A picture containing text, water, outdoor, river

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| Idaho Lakes and Streams Database  Users’ Manual | | |
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| A description of and instructions for properly entering data in the LSDB |

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# Introduction

The Lakes and Streams Database (LSDB) is a relational database designed to provide a dependable repository for staff to store biological information collected from surveys of Idaho’s lakes and streams. The effective collection, storage, and analysis of collected field data is critical to science-based fisheries management, a core department principle codified in the state’s fisheries management plan. Idaho Fish and Game currently employs approximately 50 fisheries biologists, many who oversee several fisheries management projects, programs, or directed research projects. The scientific evaluation of these fisheries and their respective projects produces hundreds of surveys at hundreds to thousands of sites with many thousands of individual fish being sampled annually. Use of this database (e.g., entry, storage, extraction) allows for species status assessments and reviews, assessment of fishing regulations changes, evaluation of suppression programs, modification of fish stocking strategies, monitoring of fish populations, and dissemination of information to partners and the public. Although primarily geared toward fish, the LSDB can also store information that describes habitat, limnology, amphibians, mussels, and other notable animals observed during a survey.

The related tables that compose the Lakes and Streams Database are located on the Idaho Fish and Wildlife Systems (IFWIS) server (IFWISSQL). The data entry application is web-based (<https://idfg.idaho.gov/ifwis/fishsurvey>), allowing data entry with only an internet connection and log-in credentials. Users are required to be logged in to the IDFG network or the IFWIS page to be allowed to use the data entry application. The LSDB is backed-up nightly.

The LSDB Users’ Manual is organized into three main sections. The first provides a brief description of the data layout and provides directions to log-in, enter the data entry application, and other important details. The second section provides detailed instructions, recommendations, and advice about entering data into the different data forms. Finally, the third section provides examples of data entry for several survey types, highlighting how data entry may be different depending on survey methods.

## Data Application Layout

### Structure

The order of data entry follows a hierarchy of related tables. A “Survey” is entered in three levels. The first level (Survey) contains the waterbody, date range, and information specific to the waterbody in which work was performed, entered with the assistance of a map. The second level (Site) contains descriptions of the physical locations where work was completed, or gear was set. The third level (Sample) contains the specific date, methods, gear types, effort, and other information about how the data was collected. These three levels have their own forms that are completed in order. **A basic Survey MUST have at least one Site and one Sample to be a valid record.** Data entry is designed this way because for each Survey, there can be many Sites, and for each Site, there can be many Samples.

Survey

Site

Sample 1

Sample 2

Sample 3

Although any survey can have either one or multiple Sites or Samples, usually a stream survey will only have one Site, whereas a lake survey will have multiple Sites. This is because sampling for a stream survey takes place on a finite length of stream and is completed in one (or two) days using one gear type for which a single estimate is made for the Site. An exception occurs for streams when the project design incorporates multiple locations that are sampled in the same way over set dates to make an estimate for the entire stream (usually larger streams or rivers with five or more Sites). In those instances, entering a stream survey with multiple sites is appropriate.

During most lake surveys, sampling occurs at different locations (Sites) over several days using multiple gears (Samples), to make an estimate for the entire lake.

Survey

Site 1

Site 2

Site 3

Sample 1

Sample 2

Sample 3

Sample 1

Sample 2

Sample 3

Sample 1

Sample 2

Sample 3

Regardless of how many Sites and Samples are entered for a Survey, the biotic and abiotic information (Fish, Habitat, Limnology, High Mountain Lake (HML), Amphibians, and Mussels) can only be entered after a Sample has been created. Although often collected during fish surveys, the data collected for habitat, limnology, HMLs, amphibians, and mussels are essentially separate surveys with their own collection protocols. Therefore, a separate Sample should be created describing the habitat, limnology, HML, amphibian, or mussel sample information with data collected entered under the respective Sample. However, if amphibian or mussel data are not complete or only noted as seen during a fish survey, enter those data under the fish Sample in which they were noted. Also, if only one or two habitat variables (e.g., Site length, mean width, visibility) are collected, those data can be entered under the fish Sample as well. If the primary reason for the survey was to collect habitat, limnology, amphibian, or mussel data (no fish survey conducted), a separate Survey can be entered.

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### Log-In

Go to the website: <https://idfg.idaho.gov/ifwis/fishsurvey> to open the data entry application. Make a bookmark for the website. Anyone entering data into the LSDB is required to be logged into the IDFG network and the IFWIS page. Logging into the IDFG network (regular log-in) should be adequate to access the LSDB, but you might be required to enter an IFWIS log-in also. Use the same IDFG username and password as your regular log-in if prompted. Employees who will need to access and enter data into the LSDB need to be added to the “**ggSSSBiologist**” list by completing Information Technology Services (ITS)paperwork when they are hired. **Supervisors are responsible for completing the correct paperwork so their employees can access the LSDB***.* Of course, when you forget, contact Tony Lamansky ([Tony.Lamansky@idfg.idaho.gov](mailto:Tony.Lamansky@idfg.idaho.gov); 208-371-1825) or Bryan Boson ([Bryan.Boson@idfg.idaho.gov](mailto:Bryan.Boson@idfg.idaho.gov); 208-287-2720) to have them added.

### Updates

Occasionally, a new version of the LSDB app is published to the website. However, because the app uses cookies, the cookies have to be refreshed to take advantage of the new version. If you turn your computer off every night and back on in the morning, the cookies are refreshed when your computer is restarted. If your computer is normally left on for long periods or you start getting error messages when entering data, with the data entry app open, **Press Control-F5** to manually refresh the cookies. Most of the time, error messages are the result of old cookies and a new version of the app, so refreshing the cookies will fix the problem.

### Data Quality

Correctly, accurately, and thoroughly entering data is extremely important. Any database is only as good as the data that is entered into it. Utilizing an appropriate experimental design, collecting organized, thorough data, and accurately entering that data are all essential parts to having a useful, powerful database. A project may have an ideal design and data may be collected meticulously, but if that data is not entered correctly, decisions made with any output will be flawed. **The best time to check for data entry errors is immediately after entering data in a form.** Review the form for completeness and accuracy before clicking the create button. Consistent review and thorough review substantially reduces data entry errors.

### ID Fields

A unique ID is automatically generated for each Survey, Site, or Sample that are created. Likewise, a unique ID is generated for each record as data are entered in the data forms. The unique IDs are how the tables in the database are related to each other. The ID fields cannot be edited. While entering data, the generation of an ID is confirmation that the record has been written to the database. If an ID is not generated while entering data in a form, data has not been written to the database and will be lost.

### Worksheets

Many of the forms are in worksheet format for easier data entry. All worksheets share the same properties. You can drag columns to change their order, click the column header to sort columns back-and-forth, copy and paste cells within the worksheet (Control-C and Control-V), and copy and paste data from another source (e.g., excel; columns must be in the same order and format).

### Dropdowns

To standardize and validate much of the data entered, many data entry fields use dropdown lists from which to select an entry. In the field descriptions below, an indicates the field uses a dropdown list. A date picker indicates a date field. Access dropdown lists by clicking the arrow on the right side of fields in the data entry forms. If an entry you require is not in the dropdown list for that field, it can be added very easily by contacting Tony Lamansky ([Tony.Lamansky@idfg.idaho.gov](mailto:Tony.Lamansky@idfg.idaho.gov); 208-371-1825) or Bryan Boson ([Bryan.Boson@idfg.idaho.gov](mailto:Bryan.Boson@idfg.idaho.gov); 208-287-2720).

### Comment Fields

The last field in every form where data is entered is a Comments field. Any comments should pertain to the form in which it resides. For example, comments in the Survey form should be about the survey (e.g., survey was completed a month earlier than normal). Likewise, comments in the Fish form should be about that particular fish (e.g., this whitefish has a hook scar). The comment fields are for noting something that does not have a designated field but may be good to know. **Please do not enter recurring data in comment fields.**

### No Observations

Sampling isn’t very fun when you don’t find any fish, but it happens rather frequently (e.g., a net set is empty, or you don’t catch any fish on the last pass of a depletion). However, recording that no fish (or amphibians or mussels) were captured or observed in a sample is important. When entering data for a sample with no observations, enter None in the species field and 1 in the count field.

### Coordinates – Lat/Lons

All coordinates in the LSDB are stored as Latitude and Longitude in decimal degrees (WGS84). **Any other coordinate system or datum should be converted to WGS84 decimal degrees before entering.**

## Home Screen

When the LSDB application is opened, and Home is bolded in black, the home page for the application is open. Clicking Surveys will reload the app.

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generatedClicking “Help” will drop down a list where you can request a new water, report bugs, and open the Users’ Manual. Clicking “Request New Water” opens a form to use when the waterbody on which work was conducted is not in the list. You provide information to request that a new waterbody be added to the base Hydrography layer. Clicking “Report Bugs” opens a form in which you can report when something is not working correctly. A message is sent to the database administrator when the Report Bugs form is submitted. Clicking Users’ Manual will open the users’ manual for the database.

Graphical user interface, website

Description automatically generatedClicking “Contact” shows the information about who to contact if you need assistance.

To the right of Contact is also a Log out button and the name of who is currently logged in. Below the header bar, the name of the waterbody, the Survey name, Site name, and Sample name of the record currently open are displayed.

## Home Page Tabs

Below the header are tabs that contain the Map, Survey Data, Photos, Reports, and Stocking forms. Clicking the Map tab opens a form in which the surveyed waterbody is identified and entered. Clicking the Survey Data tab opens the main data entry forms. Use of the Map and Survey Data tabs will be described thoroughly in the next section. Clicking the Photos tab opens the Photo form where you can upload photos or other images. Clicking the Reports tab opens the Report form where you can search and download data. Clicking the Stocking tab opens a form that shows the stocking history of the waterbody chosen in the map.

Graphical user interface, text, application

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When you open the data entry app, the Survey Data tab will open on the waterbody that was open in the previous session; you may need to click on the Map Tab.

# Entering Data

## Identify Survey Location- Map form

After opening the application, you may begin entering a new Survey by clicking on the Map tab to open the Map form. The purpose of using the Map is to locate and identify the lake or stream site that was surveyed. When the Map tab is highlighted, the Map form is open.

Graphical user interface, application

Description automatically generated

Several options are provided for finding a waterbody or site in the Map form:

Option 1 - Use the map to find the lake or stream by moving and zooming around until located, then **Click on it.**

- When you click on a waterbody, the waterbody will highlight in blue, and a green marker will appear at that point.

- Several fields in the Map form automatically populate when a point is picked and will change if you pick a different point.

Option 2 - Type in the name of the waterbody and pick the correct waterbody from the list. Check the map to ensure the correct waterbody was chosen.

Option 3 – Enter the LLID

- Copy and Paste, or type in the LLID for the waterbody.

- LLID is a unique identifier for every waterbody.

Option 4 – Enter a Lat/Lon

Copy and Paste, or type in the latitude and longitude of the starting point (downstream end) of a stream survey or the location of a lake.

Entering the Lat/Lon is the surest way the point on the map is correct.

Lat/Lons are recorded in two places, the Survey Lat/Lon and Site Lat/Lon (Beginning and End). The Survey Lat/Lons for lakes are fixed as the centroid of the lake and should not change each time a new Survey is entered. The Site Lat/Lons for lakes are the coordinates where gear was placed in the lake and must be entered in the Site form. On the other hand, the Survey Lat/Lon and Site Lat/Lon for streams are the same; the Lat/Lon of the downstream point of sampling. **Even when the stream is identified from the map, the point where the Site began has to either be clicked on the map or a Lat/Lon entered to define the point.** Surveys are often repeated at the same location over multiple years. A new Survey/Site should be created using the Lat/Lon that was recorded during each year a Survey is conducted.

Recording the Lat/Lons are recommended for: - The downstream and upstream points for stream surveys. - Beginning and end points of trawl sites (transect is a Site). - Beginning and end points for lake electrofishing. - Points that Individual gears are set in a lake (can enter beginning and end points for gill nets if desired).

When a waterbody is highlighted in the map, the following information are displayed down the right side of screen for reference to assist in identifying the correct waterbody.

- LLID

- Lat/Lon

Many waterbodies in Idaho share the same name, so it’s critical to make sure the waterbody you choose is the correct one.

- Measure (calculated by GIS)

- Elevation

- Survey Mode (Stream or Lake)

- County

- Region

- Drainage

- HUC6 code

For full descriptions of USGS Hydrologic Unit Codes (HUCs) visit

<https://nas.er.usgs.gov/hucs.aspx> or https://water.usgs.gov/GIS/huc.html.

The mapping tool also has 28 different base map options available. Clicking the Base Map button will present the selection of base maps that you can turn on by clicking one.

When a waterbody is selected, a list of past surveys and species that were sampled on the waterbody appear in forms below the map.

***If the waterbody isn’t in the list***

If the waterbody you want to select is not in the list, you can click the point on the map or type in the Lat/Lon where the survey was conducted. A marker will appear at that point and “userLatLon” will appear as the Water Name. Include a description of what you surveyed in the Survey Comments field. Then click the Help button (at the top of the screen next to Home) and click “Request New Water”. Complete the “Hydrography Request” form that opens and click submit at the bottom of the page. The information you submit will be used to create a new water in the hydrography. You will be notified when the water has been added.

You have now established the location where work was completed and need to create a Survey.

Click the New Survey Button

A new Survey should be entered each time work is performed on a waterbody during a specific timeframe to complete a specific objective, not just an entire year. If the same Survey is performed at a waterbody every year, enter a new Survey each year.

## Create New Survey Form

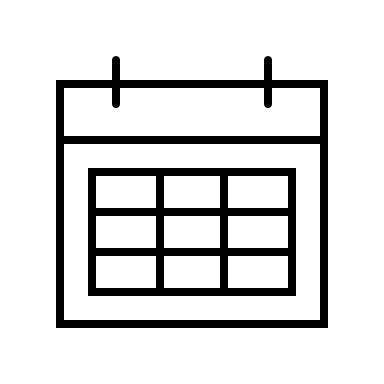
Graphical user interface

Description automatically generated Because the map was used, clicking the New Survey button opens the Create New Survey form with the Water Name, Lat/Lons, and several other location fields already completed. Complete the remaining fields.

**Survey Name** - We recommend naming the Survey with something descriptive, like a contracted water name and year, but be more descriptive if you prefer. For example, if you Survey the same water in the spring and fall of a year, include spring or fall in the name. At the same time, keep the name as short as possible. For example, if you surveyed Mud Lake in 2021, the Survey Name could be “Mud2021”.

**Survey Type** (\*Required field) - Select the type of Survey that was conducted. When there are multiple surveys (e.g., Standard Lake Survey and an Amphibian Survey) conducted at a waterbody at the same time, use the Survey Type that describes the overarching objective. For example, if you complete an Alpine Lake Survey and also survey for amphibians, select Alpine Lake Survey. If you **only** complete an Amphibian survey, then select Amphibian Survey. If fish were collected for different purposes (other than a “survey”), select the one that most closely fits the information collected.

**Frequency** - Select how often this survey is supposed to be conducted.

**Date Range From-To** (\*Required field) - Select the date range over which the survey took place using the date picker. If the survey was completed in one day, the From and To dates are the same. If it was overnight, the From date is the first day and the To date is the next day.

**Comments** - Any general comments about the survey.

When a point is chosen on the map, the following fields are automatically populated in the Create New Survey form:

**LAT** - Latitude in decimal degrees, WGS 84.

**LON** - Longitude in decimal degrees, WGS 84.

**LLID** - Unique identifier for the waterbody. LLID is a contraction of the Lat/Lon of the

mouth of a stream or the center of a lake.

**PName** - Name of the Parent stream. The waterbody that the survey water flows into.

**HUCID** - USGS Hydrologic Unit Code (HUC) and name for major drainage.

**HUC4ID** - USGS code and name for drainage.

**HUC5ID** - USGS code and name for sub-drainage.

**HUC6ID** - USGS code and name for sub-sub-drainage.

**Drainage** - Name of the drainage in which the survey is located.

**Region Name** - Name of the region in which the survey is located.

After the Survey form is completed, **ensure everything was entered correctly** and then ,

Click the Create Survey button

## Create New Site form

You’ve now completed the first step by broadly defining where and when work was completed. The next step requires detailed and precise information about the location or locations (e.g., streams and lakes) where different gears were used to collect fish. After creating a Survey, the New Site form will open.

Graphical user interface

Description automatically generated

**Use Existing Site** - Selecting this field allows you to use the Site Name, Description, and Lat/Lons of a Site entered previously for the **waterbody selected on the map**. Clicking the dropdown provides a list of all the Sites that were sampled at that waterbody and clicking on one will cause the Site Name, Description, and Lat/Lons for that site to automatically populate for the new Site.

**Site Name** - Again, be descriptive. We suggest using the Survey Name with a Site identifier. For example, at Mud Lake in 2021 you have one gill net site and one electrofishing site. You could name the gill net Site Mud2021GN1 and the electrofishing site Mud2021EF1. If different gears are fished at the same Site, enter those Samples under the same Site. You only need to create a Site once, regardless of gears used or the number of times samples are made at that location. Please do not use the same name for more than one Site**.**

**Description** - Enter a brief description of the site (i.e., how to get to the site, where the site starts or what it looks like).

**Strata** - Enter the name of the Strata (if used). If no Strata are used, leave blank. Stratifying is the dividing of a waterbody into smaller units for sampling purposes in which features of the strata (e.g., depth, habitat, morphometry, populations or sampling method) are substantially different from each other.

**Year** - Enter the four-digit Year the site was surveyed. This field defaults to the current year, so you need to change it if entering a different year.

**Agency** - Select the agency responsible for collecting the data.

**Program** - Select the Program under which the survey was completed.

**Project Leader** (\*Required field) - Select the name, including first initial and full last name, of the biologist or person who is in charge of the project and is responsible for the data collected. If the Project Leader isn’t in the list, contact Tony or Bryan to have them added.

**Alt Leader** - In case the actual project leader is unknown or not in the list, you can enter whomever you want.

**Purpose** - Enter the “purpose” of the survey (e.g., abundance estimate, trend monitoring, CPUE, etc.).

**Site Type** - Select the Site Type; generally, for snorkeling surveys (e.g., intensive, extensive).

**StartLat/StartLon** – For a stream, enter the Lat/Lon (WGS84) of the downstream point of a Site OR if for a lake, enter the actual Lat/Lon at which a Site started (i.e., where electrofishing began) or piece of gear was set.

**EndLat/EndLon** – For a stream, enter the Lat/Lon (WGS84) of the upstream point of a Site. For a lake, enter the Lat/Lon at which a Site was ended (i.e., where electrofishing ended). Can be left blank if only one point was recorded.

**Elevation (m)** – Elevation of the site. This field is automatically populated when the Site point is chosen on the map.

**Measure** – Only for streams. This field is also automatically populated when the Site point is chosen on the map. The measure is the distance upstream from the mouth of the stream that the site started and is calculated using GIS.

**Selection Technique** - Select the method that was used to choose the site for sampling. (e.g., Random, Non-Random, GRTS, EMAP, etc.).

**Wet/Dry** - Select whether the Site was wet or dry. If Dry, choose “Site Completed” for next field.

**Site Completed** - Select whether the survey at this site was completed or not completed. Site “Not Completed” should be entered when conditions arise where the actual sampling work could not be finished for some reason. For example, the road was snowed shut, the water was too high or turbid, gear broke, someone got hurt and had to leave, it’s now a beaver pond, etc. If the Site is Dry, enter Completed (because observing the Site was dry is the Survey result).

**Comments** - Any general comments or statements about this Site.

After you complete the Site form, **ensure that everything was entered correctly** and…

Click the Create Site button

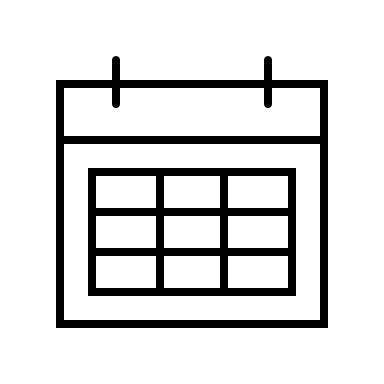
## Create New Sample form

You’ve specified the waterbody (Survey) and the location on the waterbody where work occurred (Site). The next step is to specify the sampling that occurred at the Site. The Sample form will automatically open where you enter information such as the date, method, gear, effort and other sample information specific to the Site that was just created.

Graphical user interface, table

Description automatically generated with medium confidence

**Sample Name** - Enter a name for the Sample. Like the Survey and Site names, be descriptive. If only one Sample is entered under a Site, you could use the same name as the Site. However, if multiple Samples are entered under a Site, differentiate the Sample names accordingly. For example, at Mud Lake in 2021, you use one gill net set in the same place for two nights (checked after each night) and electro-fished at one Site on one night. You could name the gill net sample for the first night Mud22GNNight1 and the second night Mud2022GNNight2. Because there is only one Sample at the electrofishing site, you could name the Sample Mud2022EF1 (same as Site name).

**Sample For** - Select what this Sample is for à Fish, Amphibians, Limnology, Habitat, HML, or Mussels.

**Sample Date** (\*Required field) - Select the Date on which the Sample was collected. This is usually the date that sampling ended, or gear is retrieved, and fish are worked up. For example, if you set a gill net in the afternoon and pull it the next morning to work up fish, enter the date the net was pulled. Or, if you finish electrofishing a site before midnight and finish another site after midnight (each would get its own Sample), enter the dates on which the electrofishing ended. The Sample Date needs to be within the dates of the Date Range in Survey.

**Begin/End Time** - Enter the time of day (military, local time) the sample began (e.g., net was set, electrofishing began) and the time the sample ended (e.g., net pulled, electrofishing ended).

**Crew** - Enter the names of the people on the crew who performed the Sample. At a minimum, the names should include first initial and full last name.

**Method** - Select the overall method used for the Sample (e.g., Netting, Trapping, Electrofishing, Angling, etc.).

**Gear** - Select the specific gear used to conduct the Sample (e.g., Gill Net, Trap Net, Backpack Shocker).

**Method Type** - Select a descriptor for the method or gear (e.g., Floating, Sinking, Mark-Recap, Multi-Pass, Single Pass, etc.). You will see a different list depending on the Method that was chosen.

**Effort Type** - Select the units of Effort (e.g., h, sec, night, area).

**Effort** - Enter the Effort expended for this Sample as a number (e.g., 6 (h), 2 (nights)).

**Effort Count** - Descriptor for the effort or gear. In certain instances, multiple units of gear can be fished at the same time, but the fish are not recorded for the individual gear in which they were captured. For example, a mark-recapture survey was completed on a river large enough that it required two electrofishing boats running simultaneously (each recording effort in seconds) during mark and recapture passes. Fish were recorded according to the pass in which they were captured and not the individual boat. In this case, the effort would be the sum for both boats, with two entered in this field because there were two “gears” (boats) involved in the effort.

**Number of Shockers** - Enter the number of backpack shockers used.

**Number of Snorkelers** - Enter the number of people who snorkeled the site (got in the water and counted fish).

**Number of Passes M/R** - Select the total number of passes that were made (if the sample is a multi-pass removal), or if the sample is a mark-recapture, select whether this sample was a mark pass or a recapture pass.

**Sample Direction** - Select the direction in which the Sample took place (Upstream or Downstream).

**Target Species** - Select a target species. Use this field **ONLY** when the sampling focuses on this species; **default is All Fish**.

Selecting an individual species or group of species in this field implies that complete information was collected ONLY for that species or group. No inferences can/should be made for any other species except the one named in this field. All Fish means that if you handled or saw a fish, it was recorded (nothing was ignored) even if just counted or determined present/absent.

**Species Marked** - Select the species (if any) that were given the same mark during sampling (i.e., for mark-recapture).

**Batch Mark** - Select the MARK that was applied to the “Species Marked” to identify them as a group (e.g., ad clip, caudal punch, pec clip). **DO NOT USE** if a TAG was applied (a tag identifies an individual fish and is recorded in the fish section).

**Fish Present** - Select whether fish were Present or Absent. Select Present If ANY fish were present or Absent if NO fish were present. This applies to Target Species, so if one species is chosen and none were collected (or seen) then this is Absent.

**Amphibians Present** - Select whether amphibians were present or absent.

**Mussels Presen**t - Select whether mussels were present or absent.

**Comments** – General comments about this Sample.

Extra fields when entering data for Lakes:

**Box** - Used to identify “groups” or multiples of panels or nets strung together.

**Mesh Size** - Mesh size of a net or box.

**Net Length** (m) - Length of the net or box**.** This is usually considered the Effort in large gill netting projects. If you record net length in feet, please note in the comments.

**Net Height** (m) - Vertical measurement of the net.

**Net Depth** (m) – Depth at which the was net fished.

**Work Week** - Week number.

**Weather** – Enter a brief description of the weather, if noted.

Trawling Settings-

These fields appear when “Trawling” is chosen as the Method. Only use if applicable.

**Number of Steps** - Enter the number of steps (depths) fished during the sample.

**Time at Step (s)** - Enter the amount of time the net was fished at a step.

**Time Btw Steps (s)** - Enter the amount of time spent moving the net from step to step.

**Boat Speed (km/h)** - Enter the boat speed.

**Area of Net Mouth (m2)** - Enter the area of the net mouth.

**Net Depth** (m) – Enter the depth at which the net was net fished.

**Min Depth (m)** - Enter the minimum depth the net was fished.

**Max Depth (m)** - Enter the maximum depth the net was fished.

**Count Start** - Enter the number from the flow meter’s counter before the sample.

**Count End** - Enter the number from the flow meter’s counter after the sample.

After the Sample form is completed, **look it over to ensure what you just entered is correct**, and…

Click the Create Sample button

Only create a Sample that includes one method, gear, or method type.

## Survey Data and Data Entry Tabs

After the Sample is created, the application opens the Survey Data tab. Views of the Survey, Site, and Sample data that were just entered are displayed along the left side of the screen. The other data tabs are across the top on the right side. The Survey Data tab will open with the Fish form open. Clicking one of the data tabs will open the data entry forms for that tab. The bars at the top of views and forms are blue when entering lake data and green when entering stream data.

Data Entry Tabs

Survey Data Tab.

A screenshot of a computer

Description automatically generated

Site view

Sample view

Bio-Structure form

Marks & Tags form

Survey view

Fish form

## Survey, Site, and Sample Views

The Survey, Site, and Sample views allow you to view the data that’s been entered. After a Survey, Site, and Sample are created, a view of each becomes visible along the left side of the screen. **The Survey, Site, and Sample that are visible are those for which the fish and other data are entered**.

Survey view

The Survey view displays survey data that was just entered through the Map and Create New Survey forms. When a Survey is created, it is assigned a unique ID that displays in the bar at the top along with the Survey Name (if given one). The box next to Survey Name displays the current survey name and date. Clicking the down arrow opens the list of **all** the surveys completed on the waterbody.

Survey ID number and name.

Graphical user interface

Description automatically generated

Current Survey

The Edit Survey button opens the Edit Survey form that allows you to edit data in the current Survey. Click the Update button to save the changes or Cancel to exit the form and not save changes.

Graphical user interface

Description automatically generated

Clicking the arrow box Shape

Description automatically generated with medium confidence in the bar at the top of the Survey, Site, and Sample views will cause the view to “roll up” or hide, only displaying the ID number, and name of the view. Clicking the arrow box again will unhide the view.

Site view

The Site view displays site data that are entered for the current Survey in the Survey view. There can be, and often are, multiple Sites under the same Survey. The SiteID and name of the current site are in the top bar of the Site view. Clicking the New Site button opens the New Site form to add another Site. Clicking the down arrow on the Site Name box will show you all the Sites that are entered for the current Survey. Clicking a site from the list will open that Site information in the view along with the Samples and other data entered for that Site.

Graphical user interface, text, application

Description automatically generated

Site ID number and name.

Current Site

Graphical user interface, application

Description automatically generatedLike the Survey view, clicking the Edit Site button opens the Edit Site form where you can edit the current record.

Sample view

The Sample view displays sample data that are entered for the site in the Site view. There can be, and often are multiple Samples for each Site. The SampleID and Sample Name are in the top bar of the view. Clicking the New Sample button opens the New Sample form to add another Sample.

Graphical user interface

Description automatically generated with low confidence

Current Sample

Sample ID number and name.

Clicking the Edit Sample button opens the Edit Sample form and allows editing of the current record.

Graphical user interface, application

Description automatically generated

If you click the Edit Survey, Edit Site, or Edit Sample buttons, ONLY THAT PARTICULAR RECORD IS EDITED.

Viewing and Editing existing Surveys, Sites, and Samples

Although designed specifically for data entry, you can use the data entry application to review and edit previously entered data. View or edit completed Surveys, Sites, and Samples by picking a waterbody in the Map, then directly opening the Survey Data tab. On the Survey view, the field Survey Name has a dropdown arrow. Clicking that will show you a list of ALL the Surveys completed at that waterbody and clicking one will open the information for that Survey in the other views. Then, in the Site view, if you click the dropdown arrow by Site Name, it shows a list of the Sites that were completed for the Survey, and likewise for Sample Name.

In order to enter or edit Fish, Habitat, Limnology, or any tabs under Survey Data, the proper Survey, Site, and Sample must be selected (like above). If there is an Edit button on a view, clicking it will open an Edit form or you can edit directly in any worksheet.

## Data Entry Tabs

Once a Survey, Site, and Sample are entered, data can be entered in the Fish, Habitat, Limnology, HML (High Mountain Lakes), Amphibians, Mussels, or Animal forms by clicking the respective data tab. **Data entered under the Data Entry tabs are specific to the current** **Survey, Site, and Sample open in the views.**

### Fish form

The Fish form is where data collected for fish during the current sample is entered. To enter the same species without clicking one in the list or copy and pasting, check the Auto Increment Species box. When this box is checked, as long as the species name field in the next record is blank, when you move to the next record, the species name will populate with the previous species name.

Graphical user interface, application, table, Excel

Description automatically generated

Fish form

Marks and Tags form

BiostructureID form

**Species** - Select the common name for the sampled species.

**Length (mm)** - Enter the length of the fish in millimeters.

**Weight (g)** - Enter the weight of the fish in grams.

**Count** - Enter the count of the number of fish sampled. (1 if individual fish are measured, otherwise number counted). Default = 1.

**Length Group** - Select a length group (length bin) that applies to the fish. Automatically populates when a Length is entered or may be used instead of Length. If only the presence of a fish is recorded, select Present in this field.

**Length Type** - Select the length type that was measured (e.g., Total, Fork, etc.).

**Tag Type** - Select the type of tag that was placed in/on the fish (e.g., PIT, Sonic, Radio, Anchor, etc.).

**Tag Number** - Enter the number or identifier of an individual tag.

**Prev/New Tag** - Select “New” if you are placing the tag in the current fish. Select “Prev” if the fish was already tagged when captured.

**BiostructureID** - ID given to all structures removed from a fish for some other analysis (see below for further description).

**Sex** - Select the sex of the fish.

**Age Class** - Select the age class that applies to the fish (mostly for snorkeling).

**Age** - Enter the final, agreed upon age of the fish from an aging structure (see BioStructureID).

**Maturity** - Select the state of maturity of the fish.

**Fecundity** - Enter the number of eggs present.

**Recap** - Check the box if this fish is a recapture, otherwise leave unchecked.

**Pass Number** - Select the pass number in which this fish was captured (e.g., 1, 2, 3, 4 or mark or recap).

**Net Number** - Enter the number or label for the net in which this fish was captured.

**Disposition** - Select whether the fish was Dead on Capture, Released Alive, Removed, etc. Use this field if the fish was a mortality.

**Mesh Size** - Enter the size of mesh in which this fish was captured.

**Origin** - Select whether the fish is Hatchery, Wild, etc.

**Condition** - Select the general physical condition of the fish, (e.g., ., good, poor, etc.)

**Flowing** - Select whether the fish is green (no eggs when pressure applied), flowing (eggs coming out), or spent (eggs are gone).

**Fizzed** - Enter whether the fish’s air bladder was deflated allowing it to sink.

**Comments** – General comments about this fish.

Genetic Sample# and Scale Envelope # are visible in the Fish form because they were used historically, but the fields are read only, so you can’t edit or enter in those fields. See BiostructureID section below.

### Mark/Tag form

Graphical user interface, text, application, chat or text message

Description automatically generatedWhen the cursor is on a fish in the fish form, the Marks & Tags form displays any marks or tags entered for that fish. **You can enter ONE Tag or Mark in the Fish form (to facilitate copy/pasting data); however, if multiple marks or tags are used or encountered you have to enter them in the Marks & Tags form.**

**Previous/New** - New means the fish was tagged this time. Previous means the tag was already there when the fish was captured.

**Mark/Tag Type** - Select the type of mark or tag placed on/in the fish (e.g., Clip, Punch, Anchor, PIT).

**Body Part** - Select the body part marked (e.g., adipose fin, caudal fin, opercle).

**Alignment** - Select the side of the body that the mark or tag was applied (e.g., left, right, midline, etc.).

**Position** - Select the position the mark or tag was applied (e.g., anterior, posterior, dorsal, ventral, etc.).

**Color** - Select the color of the mark or tag (usually for external tags).

**Tag Number** – Enter the **number** of the tag applied to this fish (e.g., 22-09675 for an Anchor Tag, or CD9.AH33FU1332 for a PIT).

**Code** – Enter the **code** the Tag emits for identification (e.g., code = 1331 (beep, beep-beep-beep, beep-beep-beep, beep). Most often for Radio or Acoustic tags.

**Frequency** - The **radio frequency** on which the tag transmits (e.g., 150.10220).

**Comments** – General comments about the tag.

It is only necessary to complete fields for marks and tags if they are descriptive, otherwise they can be left blank. For example, if Mark/Tag Type à Clip and Body Part à Adipose Fin, the Alignment, Position, and Color can be left blank. Same for Tags, if Mark/Tag Type à PIT and Number à CD9.AH33FU1332 you can leave the other fields blank. Spaghetti tags can be different colors and implanted in different locations so, Mark/Tag Type à Spaghetti, Alignment à Right, Position à Dorsal, Color à Green and Number à 12345; other fields can be left blank.

The Marks & Tags form allows multiple tags or marks to be recorded for an individual fish, both new ones and any that were previously placed on a fish.

#### Example 2.1

You capture a fish that already has a PIT and an Anchor Tag, and you are giving it a caudal punch on the upper lobe as the mark for a mark/recapture. They would be entered as such:

For the Anchor Tag:

New/Previous à Previous

Type à Anchor Tag

Number à 22-09675

For the PIT:

New/Previous à Previous Type à PIT Number à CD9.AH33FU1332

For the Caudal Punch:

New/Previous à New Type à Punch Body Part à Caudal Fin Position à Upper

**HOWEVER,** if a group of fish are given the same mark, you can use Species Marked and Batch-Mark fields in the Sample form. For example, you are marking all the Rainbow Trout with an Adipose Fin Clip for a mark-recap, so the Species Marked à Rainbow Trout and Batch-Mark à Adipose Clip. Use this so you don’t have to enter the mark for each individual fish.

### Bio Structure form

The BioStructureID is entered in the Fish form, but the structures and purposes for which the structures were removed must be entered in the BiostructureID form. Like the Marks & Tags form, when the cursor is on a fish record, the biostructures that are entered for that fish are displayed in the BioStructure form. Enter a new record for each structure sampled. The BioStructureID will repeat itself when multiple structures are entered.

Graphical user interface, application

Description automatically generated

**BioStructureID** -The BiostructureID is a single ID or NAME used for all biologic samples taken from an individual fish for different purposes. It replaces OtolithID, ScaleID, GeneticID, and any other IDs used to identify structures. If otoliths are taken for aging, the adipose fin for genetic analysis, and the stomach for diet, they all receive the same BioStructureID that travels with the samples during analysis to be able to link back to the fish from which the structure was taken.

**Structure** - Select the structure that was sampled.

**Purpose** - Select the analysis for which the structure was taken (e.g., aging, genetics, diet, etc.)

**Comments** – General comments about the mark or tag.

#### Example 2.2

You sample otoliths for age, fin clips for genetics, and stomachs for diet from fish captured in Fast Cr. on 06/08/2022. The ID could be Fast060822-1 (the ID for the next fish would be Fast060822-2). In the Bio Structures form, data would be entered as such:

Fish Bio StructureID à Fast060822-1, Bio Structure à Otolith, Purpose à Aging

Fish Bio StructureID à Fast060822-1, Bio Structure à Ad Clip, Purpose à Genetics

Fish Bio StructureID à Fast060822-1, Bio Structure à Stomach, Purpose à Diet

Note the same Bio StructureID for all structures.

### Habitat Detail form

The Habitat Detail form is where habitat measurements for **the entire Site** are entered. If the Site was sub-divided into smaller units in which habitat was measured, those data are entered in the Habitat Unit form (next section).

Click the Habitat tab to open the Habitat Details view. Then click the Create Habitat button to open the Create New Habitat form.

Graphical user interface

Description automatically generated

Complete the Create Habitat form and click the Create button.

Graphical user interface

Description automatically generated

**Channel Type** - Select the Rosgen channel type that best describes the entire site.

**Dominant Habitat Type** - Select the habitat type that makes up the majority of the habitat.

**Trans Length (m)** - Enter the linear length (m) of the entire site that was sampled.

**Mean Width (m)** - Enter the mean wetted width for the entire site.

**Mean Depth (m)** - Enter the mean depth for the entire site.

**Max Depth (m)** - Enter the maximum depth measured in the entire site.

**Section Area (m2)** - Area of the site (Trans Length X Mean Width)

**Discharge Rate (CMS)** - Enter the cubic meters per second of water flowing.

**pH** - Enter the pH.

**Gradient %** - Enter the gradient as a percent (elevation change/trans length X 100).

**Water Temp (oC)** - Enter the temperature of the water during the sample.

**Air Temp (oC)** - Enter the temperature of the air during the sample.

**Spec Conductivity (µs)** - Enter the Specific Conductivity of the water.

**Visibility (m)** - Enter the distance that objects under water can be seen clearly.

The following fields are specific for streams or lakes:

Stream:

**% Pool** - Enter the percent of the site that are riffles.

**% Run** - Enter the percent of the site that are runs.

**% Pocket** - Enter the percent of the site that are pockets.

**% Glide** - Enter the percent of the site that are glides.

Lake:

**% Littoral Zone** - Enter the percent of the lake that is littoral.

**% Shore Forest** - Enter the percent of the lake shoreline w/ trees.

**% Shore vegetation** - Enter the percent of the lake w/ vegetation.

**Most Abundant Trees** - Select the species of tree that is the most abundant.

**Comments** - General comments about the habitat for the Site.

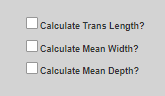
A screenshot of a computer

Description automatically generatedAfter clicking the create button, data just entered appears in the Habitat Details view, and the Habitat Units form appears at the bottom.

Habitat Details view

Habitat Units view

In the Habitat Details view are three check boxes that, if checked, will update the Trans Length (Site Length), Mean Width, and Mean Depth in the Habitat Details form to the calculated values from data entered in the Habitat Units form (next section). If you don’t measure or record the habitat in units, enter the means in the Habitat Details form. Mean depth is calculated by summing three depth measurements and dividing by four to account for zero depth at the margins.



If no data are entered in the Habitat Units form and boxes are checked, zero will be entered in those fields. We recommend checking the “calculate” boxes if you record habitat as Units so the means always match the units.

### Habitat Unit form

As mentioned above, the Habitat Unit form is where habitat measurements are entered when the site is divided into units (shorter parts of the whole).

Graphical user interface, application

Description automatically generated

**Unit Number** - Enter the label/name given to the Unit (e.g., 1-10, A-J, etc.).

**Unit HabType** - Select the habitat type of the Unit (e.g., Pool, riffle, run, etc.).

**Unit Dominant Bank Type** - Select whether the dominant bank type was overhung or undercut.

**Unit Length (m)** - Enter the linear length of the Unit.

**Unit Width (m)** - Enter the wetted width of the Unit.

**Unit Bank Area** - Enter the area of the dominant bank.

**Unit Mean Depth (m)** - Enter the mean depth of the Unit (sum of three depth measurements divided by four) or use Depth 1-3 fields.

**Unit Max Depth (m)** - Enter the maximum depth in the Unit.

**Unit Depth1** - Depth approx. ¼ way across the width of the Unit.

**Unit Depth2** - Depth approx. ½ way across the width of the Unit.

**Unit Depth3** - Depth approx. ¾ way across the width of the Unit.

**Unit DistfromBot** - Distance upstream from bottom. Sometimes used instead of Unit Length.

**Unit % Fines** - Enter the percent of the unit w/ Fine substrate.

**Unit % Sand** - Enter the percent of the unit w/ Sand substrate.

**Unit % Gravel** - Enter the percent of the unit w/ Gravel substrate. These 7 fields

**Unit % Cobble** - Enter the percent of the unit w/ Cobble substrate. need to

**Unit % Rubble** - Enter the percent of the unit w/ Rubble substrate. sum to 100.

**Unit % Boulde**r - Enter the percent of unit w/ Boulder substrate.

**Unit % Bedrock**- Enter the percent of unit w/ Bedrock substrate.

**Unit % Unstable Bank** - Enter the percent of the unit w/ unstable banks.

**Unit % Shade** - Enter the percent of the unit in shade when the sun is directly overhead.

**Unit Num LWD** - Enter the number of pieces of large woody debris in the unit.

**Unit Num Aggregate** - Enter the number of aggregates (multiple pieces of LWD piled together) in the unit.

**Unit Num Root Wads** - Enter the number of root-wads in the unit.

**Unit Gradient** - Enter the Gradient of the unit (change in elevation/length of Unit X 100).

**Unit Comments** – General comments about the habitat unit.

### Limnology Details form

The limnological conditions of the surface where a depth profile was made are entered in the Limnology Details form. Click the Limnology tab to open the Limnology view. Click the Create Limno button to open the Create New Limnology form. Enter data in the form and click the Create button. Clicking one of the tabs in the Limnology Details view (Limno Profile, Secchi, and Zooplankton) will open the forms to enter those data (see below). When limnology is collected ,a Site should be created for the location. A Sample should be created with Sample Type à Limnology.

Limnology Details view

Graphical user interface

Description automatically generated

Limnology tabs

Graphical user interface

Description automatically generated with medium confidence

**Surface Temp (oC)** - Enter the water temperature at the surface.

**Total Depth (m)** - Enter the total depth of the water column at the site.

**Surface DO (mg/l)** - Enter the dissolved oxygen at the surface.

**Surface Conductivity (micro s/m)** - Enter the specific conductivity at the surface.

**Surface pH** - Enter the pH at the surface.

**Surface TDS (mg/L)** - Enter the total dissolved solids at the surface.

**Surface Alk (mg/L CaCO3)** - Enter the alkalinity at the surface.

**Surface Chlorophyll (mg/L)** - Enter the chlorophyll at the surface.

**Surface Phosphates (mmol/L)** - Enter the phosphate concentration at the surface.

**Thermocline Depth (m)** - Enter the depth of the thermocline determined from the depth profile.

**Moon Phase** - Enter the moon phase at the time of the survey.

**Comments** - General comments about the Limnology.

### Limno Profile form

Clicking the Limno Profile tab will open the Limno Profile form where depth profile data measured at the limnology site are entered. A depth profile is achieved by lowering water-quality measuring equipment (e.g., a Sonde) thru the water column (usually) in 1-m increments and recording limnology metrics after equilibrating at each depth, continuing until adequate depth is reached.

Graphical user interface, application, table

Description automatically generated

**Depth (m)** - Enter the depth at which the profile measurement is taken.

**Temp (oC)** - Enter the temperature at the profile depth.

**Conductivity (micro s/m)** - Enter the conductivity at the profile depth.

**Alk (mg/L CaCO3)** - Enter the alkalinity at the profile depth.

**pH** - Enter the pH at the profile depth.

**% DO** - Enter the dissolved oxygen at the profile depth.

**DO (mg/l)** - Enter the dissolved oxygen at the profile depth.

**TDS (mg/L)** - Enter the total dissolved solids at the profile depth.

**BP (mb)** - Enter the barometric pressure at the profile depth.

**Comments** - General comments about the Profile.

### Secchi form

Clicking the Secchi tab opens the Secchi form where Secchi depth measurements are entered.

Graphical user interface, application

Description automatically generated

**Reader** - Enter the individual who measured Secchi depth.

**Depth (m)** - Enter the depth at which the Secchi disk disappears.

**Comments** - General comments about the Secchi reading.

### Zooplankton form

Clicking the Zooplankton tab opens the Zooplankton form where information concerning zooplankton sampling are entered. This form is designed to calculate the Zooplankton Ratio (ZPR) and Zooplankton Quality Index (ZQI) to help inform managers of whether the conditions in a waterbody are suitable to support stocking hatchery trout. You only have to enter the biomass (weight) of zooplankton collected in a 153-, 500-, and 750-micron zooplankton net and the ZPR and ZQI will calculate. Other fields are included to accommodate other zooplankton sampling protocols.

Graphical user interface, application, Word

Description automatically generated

**Species** - Select the name of zooplankter (usually Family or genus)

**Mesh Size (micron)** - Enter the mesh size of the zooplankton net BAG.

**Weight** **(g)** - Enter the weight (biomass) of zooplankton collected in the zooplankton net.

**Zoo 153 (g)** - Enter the biomass (g) of zooplankton collected in a 153-micron mesh net.

**Zoo 500 (g)** - Enter the biomass (g) of zooplankton collected in a 500-micron mesh net.

**Zoo 750 (g)** - Enter the biomass (g) of zooplankton collected in a 750-micron mesh net.

**ZPR** - Calculates the Zooplankton Ratio (biomass of 750 mesh net/biomass of 500 mesh net).

**ZQI** - Calculates the Zooplankton Quality Index (biomass 750 mesh + biomass 500 mesh/ZPR)

**Sieve Mesh (micron)** - Enter the mesh size of the CUP.

**Depth (m)** - Enter the depth to which the net was lowered before retrieving.

**Relative Size** - Select the relative size of the zooplankter (small, medium, large)

**Count** - Enter the number of zooplankters counted.

**Comments** – General comments about the zooplankton.

### HML form

When the High Mountain Lake Standard Sampling Protocols are completed at a lake, those data are entered in the HML form. Click the HML tab to open the form. The HML tab is only visible when a lake is selected in the map.

Graphical user interface, application

Description automatically generated

**Num Inlets** - Enter the number of inlets to the lake.

**Num Outlets** - Enter the number of outlets from the lake.

**Fingerlings Pres/Abs** - Select whether fingerling fish were present or absent.

**Fry Pres/Abs** - Select whether fry were present or absent.

**Adult Pres/Abs** - Select whether adult fish were present or absent.

**Spawning Potential** - Select the potential of the lake to support spawning.

**Suitability** - Select the suitability of the lake for stocking.

**Mean Depth (m)** – Enter the calculated mean depth of the lake (SHOULD GO IN HABITAT...).

**Max Depth (m)** - Enter the maximum depth of the lake (SHOULD GO IN HABITAT….)

**Num Springs** - Enter the number of springs around the lake.

**Num Campsites** - Enter the number of campsites around the lake.

**Num Firepits** - Enter the number of fire pits around the lake.

**Human Use** - Select the level of human use at the lake.

**% Trail Present** - Enter the percent of the distance to the lake that has a trail.

**Trail Distance (km)** - Enter the distance to the lake by trail.

**Cross Country Distance (km)** - Enter the distance to the lake in a straight line.

**Trail Around Lake** - Select the relative distance of any trail around a lake.

**Trail Trampled** – Enter the state of the trail around a lake.

**Litter** - Select the relative amount of litter around the lake.

**Comments** – General comments about the lake.

### Amphibians form

If an amphibian survey is completed, or when amphibians are observed or documented incidentally during a fish survey, those data are entered in the Amphibians form. Click the Amphibians tab to open the form. If you completed an actual amphibian survey according to protocols, you should create a Sample with Sample Type à Amphibians and complete the rest of the Sample form with other amphibian sample information.

A screenshot of a computer

Description automatically generated

**Species** - Select the species common name of an amphibian.

**Life Stage** - Select the life stage of the amphibians.

**Abundance** - Select a relative abundance for the amphibians.

**Count** - Enter the actual number of amphibians counted in this life stage.

**Comments** – General comments about this amphibian.

If you complete a separate amphibian survey, or were documenting amphibians or mussels, only enter data for those life stages, relative abundances, or sizes that were observed during the survey. **Do not enter a record for each combination and then zero for the count**. If no amphibians or mussels were observed, enter NONE in the Species field and 1 in the Count field.

### Mussels form

When documenting mussels as part of a survey, the size and abundance information are entered in the Mussels form. Clicking the Mussels tab opens the form.

A screenshot of a computer

Description automatically generated with medium confidence

**Species** - Select the species common name of a mussel (or mollusk including snails).

**Size** - Select the relative size of the mussels.

**Abundance** - Select the relative abundance of the mussels.

**Count** - Enter the actual count of mussels.

**Comments** – General comments about this mussel.

### Photos tab

Valuable pieces of information collected during surveys are photos of the site, or work being performed during the survey. The Photos form allows you to load photos taken during the current survey. If a Survey, Site, and Sample are open, the photo will be linked to that record. We recommend that photos of the data sheets (or other scanned file formats, not available yet) be uploaded with the sample in which they were collected. This is for quick reference to the data sheets if a question arises about data entered in the database.

Clicking the Photos tab opens the Photos form. Click the Choose File button to browse files and after choosing the desired file, click upload. Please also include a brief description of the photo and key words to assist searches.

A computer screen capture

Description automatically generated with low confidence

### Reports tab

Clicking the Reports tab opens the Reports form that provides summarized data for viewing or download. The data returned on the Report form is updated twice an hour. The Report form pulls data from a fixed table (to improve performance) that refreshes from the data tables at 15 min and 45 min past the hour. Therefore, any data entered will only appear on the Report form after the next time it updates. You can immediately review and edit data that was just entered by looking at the Survey, Site, or Sample views and using the edit button. However, you cannot edit data from the Report form.

Search button

Graphical user interface, application, table

Description automatically generated

Record count

Search fields

Export button

If a waterbody is selected in the map, the information in the Report form will reflect entries for that waterbody for the current year. However, you can select a different waterbody or search by LLID, Region, Species, Project Leader, or Year to display and export selected data. After entering search criteria, click the Search button, then click the Export button to save the data to an Excel file. The total number of records found in the current search are reflected in the record count box; however, to save processing time, only 1500 records are visible in the form. All the records will be present in the export. Below the Fish data form are separate forms for Habitat data, Amphibian data, Animal data, Mussel data, and Limnology data that are also available for viewing or export in the same way.

### Stocking Tab

Clicking the Stocking tab opens the Stocking form that lists the stocking activity for the current waterbody.

The Stocking form provides the stocking history of the waterbody selected in the map. Information in the Stocking form comes from the stocking database and is current (it has to be entered in the stocking database). Stocking events are listed from the most recent to the oldest. This form is for reference but can be downloaded if desired.

A screenshot of a computer

Description automatically generated with medium confidence

# Data Entry for Different Collection Methods

Survey methods and collection gears differ depending on the waterbody and objectives of the Survey. Therefore, data collected with different methods and gears are also entered slightly differently. Data entry for the Survey and Sites are generally similar with the greatest differences in the Sample form. The basic evaluation metrics in fisheries are population/density estimates (multi-pass, mark/recapture, snorkel) or Catch-Per-Unit-Effort (CPUE). Some other metrics like relative abundance, presence/absence, or Length-at-Age may also be evaluated. Population estimates require counting (or estimating) the number of individuals in a measured area/volume that can be expanded to the waterbody or entire population and used to compare between populations (even when collection methods are different). Catch-Per-Unit-Effort on the other hand, is just that, the count of individuals captured in a unit of gear during a unit of effort. The Effort can be calculated in many different units of time (night, hour, minute, second), volume or area, etc., for practically any gear. Examples include, electrofishing 600s on a lake or a gill net set overnight (time), trawling (volume), or snorkeling a stream (surface area). The following are data entry examples for several different collection methods.

**To save space in the examples, only fields that are affected by different entry methods are shown. However, all data entry fields should be completed for which information was collected.**

## Stream Surveys

### Stream Snorkel Survey

Individual fish are not measured when conducting Snorkel Surveys, only counts of species are made and recorded by Length Group. Counts usually only pertain to salmonids, although other species are often recorded as being seen. Only record species in length groups with actual counts (>0). Do not record length groups with zero counts (don’t list all the length groups and put zero if none were seen).

#### Example 3.1

Two people are snorkeling Grasshopper Creek on 07/13/2022 to count salmonids in two-inch length groups and count any other species seen. The entire width of the stream can be observed by the two snorkelers.

Survey form

Survey Name à GHop2022

Survey Type à Snorkel Survey

Date Range From à 07/13/2022

To à 07/13/2022

Site form

Site Name à GHop2022

Site Description à Above pool at end of road

Year à 2022

Project Leader à R. Roberts

Wet Dry à Wet

Completed à Completed

Sample form

Method à Snorkeling Gear à blank Method Type à Entire Width

Number of Snorkelers à 2

Fish form

Species à Steelhead, Count à 23, Length Group à 1-2”

Species à Steelhead, Count à 15, Length Group à 5-6”

Species à Steelhead, Count à 13, Length Group à 7-8”

Species à Steelhead, Count à 3, Length Group à 4-5”

Species à Chinook, Count à 33, Length Group à 3-4”

Species à Fry, Count à 39, Length Group à 0-1”

Species à Bull Trout, Count à 2, Length Group à 8-9”

Species à Mottled Sculpin, Count à 23,

Species à Redside Shiner, Count à 15

### Stream Electrofishing Survey (Single/Multi-Pass)

One objective of a stream survey is to estimate fish abundance in a length of stream (Site) using backpack electro-fishers. One of the easiest ways to accomplish this is a multi-pass electrofishing removal (depletion estimate). Multi-pass removals require that fish are collected and held in buckets or live wells out of the Site during subsequent passes. The fish data are entered according to the pass in which they were collected.

#### Example 3.2

Using two electro-fishers, you make four passes at a 100-m site on Flying Salmon Creek, collecting seven Grayling in the first pass, four in the second, two in the third, and zero in the fourth, data would be entered as such:

Sample form

Method à Electrofishing Gear à Backpack Method Type à Multi-pass NumofPasses/MR à 4 total number of passes

NumofShockers à 2 number of shockers used

Fish form

Enter the pass number in which individual fish were captured in the Pass column.

Species à Grayling, Length à 150, Count à 1, Pass à 1 Species à Grayling, Length à 135, Count à 1, Pass à 1 Species à Grayling, Length à 178, Count à 1, Pass à 1 Species à Grayling, Length à 104, Count à 1, Pass à 1 Species à Grayling, Length à 166, Count à 1, Pass à 1 Species à Grayling, Length à 123, Count à 1, Pass à 1 Species à Grayling, Length à 154, Count à 1, Pass à 1

Species à Grayling, Length à 173, Count à 1, Pass à 2 Species à Grayling, Length à 144, Count à 1, Pass à 2 Species à Grayling, Length à 103, Count à 1, Pass à 2 Species à Grayling, Length à 113, Count à 1, Pass à 2

Species à Grayling, Length à 107, Count à 1, Pass à 3 Species à Grayling, Length à 101, Count à 1, Pass à 3

Species à None, Length à blank Count à 1, Pass à 4

If no fish are collected on the final pass, it still needs to be recorded*. Enter None for the Species and a Count of 1***.**

Habitat form

In this example so far, there is one Site and one Sample for Fish. If you collect Habitat data, create a new Sample with Sample Type set to Habitat and complete other relevant fields, then open the Habitat Tab and click the Create Habitat button to open the Habitat Details form.

##### Example 3.3

After making four electrofishing passes, you divide the 100-m Site into 10, 10-m units for habitat measurements. Data entry would be such:

Sample form

Sample Type à Habitat

Habitat Details form

Information entered in the Habitat Details form is for the *entire Site*. If you divided the Site into smaller units to measure habitat, enter unit info into the Habitat Unit form.

Channel Type à C

Dominant Habitat Type à Pool Trans Length à Leave blank if calculating from Habitat Units Mean Width à Leave blank if calculating from Habitat Units Mean Depth à Leave blank if calculating from Habitat Units Max Depth à 1.2 Site Area à Gradient % à 0.8 Water Temp à 13 Air Temp à 23 Conductivity à 633 Visibility à 5.0

Check the calculate Trans Length, Mean Width, and Mean Depth boxes to calculate the means from values entered in the Habitat Units form.

Habitat Units form

Enter data in the Habitat Units form if the Site was divided into smaller units for measuring habitat. When entering percent substrate (% Fine-% Bedrock), the total needs to sum to 100.

Unit Number à 1

Unit Hab Type à Pool Length à 10 Width à 3.6

Mean Depth à 0.35

Max Depth à 0.53

Depth 1 à 0.30 \*\*

Depth 2 à 0.35 \*\*

Depth 3 à 0.53 \*\*

% Fine à 0

% Sand à 15 Gravel à 35 % Cobble à 30 Have to sum to 100 % Rubble à 10 % Boulder à 0 % Bedrock à10

Unstable Bank à 0 Num LWD à 6

Num Aggregate à 2

Num Root Wads à 3

Gradient à 0.02

If you enter values in the Depth 1, 2, and 3 fields, the Mean Depth is calculated from those values OR if you record the mean depth on the fly (three depth measurements divided by four) enter it in the Mean Depth field.

Unit Number à 2

Unit Hab Type à Run

Length à 10

Width à 5.2

Mean Depth à 0.07

Max Depth à 0.13

Depth 1 à

Depth 2 à already calculated, so leave blank

Depth 3 à

% Fine à 0

% Sand à 5

% Gravel à 55

% Cobble à 40

% Rubble à 0

% Boulder à 0

% Bedrock à 0

% Unstable Bank à 0 Num LWD à 1 Num Aggregate à 0 Num Root Wads à 0

Gradient à 1.86

Continue entering units until finished.

### Mark/Recapture Surveys

Mark/Recapture surveys are performed by capturing fish, placing a mark on them, and releasing them alive on one day. Then on a different day, the same Site is sampled again and captured fish are recorded as having a mark (recap) or not having a mark. The ratio of marked fish (from the mark run) and the marked and un-marked fish (from the recap run) provides an estimate of abundance. Sometimes multiple sample passes are made with fish being marked and recaptured over multiple days. Enter a new Sample for each day a Mark or Recapture pass is completed.

### Simple Mark/Recapture Survey

#### Example 3.4

You sample 100 m of Big Fish Creek and mark all the Brook Trout with a pelvic clip on 06/23/2022. You then return on 06/30/2022 and sample the same 100 m of stream and record whether fish were marked or not marked. Create **one** Survey, **one** Site, and two Samples.

Survey form

Survey Name à BigFish2022

Date Range Start à 06/23/2022

Date Range End à 06/30/2022

Site form

Site Name à BigFish2022

Sample form

Marking Run on 06/23/2022:

Sample Date à06/23/2022

Method à Electrofishing Gear à Backpack

Method Type à Mark/Recapture

Number of Passes M/R àMark

Species Marked à Brook Trout Means all Brook Trout pelvic clipped

Batch Mark à Pel Clip

For the Recapture Run on 06/30/2022:

Sample Date à06/30/2022

Method à Electrofishing

Gear à Backpack

Method Type à Mark/Recapture

Number of Passes M/R àRecapture

Fish form

Enter fish data as usual except for fish that already have a mark, check the box in the Recap field.

Recap à Recap (CHECK the box)

#### Example 3.5

A snorkel crew conducted a Re-sight Survey at a new Site on Fish Creek. They first angled through the Site on 06/13/2022 and marked 5 Steelhead w/ a caudal fin clip. The crew returned the next day and snorkeled the Site, recording all the fish they saw with and without a mark (3 with and 2 without). This is a Mark/Recapture, just with different methods for the mark and recap runs. Data is entered similarly as above:

Survey form

Survey Name à FishCrResight2022

Site form

Site Name à NewFishCrResight2022

Sample form

Marking Run on 06/13/2022:

Sample Name à FishCrResight2022Mark

Sample Date à06/13/2022 Method àAngling Gear à angling Method Type à Mark/Recapture

Number of Passes M/R à Mark Species Marked à Steelhead \*Means Steelhead were Caudal punched Batch Mark à Caudal clip

Fish form

Enter fish captured in the Mark run.

Species à Steelhead, Length Group à 2-4”, Count à1 Species à Steelhead, Length Group à 5-6”, Count à1 Species à Steelhead, Length Group à 2-4”, Count à1 Species à Steelhead, Length Group à 2-4”, Count à1

Species à Steelhead, Length Group à 5 -6”, Count à1

Because it’s snorkeling, fish are counted by length group; however, now there are fish with a mark and without a mark in the same length group. Enter the Species and Count of fish in a Length Group without marks, then enter the Species and Count of fish in a Length Group that weremarked and check the box in the Recap field.

Sample form

Recapture Run on 06/14/2022:

Sample Name à FishCrResight2022Recap

Sample Date à06/14/2022 Method à Snorkeling Gear à blank

Method Type à Mark/Recapture

Number of Passes M/R à Recapture

Species Marked à Chinook Batch Mark à Ad Clip

Fish form

Species à Chinook, Length Group à 2-4”, Count à 12

Species à Steelhead, Length Group à 2-4”, Count à 2\* check Recap box

Species 🡪 Chinook, Length Group à 5-6”, Count à 6

Species à Steelhead, Length Group à 5-6”, Count à 1\* check Recap box

Species à Fry, Length Group à 1-2”, Count à 56

Species à Bull Trout, Length Group à 10-11”, Count à 3

\*means that three of the five marked fish were “recaptured” (i.e. seen in the recap run)

### Complicated Mark/Recapture Survey

Multi-pass removals are effective for small streams but are impractical on larger waterbodies. However, a simple mark/recap (one mark pass and one recap pass) may also not be adequate, requiring multiple mark and recapture runs of the same Site. In this case, enter data as a Mark/Recap, except enter a new a Sample for each day a run was made and record it as Marking or Recapture in the “Number of Passes M/R” field with the Species Marked and Batch Mark filled in. **Do this to avoid having to enter the mark with each individual fish.** Also, instead of entering a new Survey for each Site, because the sampling is all part of the same project, enter one Survey (w/a Date Range) and one Site for each location.

#### Example 3.6

Crews completed Mark/Recapture surveys on the South Fork Snake River at three sites between 10/10/2022 and 11/01/2022. Each site is variable in length and width and has fixed beginning and end points. This work also required TWO shocking boats working simultaneously. Each Site was sampled on four different days during the Date Range. All trout are given the same mark. Data entry is as follows:

Survey form

This is a case when creating one survey with several sites works best for a stream.

Survey Name à SFSnake2022Fall

Survey Type à Mark-Recapture Survey

Date Range From à 10/10/2022 To à 11/01/2022

Site form

Site info for each location entered ONCE.

Site Name à Conant2022Fall

Description à From Swan Valley Bridge downstream 4.9 km Start Lat/Lon à 45.254455, -115.516845 End Lat/Lon à 45.898752, -115.001254

Site Name à SwanValley2022Fall

Description à Swan Valley reach Start Lat/Lon à 45.298455, -115.671333 End Lat/Lon à 45.898752, -115.001254

Site Name à Lorenzo2022Fall

Description à Lorenzo reach Start Lat/Lon à 45.254455, -115.516845 End Lat/Lon à 45.898752, -115.001254

Sample form

For each Site, a Sample is entered for each day that work was conducted. Using the ConantFall2022 Site sampled for four days, two days are spent marking and two recapturing. Samples are entered as such:

Date run was made

Sample Name à Conant2022Mark1 Sample For à Fish Sample Date à 10/10/2022 Method à Electrofishing Gear à Jet Boat Method Type à Mark-Recapture Effort Type à Seconds  Effort à 4533 Effort Count à 2\*

Time for both boats combined

Number Passes M/R à Mark

Species Marked à Trout All trout marked in this Sample

Target Species à Trout

Batch Mark à Punch All marked trout received a punch

\*Remember there were two shocking boats, so the Effort is summed, and the Effort Count is two (2). If you recorded information separately for each boat, you could enter it that way by creating a new Sample for each boat on each day.

Sample Name à Conant2022Mark2 Sample For à Fish

Sample Date à 10/11/2022

Method à Electrofishing

Gear à Jet Boat

Method Type à Mark-Recapture

Effort Type à Seconds

Effort à 3967

Effort Count à 2

Number Passes M/R à Mark

Target Species à Trout

Species Marked à Trout Batch Mark à Punch

Sample Name à Conant2022Recap1 Sample For à Fish

Sample Date à 10/31/2022

Method à Electrofishing Gear à Jet Boat

Method Type à Mark-Recapture Effort Type à Seconds Effort à 4131

Effort Count à 2

Number Passes M/R à Recapture Target Species à Trout

Species Marked à Trout

Batch Mark à Punch

Sample Name à Conant2022Recap2 Sample For à Fish

Sample Date à 11/01/2022

Method à Electrofishing Gear à Jet Boat

Method Type à Mark-Recapture Effort Type à Seconds Effort à 3413

Effort Count à 2

Number Passes M/R à Recapture

Target Species à Trout

Species Marked à Trout

Batch Mark à Punch

Fish form

While a Sample is open in the Sample view, enter the fish info collected for that Sample. Because the Species Marked and Batch Mark fields are used, you do not have to enter anything in the Pass field for individual fish on either marking or recapture runs. However, when it is a recapture run, and a marked fish is captured (a recapture), check the box in the Recap field to record that the fish was a recapture.

## Lake Surveys

In terms of sampling and data recording, lakes are often times more complicated than streams. Lake surveys usually require the use of different gears to effectively sample the different species and sizes of fish because of inherent gear bias. The size of the lake, the species of interest, time of year, or objective of the survey, will determine the types of gear and how long or how many nights a gear is fished. For more details on determining the gears and effort required to effectively sample a lake see “Standard Fish Sampling Protocol for Idaho Lakes and Reservoirs”, IDFG 2012. Again, it’s important for the fish that are captured by a gear during a unit of effort be recorded that way. Lakes can be sampled with nets, electrofishing, trawling, fixed traps fished for long periods, and even angling. Examples of data entry for several lake survey protocols are described below.

### High Mountain Lakes (Alpine Lake)

Because of their difficulty to access and small size, HMLs have their own standard survey protocols, including specialized gill nets, angling, and amphibian sampling. Entering data for HMLs is similar to other surveys except for an additional HML tab under Survey Data.

#### Example 3.7 Netting

You are surveying Elk Wallow Lake, a small cirque lake at 2,133m elevation for fish and amphibians over two nights. You use two Mountain Lake Swedish gillnets for CPUE and angling to tag fish for an exploitation evaluation using the *Tag, You’re It!* system. Data entry would be as such:

Survey form

Survey Name à EWL2022

Survey Type à Alpine Lake Survey

Date Range Start à 07/13/2022

End à 07/15/2022

Survey Lat à center of lake

Lon à center of lake

Site form

The Survey Lat/Lon is the centroid of the lake (approximately the center), whereas Site Lat/Lon is the specific location on the lake that gear was fished. Create a Site with the Lat/Lon for each location on a lake where sampling occurred. Only enter a Site once (one Site per Lat/Lon).

Site Name à EWL2022Site1 Start Lat à location of Site Lon à location of Site

Site Name à EWL2022Site2

Start Lat à location of Site

Lon à location of Site

Sample form

Create a Sample for each gear fished for a unit of effort at a Site. The Sample Dates must fall in the date range of the Survey.

Site Name à EWL2022Site1

Sample Name à EWL2022Site1Night1 Sample for à Fish Sample Date à07/14/2022 Method à Netting Gear à Mtn Lk Swedish Gill Net Method Type à Sinking Effort Type à Night Effort à 1

Sample Name àEWL2022Site1Night2

Sample for à Fish

Sample Date à 07/14/2022

Method à Netting Gear à Mtn Lk Swedish Gill Net

Method Type à Sinking Effort Type à Night Effort à 1

Site Name à EWL2022Site2

Sample Name à EWL2022Site2Night1 Sample for à Fish Sample Date à 07/14/2022 Method à Netting Gear à Mtn Lk Swedish Gill Net Method Type à Sinking Effort Type à Night Effort à 1

Sample Name à EWL2022Site2Night2

Sample for à Fish

Sample Date à07/15/2022

Method à Netting

Gear à Mtn Lk Swedish Gill Net

Method Type à Sinking

Effort Type à Night Effort à 1

Fish form

Enter the fish that were captured for each Sample.

#### Example 3.8

Although the previous example provides the most precision and is the correct way to record data, sometimes “lumping” occurs where fish captured in multiple gears or units of effort are recorded together. Data was commonly collected that way in the past. **However, recording data in this manner is discouraged and should be discontinued.** Contrasting the previous example, the crew fishes two nets for two nights and records all the fish together without regard to location, net, or date. In this case, there would be one Site (the entire lake) and one Sample (two nets fished for two nights). However, use the Effort Count field to record that two nets were used because the individual net a fish came out of was not recorded.

Site Name à EWL2022 only one site

Sample Name à EWL2022

Sample Date à 07/15/2022 \*use last date

Effort Type à Night

Effort à22 Nights

Effort Count à 2\* 2 Nets

Fish form

Enter all the fish captured in all the nets

#### Example 3.9 Angling

Both crew members also angled and completed an Amphibian survey that have to be entered. Again, depending on how the data were recorded will determine how it’s entered. All angling Samples can be entered under one Site (site is the whole lake). If it was collected for each angler for each day w/ effort for that day, you would enter a sample for each person for each day. If it was recorded as two anglers who, **combined**, fished a total of 4 h (sum of the hours for both anglers) on the first day, 2.5 h the second, and 2 h on the third, it would be entered with three Samples (one for each day).

Sample Name à Day1Angling Sample Date à 07/13/2022 Method à Angling Gear à Spinning Method Type à Fly Effort Type à Hours Effort à 4 people fished a total of 4 h (2 h per person) Effort Count à 2 two people

Sample Name à Day2Angling Sample Date à 07/14/2022 Method à Angling Gear à Spinning Method Type à Fly Effort Type à Hours Effort à 2.5 Effort Count à 2

Sample Name àDay3Angling

Sample Date à 07/15/2022

Method à Angling Gear à Fly

Method Type à Fly

Effort Type à Hours Effort à 2

Effort Count à 2

Or, if just the total hours fished for both anglers are recorded, it can be entered as one Sample.

Sample Name à Angling Sample Date à 07/15/2022 Method à Angling Gear à blank Method Type à blank Effort Type à Hours Effort à 8.5 Effort Count à 2

After entering the fish, you also need to enter the Amphibian and HML data (tabs under Survey Data). For Amphibian surveys, Samples can be entered under one Site (site is the whole lake). You can use a Site that was already created or create a new Site (don’t enter two Sites with the same info, if one already exists that describes the whole lake as a site, use it). If amphibians are surveyed on different days or by different people, you would enter a Sample for each day or person.

#### Example 3.10 Amphibians

You and another person begin an amphibian survey at 10:13 AM and, going different directions, end the survey where you meet up on the other side of the lake at 11:58 AM. You and the other person record Roughskin Newts (Adults: 1-10, July: 10-100, and Larva: >1000 larva) and Idaho Giant Salamanders (Adults: 2). Data entry would be such:

Site Name à EWL2022 (Site already created from the example above)

Sample For à Amphibian

Sample Name à EWLAmph

Sample Date à 07/14/2022 Method à Visual Observation Gear à blank

Method Type à blank

Effort Type à Minutes

Effort à 142 2 people 71 min each

Effort Count à 2

If two people are conducting the Amphibian Survey and they independently sample the same area or sample a completely different area, a Sample should be entered for each person.

Be sure to change the Sample Type field to Amphibian (default is Fish)

Amphibians Tab

After entering the Sample, click on the Amphibians tab to open the Amphibian form and enter data in the grid. You should only make an entry for each species, life stage, and abundance that are observed. You **DO NOT need to enter zeros** for those categories when none are seen. Data would be entered in the Amphibian form as such:

Amphibian form

Species à Roughskin Newt

Life Stage à Adult

Abundance à 1-10

Species à Roughskin Newt

Life Stage à Juvenile

Abundance à 10-100

Species à Roughskin Newt

Life Stage à Larva

Abundance à 1000+

Species à Idaho Giant Salamander

Life Stage à Adult Count à 2

HML form

Clicking on the HML tab opens the HML form where data specific to the HML survey is entered. You should enter data in the HML form under its own Sample with Sample Type set to HML.

Survey Name à EWL2022

Site Name à EWL2022

Sample Type à HML

Sample Name à EWL2022HML

Sample Date à 07/15/2022

# Inlets à 2

# Outlets à 1

Fingerling Pres/Abs à Present

Fry Pres/Abs à Present

Adult Pres/Abs à Present

Spawning Potential à High

Fish Suitability à Good

Mean Depth à 4.7

Max Depth à 6.4

Human Use à Low

# Springs à 4

#Campsites à 1

# Firepits à 1

% Trail Present à 100

Trail Distance à 10

Cross Country Distance à 8

Trail Around Lake à 50

Trail Trampled à Yes

% Perimeter Surveyed à 100

Litter à None

Comments à area burned in last few years

There are three fields in the HML tab (Fingerling, Fry, and Adults present/absent), that can be entered here if you want, **but any fish data also needs to be entered in the fish form!** Even if only presence/absence is collected, it still needs to be entered in the Fish form as such:

Species à Species name

Length à blank

Weight à blank

Count à 1 If you have a count, enter that

Length Group à Present

Age Class à Adult, Juvenile, or YOY

Fill out the Fish form like this if the only fish info you collect is presence/absence. You do not need to enter that fish were Present/Absent in the Fish form if you collect fish that are normally entered in the Fish form.

### Standard Lake Survey

The IDFG Standard Lake and Reservoir Survey Protocols (SLRSP) were developed to provide a framework of the basic sampling necessary to produce results that are less biased with reasonable statistical comparability. The basic SLRSP includes the use of three gear types (gill nets, trap nets, and electrofishing), but depending on the survey objectives, additional gears or entirely different gears can be used to sample a lake. Again, the way data is entered depends on the gears, how data is collected and the survey objectives.

#### Example 3.11

It’s 2022 and Sawyers Pond hasn’t been surveyed in years and no one knows what happened to any previous data. The recommended standard Effort Unit is 600 s of power-on shocking and the Effort Unit for gill and trap nets is a night. You figure out that you have to e-fish three sites (600 s each), deploy four gill nets (two float and two sink), and two trap nets. Sawyers Pond is small enough you can complete the survey in one night. You also collect basic Limnology data at one Site. The data entry would be such:

Always record the ACTUAL TIME even if it’s not exactly 600 s. The actual times will be divided by 600 to standardize unit of effort.

Survey form

Survey Name à Sawyers2022 Survey Type à Standard Lake Survey

Date Range From à 06/13/2022 To à 06/14/2022 Survey Lat à Center of Lake

Survey Lon à

Site form

Enter a Site for each unique location at which a gear was used. You would enter three Sites for electrofishing, four Sites (or three) for gill nets, and two Sites for trap nets.

If floating gill nets and sinking gill nets were paired, you can use the same Site with two Samples (**do not enter them as a “pair”**):

Electrofishing-

Site Name à Saw2022EF1 Site Lat Begin à at beginning location Lon Begin à Site Lat End à at ending location Lon End à

Site Name à Saw2022EF2

Site Lat Begin à at beginning location

Lon Begin à

Site Lat End à at ending location

Lon End à

Site Name à Saw2022EF3

Site Lat Begin à at beginning location Lon Begin à Site Lat End à at ending location Lon End à

Gill Nets- \*only three Sites because two nets were fished at the same site (GN3)

Site Name à Saw2022GN1 Site Lat Begin à at beginning location Lon Begin à Site Lat End à at ending location Lon End à

Site Name à Saw2022GN2

Site Lat Begin à at beginning location Lon Begin à Site Lat End à at ending location Lon End à

Site Name à Saw2022GN3 \*2 nets fished here Site Lat Begin à at beginning location Lon Begin à Site Lat End à at ending location Lon End à

Trap Nets-

Site Name à Saw2022TN1 Site Lat Begin à of location

Lon Begin à

Site Lat End à

Lon End à

Site Name à Saw2022TN2

Site Lat Begin à of location

Lon Begin à

Site Lat End à

Lon End à

Sample form

Each Site gets one Sample except GN3 where two nets were set. Data entry is as such:

Electrofishing-

Site Name à Saw2022EF1

Sample Name à Saw2022EF1 Sample For à Fish Method à Electrofishing Gear à Power Boat Method Type à Effort Type à Seconds Effort à 606

Site Name à Saw2022EF2

Sample Name à Saw2022EF2 Sample For à Fish Method à Electrofishing Gear à Power Boat Method Type à Effort Type à Seconds Effort à 613

Site Name à Saw2022EF3

Sample Name à Saw2022EF3 Sample For à Fish Method à Electrofishing Gear à Power Boat Method Type à Effort Type à Seconds Effort à 633

Gill Nets-

Site Name à Saw2022GN1

Sample Name à Saw2022GN1S Sample For à Fish Method à Netting Gear à Gill Net Method Type à Sinking Effort Type à Night Effort à 1

Site Name à Saw2022GN2

Sample Name à Saw2022GN2F Sample For à Fish Method à Netting Gear à Gill Net Method Type à Floating Effort Type à Night Effort à 1

Site Name à Saw2022GN3Enter both Samples under the same site.

Sample Name à Saw2022GN3S Sample For à Fish Method à Netting Gear à Gill Net Method Type à Sinking Effort Type à Night Effort à 1

Site Name à Saw2022GN3

Sample Name à Saw2022GN3F

Sample For à Fish Method à Netting Gear à Gill Net

Method Type à Floating Effort Type à Night Effort à 1

Trap Nets-

Site Name à Saw2022TN1

Sample Name à Saw2022TN1

Sample For à Fish

Method à Netting Gear à Trap Net

Method Type à Bottom

Effort Type à Night Effort à 1

Site Name à Saw2022TN2

Sample Name à Saw2022TN2 Sample For à Fish Method à Netting Gear à Trap Net Method Type à Bottom Effort Type à Night Effort à 1

Fish form

For each Sample, enter the fish that were captured in that Sample.

Site Name à Saw2022GN1

Sample Name à Saw2022GN1S One Sample at this Site

Species à Smallmouth Bass Length à 274 Weight à 566 Count à 1

Species à Smallmouth Bass Length à 227 Weight à 312 Count à 1

Species à Black Crappie Length à 233 Weight à 157 Count à 1

Species à Black Crappie Length à 210

Weight à 165 Count à 1

Species à Bluegill Length à 402 Weight à 1135 Count à 37

Site Name à Saw2022GN2

Sample Name à Saw2022GN2F One Sample at this Site

Species à Bluegill Length à 94 Weight à 18 Count à 1

Species à Bluegill Length à 110 Weight à 23 Count à 1

Site Name à Saw2022GN3 Two Samples at this Site

Sample Name à Saw2022GN3S

àEnter Fish data

Sample Name à Saw2022GN3F

àEnter Fish data

Lake Surveys can be very complex. However, regardless of how complicated the data are, data entry follows the previous examples, only with more Sites and Samples.

Limnology Tab

Like the other tabs, a Survey, Site, and Sample have to be created to enter data in the forms under the Limnology Tab. Oftentimes, limnology data is collected at a lake during the same time that fish surveys are conducted. However, collecting limnology data can be its own Survey if fish are not sampled. If limnology is the purpose of the trip, create a new Survey with Survey Type à Limnology Survey. Or, if you perform limnology sampling during a fish survey, create a Site with the location the limnology samples were taken then create a new Sample with Sample Type à Limnology. Complete the rest of the Sample form with info for the limnology sample. You can create a Sample for a Site that is already entered for fish if limnology data is collected at the same location. Otherwise create a new Site and Sample for each limnology sampling location. Open the Limnology Tab and click the Create Limno button to begin entering data in the Limno Details form. The forms in the Limnology tab are where information related to the temperature and chemical profile of the water column, Secchi depths, and Zooplankton samples are entered.

#### Example 3.12

You return to Sawyers Pond a month later and only collect limnology data (a depth profile, Secchi readings, and zooplankton to calculate ZQI and ZQR) at one site. Data entry would be such:

Limno Details form

Enter temperature and water chemistry info for the SURFACE at the point where the depth profile data is collected. Not all the water chemistry parameters are usually collected during one survey. Only enter data into those fields in which data was collected and leave the others blank. Usually temperature, dissolved oxygen, conductivity, and pH are collected depending on equipment. There is also the Thermal Depth (thermocline) and Moon Phase if you record those.

Survey form

Survey Name à SawLimno2022

Survey Type à Limnology Survey

Date Range From à 07/14/2022

To à 07/14/2022

Site form

Site Name à SawLimno2022 Start Lat à location on lake Lon à location on lake

Sample form

Sample Name à Limno2022 Sample For à Limnology

Limno Details form

Surface Temp à 12 Total Depth à 93 Surface DO à 10

Surface Conductivity à 513

Surface pH à 7.2

Thermo Depth à 17

Moon Phase à 1st quarter

Then you can click the Limno Profiles, Secchi, or Zooplankton tabs and enter the relevant data.

Limno Profile form

Enter the temperatures and water chemistry recorded in a depth profile. The measuring equipment is lowered through the water column, stopping to record measurements (usually) every meter to the bottom or an appropriate depth.

Depth à 1 Temp à 12

Depth à 2 Temp à 11

Depth à 3 Temp à 10

Depth à 4 Temp à 9

Secchi form

Enter the reader and depth the Secchi disk was no longer visible. Each reader is supposed to take three measurements.

Reader à Reader 1 Depth à 3.42

Reader à Reader 1 Depth à 3.38

Reader à Reader 1 Depth à 3.57

Reader à Reader 2 Depth à 4.03

Reader à Reader 2 Depth à 3.83

Reader à Reader 2 Depth à 3.96

Zooplankton form

If you collect zooplankton samples for ZPR and ZQI, enter the weight (g) of the zooplankton captured in a 153-micron net, a 500-micron net, and a 750-micron net in those fields. If you are using a different limnology protocol there are fields to record Species, Bag Mesh, Cup Mesh, Count, Weight and Life Stage. There are also fields for Net Depth and Total Depth.

For ZPR/ZQI:

Zoo 153 à 329 Zoo 500 à 213 Zoo 750 à 33 Net Depth à 57

Zoo 153 à 371 Zoo 500 à 187 Zoo 750 à 45 Net Depth à 60

Zoo 153 à 401 Zoo 500 à 233 Zoo 750 à 13 Net Depth à 45

For different zooplankton protocols: e.g., mysid samples

Species à Mysid Net Mesh à 1000 micron Bucket (Cup) Mesh à 500 micron Net Depth à 47 Life Stage à YOY Count à 79

Species à Mysid Net Mesh à 1000 micron Bucket (Cup) Mesh à 500 micron Net Depth à 47 Life Stage à Adult and Juvenile Count à 33

### Trawl Survey

Trawling is a method of capturing fish that entails a net being pulled by a boat. Trawl nets are bag shaped and the opening is usually held open either with a fixed frame or with otter boards and terminates in a cod end that can be opened and tied shut. Nets are lowered from a moving boat into the water with cables through on-board hydraulic systems to a desired depth. Once the net reaches the desired depth, the net is pulled at a constant speed by the boat for an amount of time (usually 5 minutes). After the allotted time fishing, the net is pulled up to the next depth (step) and fished for the same amount of time, continuing until finished. The number of steps the net is fished, the time spent fishing at each step, the time spent moving the net between steps, and the speed of the boat are all recorded. Sometimes a counter is used to measure the distance the net was pulled instead of calculating it from time and boat speed. For data entry purposes a trawling *transect* is a Site with beginning and ending coordinates. In the Sample form, when Trawling is picked as the Method, the Trawl Setting form opens and the trawl specific info can be entered.

Many larger waterbodies have to be subdivided into smaller areas because of differences in habitat or morphometry. The smaller areas are **Strata** and are recorded in the Site form. Only use the Strata field if the waterbody is stratified for sampling, *otherwise leave it blank*.

#### Example 3.13

You want to sample Kokanee in Three-Lobe Lake that is both large and deep. You decide to stratify the lake into three Strata (Lobe 1, 2, and 3) and make two trawl transects (Sites) in each Strata. You can complete two Sites in a night, so it will take three nights. You would enter one Survey with six sites (I.e., 3 strata X 2 sites), and each Site would get one Sample, like this:

Survey form

Survey Name à ThreeLobeLake2022 Survey Type à Trawl Survey

Survey Date Start à 06/13/2022

Survey Date End à 06/16/2022

Site form

Site Name à L1S1 Lobe 1 Site 1 Strata àL1 Lobe 1

Site Lat Begin à Location Trawling began

Lon Begin à Site Lat End à Location Trawling ended Lon End à

Site Name à L1S2 Lobe 1 Site 2

Strata à L1 Lobe 1

Site Lat Begin à Location Trawling began

Lon Begin à

Site Lat End à Location Trawling ended

Lon End à

Site Name à L2S1 Lobe 2 Site 1 Strata à L2 Lobe 2

Site Lat Begin à Location Trawling began

Lon Begin à

Site Lat End à Location Trawling ended

Lon End à

Site Name à L2S2 Lobe 2 Site 2 Strata à L2 Lobe 2

Site Lat Begin à Location Trawling began

Lon Begin à

Site Lat End à Location Trawling ended

Lon End à

Site Name à L3S1 Lobe 3 Site 1

Strata à L3 Lobe 3

Site Lat Begin à Location Trawling began

Lon Begin à

Site Lat End à Location Trawling ended

Lon End à

Site Name àL3S2 Lobe 3 Site 2

Strata à L3 Lobe 3

Site Lat Begin à Location Trawling began

Lon Begin à

Site Lat End à Location Trawling ended

Lon End à

Sample form

Enter one Sample for each Site with the date the Sample was completed.

Sample Name à L1S1 Sample for Site L1S1 Sampled Date à 06/13/2022 Before midnight Method à Trawling

Trawl Settings

Number of Steps à 5

Time at Step (s) à 300

Time Btw Step (s) à 23

Boat Speed (km/h) à 1

Net Area (m2) à 12

Min Depth (m) à 5

Max Depth (m) à 30 Gear à Trawl Net

Method Type à Otter Effort Type à Area (m2) Effort à 6874 Surface area of Strata

Target Species à Kokanee

Sample Name à L1S2

Sampled Date à 06/14/2022 Same night, after midnight

Method à Trawling

Trawl Settings

Number of Steps à 7 Time at Step (s) à 300 Time Btw Step (s) à 30

Boat Speed (km/h) à 1

Net Area (m2) à 12

Min Depth (m) à 5

Max Depth (m) à 45

Gear à Trawl Net

Method Type à Otter

Only the species listed as the Target Species should be used for analysis.

Effort Type à Area (m2)

Effort à 6874

Target Species à Kokanee

Then enter Samples for the Sites completed on the second and third nights in a similar fashion, making sure to enter new Sample Names and Dates. In the Fish form, enter what was caught during each Sample.

### Weir or Trap

If you operate a weir or trap, regardless of whether they are permanent or temporary, the length of time in which the weir or trap runs continuously (without planned shutdowns) would be a Survey. For example, the Sockeye weir on Redfish Lake Creek operates for several weeks in the spring when fish are out-migrating and again for several weeks in the fall when adults return. Each period would be its own Survey with the Date Ranges encompassing that period. Each Survey would have one Site (the site doesn’t change) and then as many Samples as there are days in the period. The fish would be entered under the Sample for the day on which it was captured. When no fish are captured, enter “None” as the Species with a Count of one. Oftentimes, a weir is operated to catch a certain species at a certain time of year (e.g., Bull Trout in the fall or Yellowstone Cutthroat Trout in spring). When the weir or trap is targeting a specific species, you should enter that species in the Target Species field (yes, for each Sample). If other species are captured, they can be entered in the Fish form like any other fish.

#### Example 3.14

You are responsible for operating the weir on the upper Blackfoot River in the spring to estimate the number of Yellowstone Cutthroat Trout that move into the river to spawn. Fish are scanned for PIT tags and given one if none are found (New). The weir operates from April 21 to June 1 each year. Other metrics, such as water temperature, gauge height (depth), and discharge are also measured daily.

Survey form

One Survey with date range.

Survey Name à BlkftWeir2023

Date Range Begin à 04/21/2023

End à 06/01/2023

Frequency à Annually

Site form

One Site.

Site Name à Upper Blackfoot Weir Description à Just downstream from the Blackfoot River Road bridge Start Lat/Lon à coordinates of weir

Sample form

One Sample for each day.

Sample Name à 2023Day1 Sample Date à 04/21/2023 Method à Trapping Gear à Weir Effort Unit à Days Effort à 1 Target Species à Yellowstone Cutthroat Trout

Fish form

Species à Yellowstone Cutthroat Trout Length à 489 Weight à 1,987 Count à 1 Tag Type à PIT tag fields can be entered Tag Number à CD9.4561521464 thru the fish form, but Prev/New à Previous appear in the Marks & Tags Sex à Female form Maturity à Mature Flowing à Green

Species à Yellowstone Cutthroat Trout Length à 523 Weight à 2,415 Count à 1 Tag Type à PIT Tag Number à CD9.47987984598 Prev/New à New Sex à Male

Maturity à Mature

Flowing à Flowing

Species à Yellowstone Cutthroat Trout

Length à 523

Weight à 2,415

Count à 1

Tag Type à PIT

Tag Number à CD9.4561521464

Prev/New à Previous Sex à Female

Maturity à Mature

Flowing à Spent (eggs are gone)

If other metrics, such as temperature (air and/or water), depth, or discharge are recorded each day, they can be entered in the Habitat form under the Sample for that day.

# Literature Cited

Idaho Department of Fish and Game. 2012. Standard fish sampling protocol for lowland lakes and reservoirs in Idaho. Report No. 12-10. Idaho Department of Fish and Game, Boise.

Idaho Department of Fish and Game. 2021. Standard sampling protocol for high mountain lake surveys in Idaho. Idaho Department of Fish and Game, Boise.

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