfish counts, and their associated length and weight if measured. There are additional fields you might want to fill in. See the Results Template Help Document for these fields and more detail about the required fields. This document is downloadable from the Templates & Guidance page or the EIM Loader homepage.

Required Fields

- **Field Collection Type** (column D): Enter "**Measurement**."

- **Field Collection Start Date** (F): MM/DD/YYYY format.

- **Field Collection End Date** (H): Required if collection time ended on a subsequent day (such as for crab pots), MM/DD/YYYY format.

- **Sample ID** (R): This isn't a required field for this type of data, but if other samples such as water quality were collected during the same sampling event, you could enter the same Sample ID here to connect the counts with the water quality samples that were collected during the same sampling event.

- **Sample Replicate Flag** (T): Enter "**N**" to indicate that the sample is not a replicate sample.

- **Sample Composite Flag** (V): Enter "**Y**" to indicate that the sample is a composite (organisms were collected throughout a sampling area during the same sampling event and combined for counting and measuring).

- **Sample Matrix** (X): Enter "**Water**."

- **Sample Source** (Y): Enter "**Freshwater Taxonomy**" or "**Salt/Marine Taxonomy**."

- **Sample Collection Method** (AA): Enter the method used to collect the samples (ex. "FISH-NET" or "FISH-TRAP"). Refer to Sample Collection Method Examples below.

- **Result Parameter Name** (AH): Refer to Valid Values section below for the appropriate entry. There are separate options for fish, crustaceans, and mollusks.

- **Result Value** (AM): Enter the result value (count, length, or weight).

- **Result Value Units** (AN): Refer to Valid Values section below for the appropriate entry.

- **Result Data Qualifier** (AS): If you estimated your min/max lengths, enter "EST" in this field to indicate measurement value reported is estimated.

- **Result Method** (AY): Refer to Valid Values section below for the appropriate entry.

- **Result Taxon Name** (BE): Enter the taxon's scientific name (e.g., Oncorhynchus mykiss*). Search EIM's online Taxa Valid Values to make sure it's in EIM.
    - o The Integrated Taxonomic Information System (ITIS) is also a useful database to search for taxonomic names.
    - o If you have a taxon that is not in EIM, contact us.
    - o If you have an unidentified species, see Entering Unidentified Species Data for instructions on how to enter your data.
- **Result Taxon Life Stage** (BH): Enter "**Juvenile**," "**Adult**," or "**Unknown**."

Valid Values

Fish Parameter Names, Methods, and Units

Result Parameter Name (AH)	Result Method (AY)	Result Value Units (AN)
Number of Individual Organisms	ID-COUNT	Count
Fish Total Length, Min Individual in Composite Sample	LENGTH	mm
Fish Total Length, Max Individual in Composite Sample	LENGTH	mm
Fish Total Length, Mean of Individuals in Composite Sample	LENGTH	mm
Fish Fork Length, Min Individual in Composite Sample	LENGTH	mm
Fish Fork Length, Max Individual in Composite Sample	LENGTH	mm
Fish Fork Length, Max Individual in Composite Sample	LENGTH	mm
Fish Weight, Min Individual in Composite Sample	WEIGHT	g
Fish Weight, Max Individual in Composite Sample	WEIGHT	g
Fish Weight, Mean of Individuals in Composite Sample	WEIGHT	g

Vertebrate Parameter Names, Methods, and Units

Result Parameter Name (AH)	Result Method (AY)	Result Value Units (AN)
Vertebrate Total Length, Max of Individuals Observed	LENGTH	mm
Vertebrate Total Length, Min of Individuals Observed	LENGTH	mm

Mollusk Parameter Names, Methods, and Units

Result Parameter Name (AH)	Result Method (AY)	Result Value Units (AN)
Number of Individual Organisms	ID-COUNT	Count
Mollusk Length, Min Individual in Composite Sample	LENGTH	mm
Mollusk Length, Max Individual in Composite Sample	LENGTH	mm
Mollusk Length, Mean of Individuals in Composite Sample	LENGTH	mm
Mollusk Weight, Min Individual in Composite Sample	WEIGHT	g
Mollusk Weight, Max Individual in Composite Sample	WEIGHT	g
Mollusk Weight, Mean of Individuals in Composite Sample	WEIGHT	g

Crustacean Parameter Names, Methods, and Units

Result Parameter Name (AH)	Result Method (AY)	Result Value Units (AN)
Number of Individual Organisms	ID-COUNT	Count
Crustacean Carapace Length, Min Individual in Composite	LENGTH	mm
Crustacean Carapace Length, Max Individual in Composite	LENGTH	mm
Crustacean Carapace Length, Mean of Individuals in Composite	LENGTH	mm

Result Parameter Name (AH)	Result Method (AY)	Result Value Units (AN)
Crustacean Carapace Width, Mean of Individuals in Composite	LENGTH	mm
Crustacean Weight, Min Individual in Composite Sample	WEIGHT	g
Crustacean Weight, Max Individual in Composite Sample	WEIGHT	g
Crustacean Weight, Mean of Individuals in Composite Sample	WEIGHT	g

Sample Collection Method Examples

Sample Collection Method (AA)	Description
FISH-TRAP	Fish, crab, lobster (etc.) collection, trap or pot
FISH-ANGLING	Fish collection, with rod, hook, and line.
OTTERTRAWL	Fish or macroinvertebrate collection by netting, otter trawl
FISH-LONGLINE	Fish collection, with multiple hooks on a long line typically anchored to the bottom.
FISH-MISC	Fish collection, unspecified
FISH-NET	Fish collection, netting, type unspecified
FISH-NET-BEACHSEINE	Fish collection, netting, beach seine
FISH-NET-GILL	Fish collection, netting, gill net
FISH-POISON	Fish collection, poison
Electrofish-backpack	Fish collection, electro-shock via backpack-mounted unit
Electrofish-boat	Fish collection, electro-shock via boat-mounted unit
DIVER	Collection/measurement by diver

Search EIM's online Methods Valid Values for additional valid values. If you need a method added, contact us.

Revision History

Revision Date	Revision No.	Summary of Changes	Reviser(s)
11/08	1.0	Original Draft	CL
2/14	1.1	Updated with new EIM fields and requirements	CL
11/30/14	1.2	Expanded coverage from "Fish Counts" to "Aquatic Vertebrates and Shellfish." Added Sampling Process section. Updated Sample Collection Method table. Added Parameter/Method/Units table for fish, amphibians, crustaceans, and mollusks. Removed all lab-related fields (all count data are "Measurements"). Expanded Composite definition. Changed Result Taxon Life Stage to a required field and added a new valid value of "unknown". Removed age parameters (these are not done in conjunction with counts). Added Sample ID field as optional and expanded definition. Updated Sample Collection Method table.	CL
09/05/17	1.3	Updated links, updated terminology "spreadsheet" to "template" and "reference table" to "valid values"	KC
12/19/18	1.4	Updated Result Method COUNTM to ID-COUNT in Table 1	KC
01/28/19	1.5	Updated link for new Benthic Invertebrate Identification and Counts guidance	KC
03/02/23	1.6	Removed Amphibian and added Vertebrate length/count info. Updated for accessibility/current template. Updated old Fortress links.	CN
09/10/24	1.7	Updated name of help document "Aquatic Vertebrates and Shellfish Tissue Data" linked on first page to "Fish and Shellfish Tissue Data."	KC