SGS III Manual

OVERVIEW

The SGS III program is a replacement for the long standing SGS II program. The SGS II program continues to function, and the two are intended to be both forwards and backwards compatible, such that a database used with SGS II can work with SGS III, and vice versa. The only feature missing from SGS II is a means to download mobile surveys.

The SGS II program was showing it's age, as it was designed at a time when computer monitors were technically simpler. This meant that on some newer computers, the SGS II program would not show up correctly. In some cases, this made the program difficult to use, as parts of forms simply wouldn't be

displayed. The SGS III program is built on DPI aware technology, and should look the same across any monitor.

The other major change between SGS II and SGS III is that SGS III is focused on visualizing waypoints on maps. SGS II allowed the user to import waypoints to use with a survey, and they could see the waypoints on a map, but they were never required to use waypoints or look at them. SGS III uses a map as the central feature of the program. Features without waypoints are still possible, feature with waypoints are just emphasized.

QUICK GUIDE

ENTERING NEW SURVEYS

All Waypoints First

This is a new approach added in SGS III for people who want to upload a bunch of waypoints, then build surveys around those waypoints afterwards.

1. Go to Waypoint Management and choose import file to bring a file of waypoints into SGS III.
2. When ready to enter a survey, select waypoints from the Waypoint Management form and either add them to the survey (deciding what role these generic waypoints play happens later), add them as redds, add them as carcasses, or add them as endpoints.
3. Click Finished, which will create the new survey with the waypoints you have selected.

Waypoints As You Go

This is the approach that will be more familiar to users of SGS II, though you will have to upload waypoints or choose waypoints as a first step.

1. Go to Survey Management.
2. Click New Survey.
3. Choose from the Survey Options form to decide what route you want to take.

DOWNLOADING MOBILE/HISTORIC SURVEYS

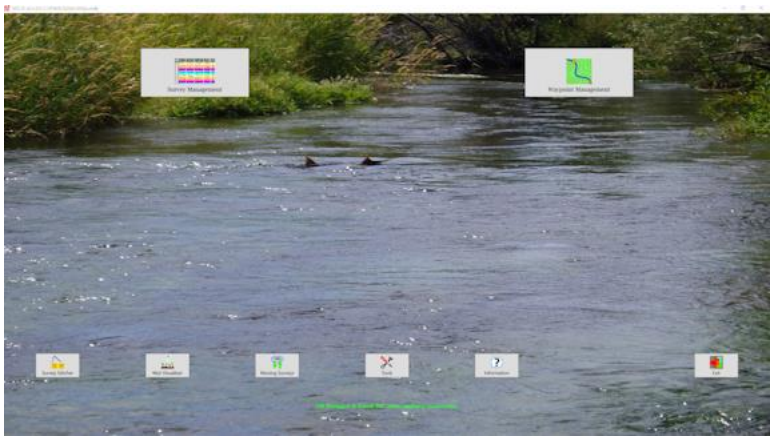
Historic surveys are read only, mobile surveys (those entered on mobile devices using the mobile SGS application) can be edited. Anybody importing mobile surveys should make sure that they only edit surveys that they are responsible for.

1. Select Moving Surveys from the bottom of the Initial Form.
2. Select Download Surveys.
3. Choose mobile or SGS along with at least the stream, then press Get Candidates, if necessary (it depends on the order of selection).
4. Choose one or more surveys from the candidates presented and press the Import Surveys button. If there are no candidates, then change the selection and press Get Candidates again.

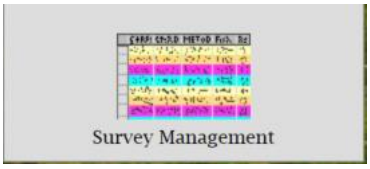
ENTERING/EDITING A SURVEY

1. Every waypoint must be a redd, a carcass, or an endpoint. Right click on the waypoint to set which role it plays. Waypoints not assigned to a role will be removed from the survey when the survey is saved.
2. Waypoints can be dragged and dropped, with the bottom of the icon being the location the waypoint is found at.
3. All waypoints that are carcasses must have one or more carcasses associated with them. Double clicking the icon will bring up the Individual Fish form to allow entering/editing/viewing carcass information.
4. All waypoints that are redds will default to one redd. Double click the redd icon to change that number at that waypoint.
5. All labels on the right side must be either green with green checkboxes, or yellow with question marks. If they are not, double click on the label to enter the missing data, or select the button appropriate to the missing data, from the bottom of the form. Those two alternatives do the same thing, so pick the one easier for you.
6. When all data has been entered, the validation icon in the upper right should be a green check mark. If it is a red X, then click on the red X to see any validation errors.

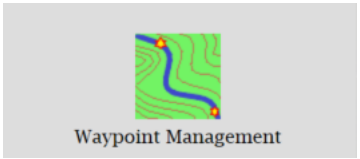
INITIAL FORM



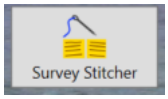
There are two main approaches to entering new surveys into SGS III. You can either upload a file containing waypoints, then build surveys with them, or you can start a survey and add waypoints to it, which is how surveys were entered in SGS II. To enter, edit, view or delete surveys, use the Survey Management form.



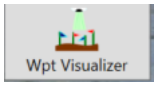
To upload a file containing waypoints, or to select existing waypoints to build a survey from, use the Waypoint Management form.



These two buttons are the largest on the main form because they are expected to be the most commonly used buttons on the form. The other buttons on the main form are used to perform a variety of auxiliary functions.

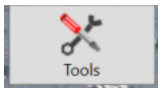


The Survey Stitcher form is used to tie a series of contiguous surveys into a single survey. This is intended to be used to stitch together a series of sub surveys, such as are created by a series of drone flights on a single stream. The sub surveys don't need to be in order, but they do need to cover a contiguous section of the stream in question.



The waypoint visualizer provides a means to see all the waypoints in the local database for one or more streams. This can be used to see redds across time, surveys from year to year, and so forth. See the Waypoint Visualizer for more information.

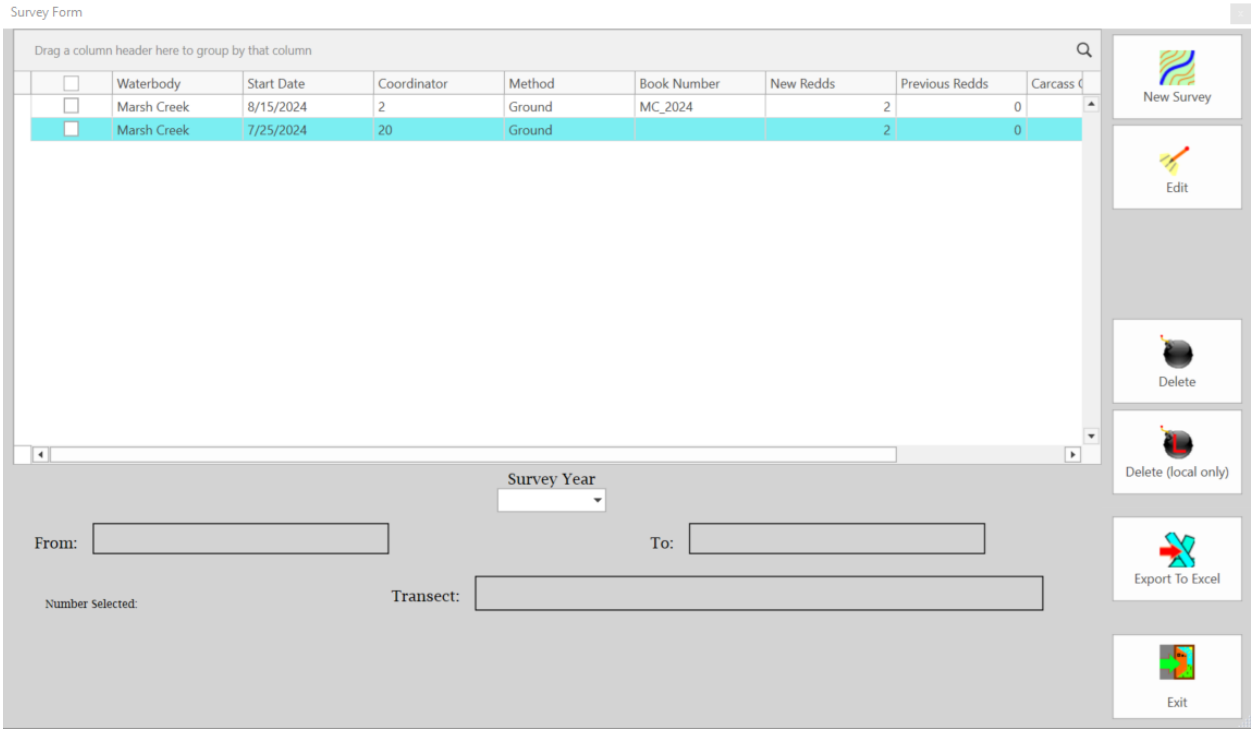
Moving surveys is used for uploading surveys to the SGS database, downloading surveys from either SGS or the mobile SDE database, importing surveys from a text file, or exporting surveys to a text file. Not all options will be available to all users, as only coordinators are allowed to upload files.



The Tools button brings up the Options form, which offers up several configurations for validating and configuring data entry using SGS III. Default values for several fields in surveys can be set here. This functionality replaces the protocols from SGS II.

The Information button brings up a form that is an extension of the Clues concept from SGS II. The SGS III program will store a variety of information about the behavior of the program, which can be useful for diagnosing problems with the program. The information form shows all the diagnostic data that was stored.

SURVEY FORM

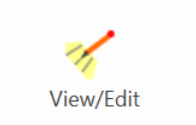


The Survey form will be familiar to anybody who has used SGS II, as the look and feel remains almost entirely the same. This is the form for reviewing entered surveys from this year and past years. By default, the grid shows the current year. Selecting a survey will cause the starting point to be added to the From label, the ending point to be added to the To label, and the transect name added to the Transect label. If the survey is not a named transect, then the Transect label will indicate that.

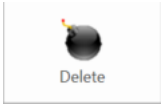
In the grid, one or more surveys can be selected. For some actions, such as edits, you are only allowed to select one. If you select more than one survey and press the Edit button, you will be snarkily told that you can only select one.

The fields shown in the grid by default are those thought to be most common. Further fields exist for the grid, and can be added on demand by right clicking the header row of the grid, which brings up a menu with an option to select fields to display. Grouping surveys by one or more fields is also possible by dragging fields into the area above the grid where it says that you can group by dropping fields there.

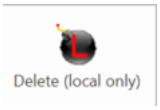
The New Survey button will bring up the New Survey Options Form, which gives you the options to create the new survey using waypoints that have already been uploaded to SGS III, create the new survey with waypoints that have not yet been uploaded (in which case you'll be taken to the Waypoint Loader form to import a waypoint file), a blank new survey (in which case you'll be able to add waypoints later on from the Map form), or cancel. The key is how you want to deal with waypoints.



To use the View/Edit button, you must select one and only one survey from the grid. The button will then take you to the Map form, which will be displaying the selected survey. If the selected survey is editable, you will then be allowed to edit all of the information in the survey from the Map form. If the selected survey is read only, then you will still be able to review all of the information for the survey in the Map form, but you will not be able to edit any of the data.



The Delete button should be used with caution. This will delete all of the selected surveys from the local database, but it will also note the deletion such that the surveys will be deleted from the SGS database, if they are found there, the next time the user uploads any data. Naturally, you are warned before this deletion takes effect, but because the deletion will propagate to the SGS database, the button should be used with caution.

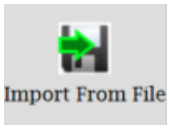


The Delete Local Only button will only remove a survey from the local database. This deletion will not propagate to the SGS database, and will have no affect on the SGS database in SQL Server.

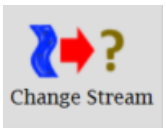
WAYPOINT MANAGEMENT FORM

The Waypoint Management form is used for importing, viewing, managing, and assigning waypoints. The form can be reached from the Main form, the Map form, and the Survey form, depending on what choice the user makes. The expectation is that all waypoints for a survey or even for an entire season, can be loaded from one file, or from multiple files, and then selected from this form for inclusion in surveys as needed.

This is a change from SGS II, where waypoints were all stored by survey. If a person had a file with all their waypoints from the season, they might add that file for each survey they did, thereby duplicating the waypoints several times over in the local database. The Waypoint Management form removes the need to do that, as the user can load the file one time, then select the waypoints they want to use for the current survey they are entering.

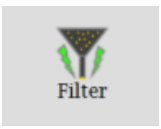


The Import From File button will take the user to the Waypoint Loader form for importing waypoint files in a variety of formats.



When waypoints are loaded, they are checked against a service that will determine which stream the waypoint is on. This service can get the assignment wrong, as some waypoints will be located at the mouth of a stream, or might be inadvertently located far enough away from a stream that they appear to be on a different stream. The Change Stream tool can be used to fix incorrect stream assignments for waypoints. After all, a survey will be on a specific stream, and will not allow any waypoints that are not on that stream to be included in the survey.

The Delete From DB button will remove any of the selected waypoints from the local database. Naturally, if the waypoints have already been included in a survey, then removing the waypoints from the database is not allowed. The intention of this tool is to remove any waypoints that were added in error.



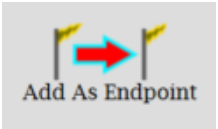
The Filter button brings up the Waypoint Filter form which allows the user to restrict the waypoints displayed in the Waypoint Management grid. It is expected that some databases will have so many waypoints for a given year that sorting through them to find certain waypoints would be tedious. The purpose of the Waypoint Filter form is to allow the user to attempt to manage this proliferation of waypoints.

Click the Include In Survey button to include any selected waypoints into the current survey. The role of the waypoint will have to be assigned in the Map form, unless the type of the waypoint was recognized when the waypoint was imported.

All waypoints in a survey have to fill some role. They can be redds, carcasses, endpoints, or even a mix of any set of those three (though it is generally better to have one waypoint for each redd, carcass, or endpoint rather than having a single waypoint serve multiple purposes). Clicking this button will add all selected waypoints to the current survey as new redds.

Clicking this button will add all selected waypoints as previous redds, so long as the waypoint fits the requirements to be a previous redd. To be a previous redd, a waypoint must not be used in any other role in the current survey. Furthermore, if the waypoint was used in some other survey, then it must have been either a redd or a previous redd, and must be used on the same stream as the current survey.

All waypoints in a survey have to fill some role. They can be redds, carcasses, endpoints, or even a mix of any set of those three (though it is generally better to have one waypoint for each redd, carcass, or endpoint rather than having a single waypoint serve multiple purposes). Clicking this button will add all selected waypoints to the current survey as carcasses.



All waypoints in a survey have to fill some role. They can be redds, carcasses, endpoints, or even a mix of any set of those three (though it is generally better to have one waypoint for each redd, carcass,

or endpoint rather than having a single waypoint serve multiple purposes). Clicking this button will add all selected waypoints to the current survey as an endpoint. The user will then have to indicate whether the endpoint is the starting endpoint or ending endpoint, as each survey can have only two endpoints, and there must be one starting and one ending. Technically, it makes little difference which endpoint is considered the start and which is considered the end, as we don't generally evaluate surveys for upstream vs downstream, but if it is known which one was the start and which was the end, then they should be assigned appropriately.

The Boot From Survey button will cause any selected waypoints to be removed from the survey if it is permissible to do so. Some waypoints can be removed fairly simply, such as redds and endpoints, but carcass endpoints might have quite a bit of data associated with them. Therefore, booting a waypoint from a survey is not always going to be allowed.

MAP FORM

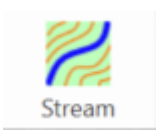
The Map form is used for viewing/entering/editing surveys. The form displays a map that is centered either on the waypoints included in the survey, or on Redfish Lake if there are no waypoints in the survey, yet. Centering of the form if there are waypoints can get a bit messy, especially if there are odd waypoints included, however the form is a standard map tool which allows zooming and panning, so it should be fairly obvious how to navigate around.

The map has some standard navigation controls in the upper left, the stream information in the top center, and various information about the survey along the right side. Along the bottom are a series of buttons that take the user to different parts of the survey, such as redds, fish, and other survey information. However, in addition to the buttons, the user can get to any of the parts of the survey by clicking on the labels on the right. For example, clicking on the redd and previous redd labels takes the user to the Redd form.

All the labels on the form are color coded and include an icon. If the label is red and the icon is an X, then that information has not been entered for the survey and it needs to be. If the label is green and the icon is a check, then that information has been entered and is in good shape for the survey. If the label is yellow and the icon is a question mark, then no data has been entered for that field and that's okay. A yellow label and question mark indicates that something more could be done there, but it is not essential. Clicking on the label will take the user to the form for entering whatever they need to address.

One additional label is found in the upper right corner. There is either a red X, or a green check. This indicates whether or not the survey has passed validation. Clicking on the icon will bring up a message box showing any issues with the survey. Essentially, that label should be showing a large, green, check mark, or else there is something wrong with the survey. Read only surveys will always show as having validated, because the data can't be changed anyways, so it is what it is.

CONTROLS AND REGIONS



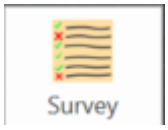
Clicking on either the Stream button or on any of the labels for the stream, survey from or survey to, will open up the Stream form to allow viewing/editing the stream, starting point, and ending point of the survey. The Stream form will be familiar to users of SGS II, as they are very similar in use and appearance.

The Validation icon indicates whether or not the survey passes validation. If the icon is a redd X, as shown, then there are problems with the survey. Clicking on the icon when it is a redd X will show a message listing the validation issues with the survey. If the icon is a green check, then the survey has

passed validation. Clicking on the icon when it is a green check will show a message saying that there are no issues. In general, saving a survey with issues is not allowed.

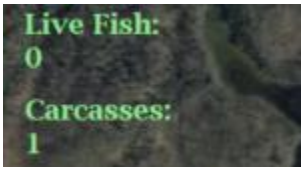
One thing to note is that read only surveys are not validated. If a read only survey is being viewed in the map form, then the validation icon will always be a green check, regardless of the state the survey is in.

Click on any part of the date labels to bring up the Date Management form. Date and time are combined in the display, but are entered separately and end up in different fields in the database. Also, there is no button to get to the Date Management form, as clicking on the date labels is simply easier (and I forgot).



Clicking on the Survey button, the sample method, or the book number, will open up the Survey Information form. On that form, you can enter the sample method and book number, but also the visibility, coordinator, collector, agency, and other information about the survey.

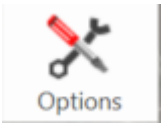
Clicking either the Redd button or either of the redd labels brings up the Redd form which is used for entering redd information. This can also be done by clicking on a waypoint that is a redd type.



Clicking either the Fish button or either of the fish labels brings up the Fish Grid form which shows a grid containing any carcass information, along with a grid containing live fish counts. From that form, editing information about carcasses is possible. Clicking a waypoint that is a carcass type will not do the same thing, as that brings up the Individual Fish form.

Click on any of the count labels to indicate whether the survey was a redd count, a carcass count, both, or if the survey was not taken. If the survey was either a redd or carcass count, then the survey cannot be set as not taken. The Survey Not Taken field is there for entering surveys that could not be conducted for any reason. The comment field on the Survey Information form can be used to state why the survey wasn't conducted, but it is not essential that any reason be given.

Clicking on the Waypoint button will take the user to the Waypoint Management form, which allows them to add and remove waypoints from the survey.



The Options button brings up the Options form. The Options form is similar to the Information form from the Main form in that it shows any messages in the log. Normally, the log will be irrelevant to a survey, but some issues with entering data in a survey will also be logged, so having the data available can be useful for diagnosing issues.

The other feature of the Options form is that it allows the user to filter which waypoints are being displayed. Many surveys will have so few waypoints that displaying them all is just fine. However, it is entirely possible to display waypoints for multiple surveys, and there are times when that would be desired, such as multi-pass surveys. If the runs are large enough, and there are enough passes, then there could be quite a few waypoints cluttering up the display. The filter allows the user to remove certain waypoints from view to make working with waypoints a bit easier.

WAYPOINTS

Waypoints show up on the map as icons. Waypoints can be carcasses, redds, previous redds, endpoints, or unassigned. Waypoints can also be selected or not. When a waypoint is selected, it is yellow. Here are many, though not all, of the various waypoint icons:

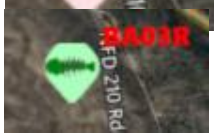
Unknown waypoint that is not selected.

Unknown waypoint that has been selected.

Redd waypoint that is not selected.

Endpoint waypoint that is not selected.

A carcass waypoint that is not selected. The pink indicates that the carcass information is also incomplete.



A carcass waypoint indicating that the carcass information is complete and the fish has passed validation.

A waypoint that is both a carcass and a redd. The pink indicates that the carcass is not complete.

In addition to the waypoints shown, there are also different waypoints for previous redds (the redd icon with green moss on it), and all combinations of redds, carcasses, and endpoints. As a general rule, waypoints should never be shared for carcasses, redds, and endpoints, but it does happen. There are also selected versions of each of the waypoints, which is just a yellow version of the waypoint shown here.

Selecting Waypoints

To select a waypoint, hold down the Ctrl key and click on the waypoint. Multiple waypoints can be selected in this fashion. It is also possible to do a 'lasso' select to select multiple waypoints at once, as discussed in the next section.

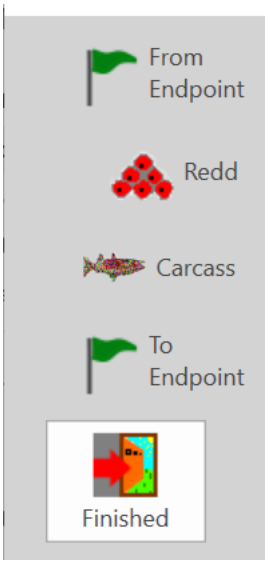
To remove the selection from any waypoint, click anywhere on the map that is not on a waypoint. This will deselect all the waypoints currently selected.

Multiple Selection

Multiple waypoints can be selected by holding down the Shift key and drag selecting multiple waypoints. One thing to note is that if multiple waypoints are selected, they can only be assigned as either redds or carcasses, not endpoints. This is because there can be only a from endpoint and a to endpoint, so it would be impossible to assign any endpoint type to multiple waypoints.

Assigning Waypoint Types

To assign a waypoint to a type, right click on the waypoint. This brings up the form for indicating the type of the waypoint:



Waypoints can be assigned to any combination of types, except that they cannot be assigned as both the from and to endpoint. Also, note that the previous redd type is not on this list. Previous redds are special, as they must have been redds that were part of a different survey. Since they are already redds in a previous survey, then they can't be new redds, carcasses, or endpoints in the current survey, as the waypoint was actually recorded for the previous survey.

If you right click on a waypoint with several waypoints selected, they will all get assigned to whichever type you choose. This allows you to set several as redds or carcasses. If one of the selected waypoints is already in one role, and you select a different role, then the waypoint will be assigned to both roles.

Also note that any previous redds cannot be set as either current redds, carcasses, or endpoints. Previous redds can only be seen or not seen.

Moving Waypoints

Waypoints can be moved by holding down the Alt key while dragging and dropping the waypoint. Without the Alt key, the same action would navigate around the map, so the Alt key is required for moving the waypoint relative to the map.

The target of the waypoint is the bottom of the icon, so when moving a waypoint, place the bottom of the icon at the point you want the waypoint to be located.

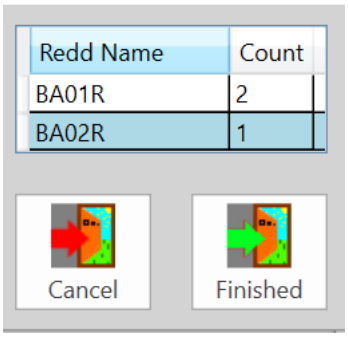
Working With Waypoints

To work with a waypoint, double click the icon. This will do nothing for endpoint types, because there is no information associated with endpoints other than the fact that they are endpoints. Also, if the waypoint is both a redd and a carcass, you will have to choose whether you want to edit the redd part or the carcass part, as they are different.

Redd Waypoints

If the waypoint is a redd, then some modified redd form will appear. If there is only one waypoint selected, then there will be a simple number box, which defaults to 1:

If there are multiple redd waypoints selected, then the multiple redd form will appear such that the number of redds at each of the selected waypoints can be edited:

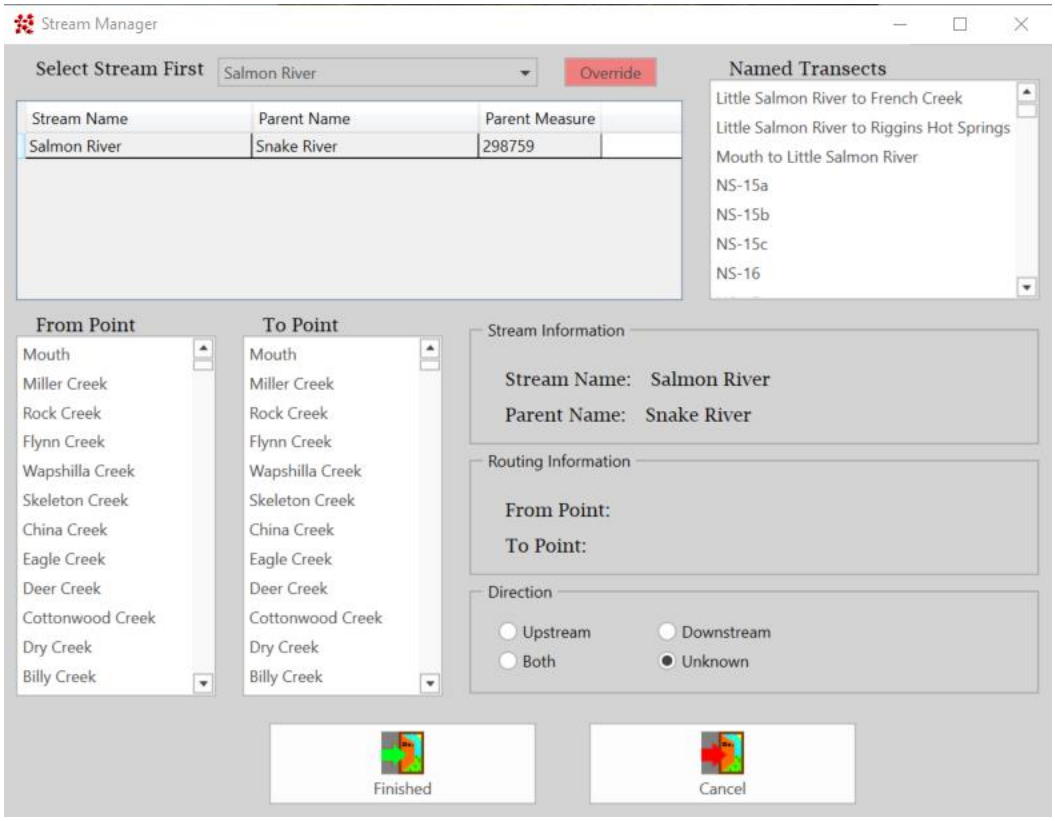


By default, the number of redds at a redd waypoint is 1. You can set the number to any reasonable (and some unreasonable) numbers greater than 1. If the count at a waypoint is greater than 1, the waypoint will show that number in parentheses:

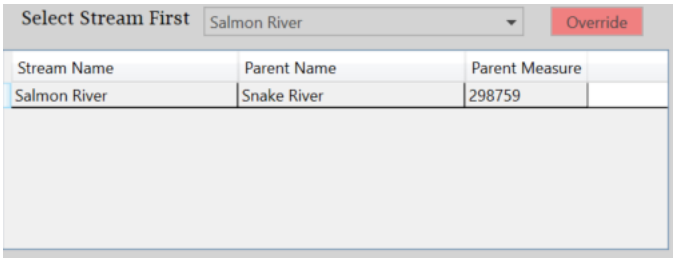
Carcass Waypoints

If the waypoint is a carcass, then double clicking on the waypoint will bring up the Individual Fish form so that you can add/edit/view all carcasses associated with that waypoint.

STREAM MANAGEMENT



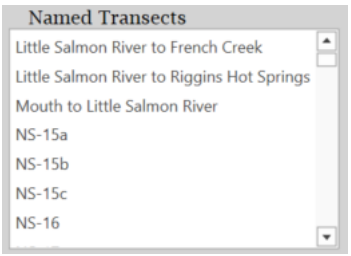
The Stream Management form allows the user to choose a stream and endpoints for a survey, as well as setting the direction in which the survey was conducted. Most surveys will be using waypoints, these days, in which case the stream will already be identified based on the stream associated with the waypoints. However, there are some surveys that will have no waypoints, either because nothing was identified in the survey, or because it was a survey that was not actually conducted. Therefore, changing the stream is possible.



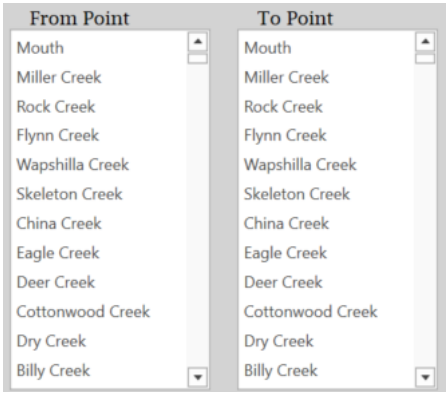
To select a stream, choose the stream name in the drop down box. Stream names in Idaho are frequently not unique. Therefore, all streams that share the chosen name will appear in the grid. The

grid shows the parent stream and the measure on the parent of the confluence. This should be enough to identify the correct stream in cases where the name of the stream has been frequently duplicated.

While choosing the stream is rarely going to be necessary, choosing the endpoints will be much more common for new surveys, as they may not have waypoint endpoints. There are two ways to choose endpoints in the Stream Manager form. The first is by selecting a named transect, the second is by choosing named locations on the stream.

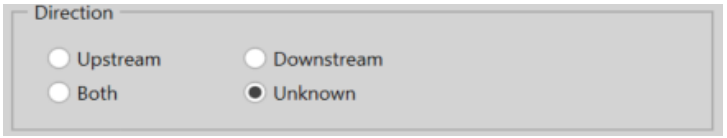


Named transects have known endpoints. Therefore, choosing a named transect will automatically select a from and to endpoint, and show them on the form. This is the quickest way to select the endpoints for surveys that are named transects.



For all other surveys that are not named transects, and for which there are not waypoint endpoints, a from and to point must be chosen. The list of From and To points is based on the stream. These locations are features of the stream that are readily recognizable and unlikely to change over time, such as tributary confluences, road crossings, and the like. Transitory features, such as distinctive trees, or hard to identify features, such as “the big rock”, are not included in these lists.

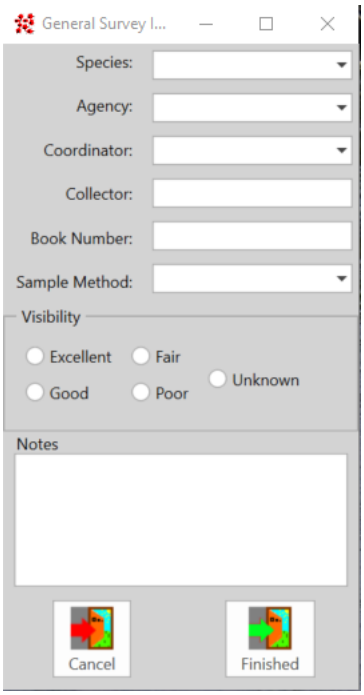
Each survey must have a from and a to point. Surveys may have a waypoint for one endpoint and one of these known features for the other endpoint, or they can have two known features as endpoints, or two waypoints.



Indicating the direction of travel for a survey can also be done in the Stream Management form. Direction of travel is usually either upstream or downstream, though some surveys are conducted from

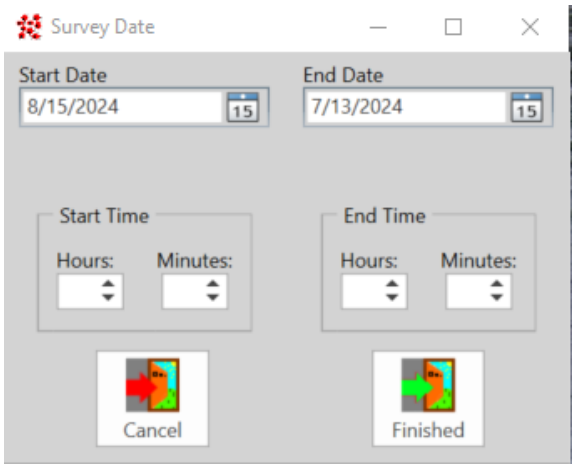
both ends, in which case the direction of travel is both. By default, the direction of travel is set to Unknown. SGS III does not enforce any requirement regarding entering the direction of travel. Spawning ground protocol does suggest that one direction is better than another, but surveys are generally conducted based on what is most expedient at the time, and the direction of travel is not used for analysis purposes.

SURVEY INFORMATION



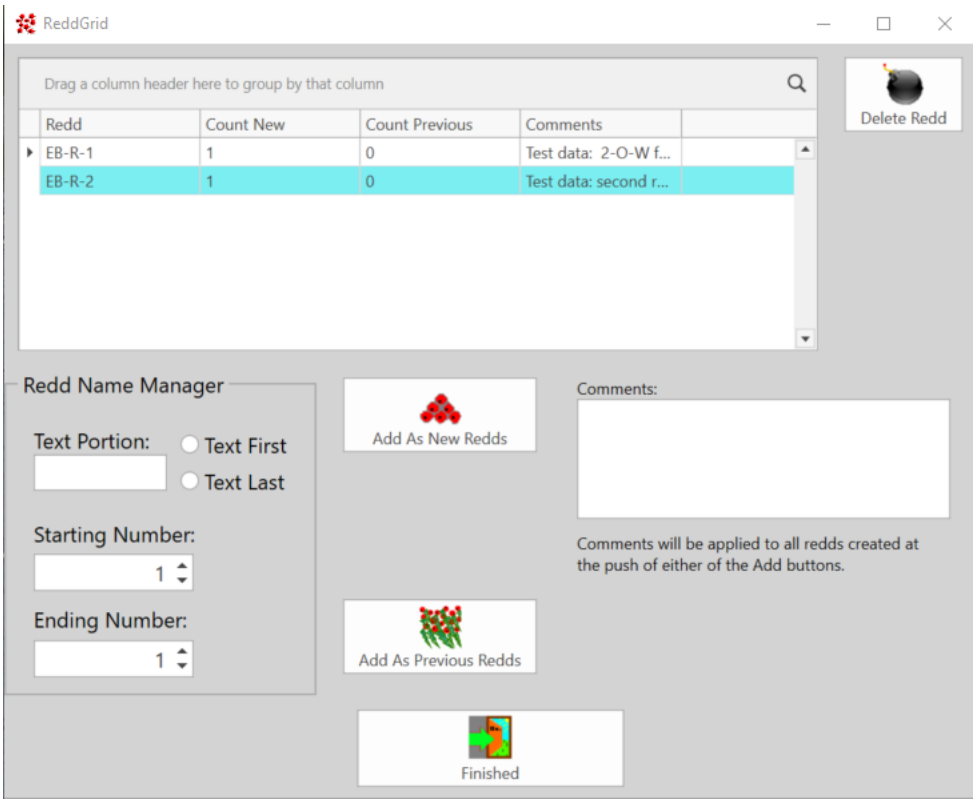
The Survey Information form is where you can enter all the information about the survey that doesn't fit anywhere else. The species, agency, coordinator, and sample method can all be set to default values in the Tools form on the Main form, so if those have been set to defaults, they will already be filled out when this form is reached, which leaves only collector, book number, visibility, and any notes about the survey.

DATE MANAGEMENT



Survey dates can be edited or entered with the Survey Data Management form. When you enter the start date, the end date will automatically be set to the same date, since most surveys take place in a single day. The start and end times will need to be adjusted, and the start date/time must be earlier than the end date/time. No other validation is done on the dates.

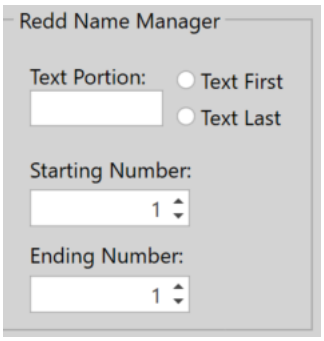
REDDS



There is very little information associated with Redds. Redds usually only have a count associated with them, while the name of the redd is the name of the waypoint. For that reason, most redd management can be done simply through the waypoint icons themselves. However, some redds might not have waypoints associated with them, and in other cases it might be simply easier to see all the redds for a survey in a grid such that altering counts and comments can be added more quickly. Those scenarios are what the Redd form is for.

The Redd form can be accessed either via the Redd button at the bottom of the Map form, or by clicking on the Redd labels on the left side of the Map form. The form shows all the redds for the survey, ordered by name, with the count for new and previous, along with any comments.

While it is not expected that there will be any redds without waypoints by this time, entering them is possible with the Redd Management area.

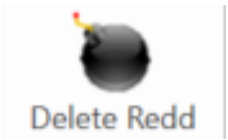


The expectation for the Redd Name Manager is that all redds be names using the convention “some text”1, “some text”2, etc. Therefore, you enter the text (usually just some initials, or something to indicate the stream section), a starting number and an ending number. Thus, if you enter some text such as “BB” with 1 as the starting number and 10 as the ending number, then press the Add as Redd button

You will get redds BB1, BB2, BB3 and so forth up to BB10.

It is also possible to enter previous redds in this fashion by using the Add as Previous Redd button:

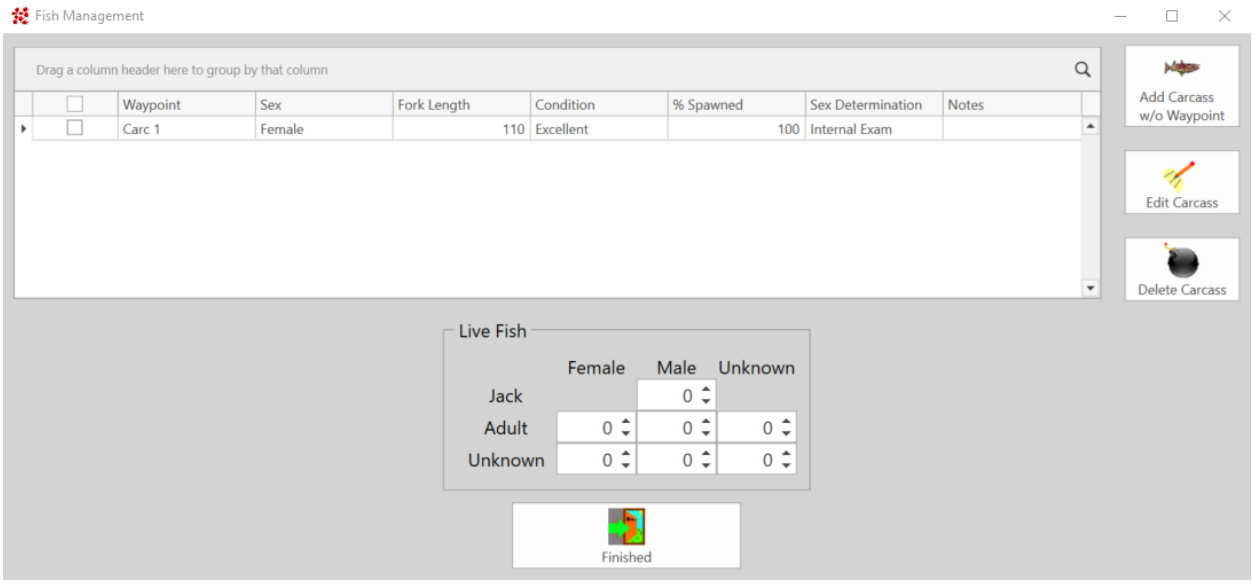
Adding previous redds in this fashion may well be necessary if the waypoints associated with the previous redds were not available in the local database. For example, if the survey that saw the previous redd was located on a different computer, the waypoints won’t be available in the current database, but the user may well want to enter those previous redds to indicate that they were seen.



To delete one or more redds, select them in the grid and press the Delete Redd button. This can be done for any redd, with or without a waypoint. If the redd has a waypoint, and the waypoint was not also used for a carcass, then the waypoint will be removed from the survey.

Comments can also be added for redds, but doing so is somewhat discouraged. Comment fields can not be easily searched. Any information that is routinely entered into a comment field for a redd is information that should probably be considered for addition into the database by some other means.

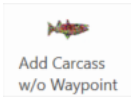
FISH GRID



The Fish Grid form is used for viewing and selecting carcasses, as well as for adding any live fish information. The form can be accessed from the Map form either by clicking on the Fish button, or by clicking on any of the fish related labels.

The form consists of two parts. The upper grid portion is for carcasses, with one row per carcass, while the lower portion consists of a simpler grid for entering live fish. Most carcasses will be associated with waypoints, and entering/editing information for those carcasses may be more easily done by clicking on individual carcass waypoint icons in the Fish form, which will bring up the Individual Fish form for entering and editing of carcass data for that one fish. However, the Fish form is the only place for entering live fish, as no waypoints are taken for live fish. Furthermore, any carcasses that do not have waypoints can be entered from the Fish form.

To enter a fish that has no waypoint, use the Add Carcass w/o Waypoint button:

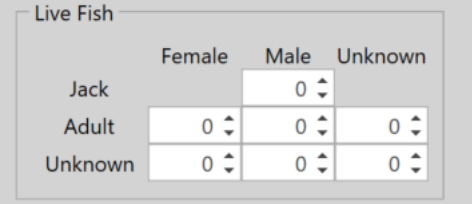


Clicking this button will take the user to the Individual Fish form to enter a new carcass. It is assumed that this carcass will not have a waypoint. If the carcass does have a waypoint, then this is not the way to enter the data, as the waypoint should be added to the survey as a carcass waypoint, in which

case the waypoint will show up on the Map form, as well as showing up in the carcass grid on the Fish form.

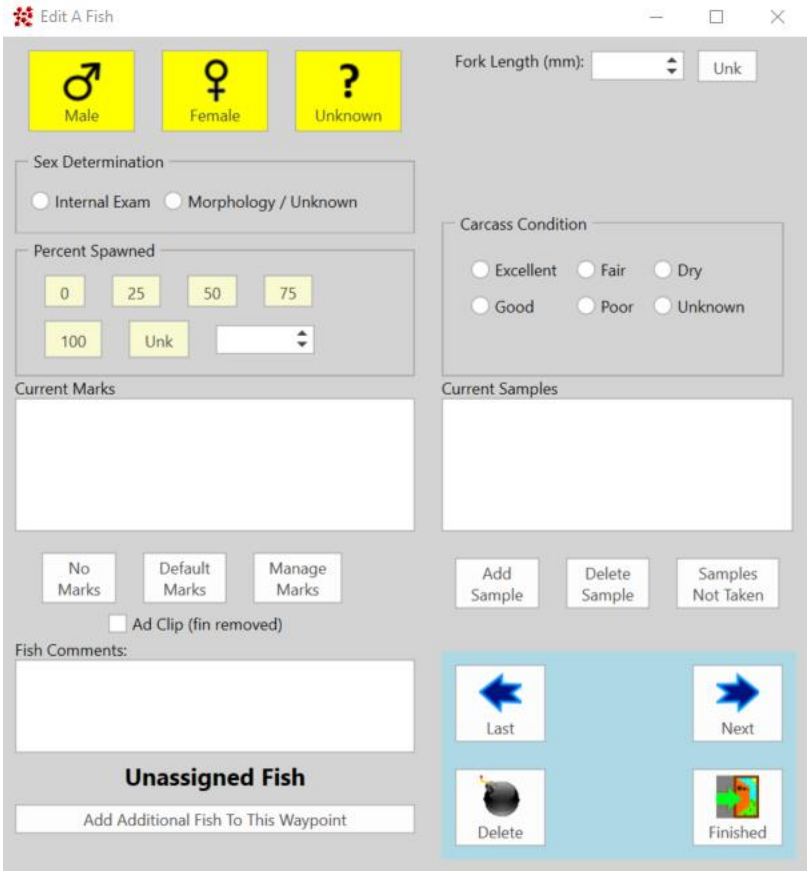
To edit the information for a carcass, select the carcass you with to edit in the grid, then click the Edit Carcass button. This will take you to the Individual Fish form where you can edit any data associated with the carcass.

To delete one or more carcasses, select them in the grid and press the Delete button. Note that if the carcasses are associated with a waypoint, and that waypoint isn't used for anything else in the survey, then deleting the carcass will remove the waypoint from the survey.



Live fish can be entered into the fields in the Live Fish grid. This grid conforms to the grid as found on the paper data entry sheets, except that it isn't possible to add either a female jack or an unknown jack, since jacks are assumed to be male. There also is no distinction made between 4-ocean and 5-ocean adults, as any such distinction on live fish is pure speculation. The size range for adults overlaps almost completely, and there is no real value in noting "that fish is really big", as much fun as it might be.

INDIVIDUAL FISH

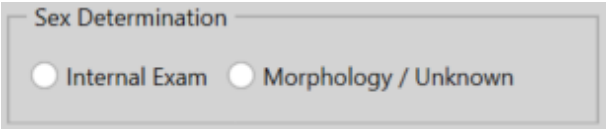


The individual fish form is used for entering the information for an individual carcass, as well as for reviewing the data for a series of carcasses. How the form behaves depends to some extent on how it has been reached. The form can be reached either by clicking on a carcass waypoint, in which case the form will only show that single carcass. Alternatively, the form can be reached by clicking the Add or Edit button from the Fish Grid form.

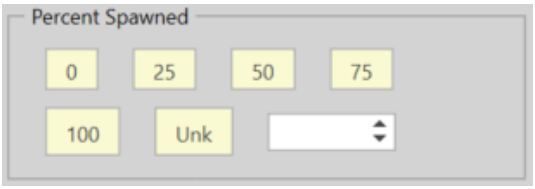
If the form is reached from the Fish Grid form, then there may well be several fish in the survey. Even if the form is reached from a single waypoint, there could be multiple carcasses associated with that waypoint. The Last and Next buttons allow you to traverse the fish either for the survey (if coming from the fish grid) or the waypoint (if coming from a waypoint). This is a continuous loop, so if you keep

pressing either Next or Last, you will continue to cycle through all the carcasses in the survey, with each one loading into the form in turn.

The sex buttons will change color once one has been selected. The buttons start out as yellow when no selection has been made, then the selected button will become green, while the others switch to red.

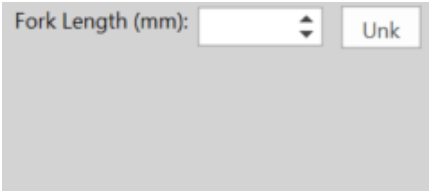


Sex determination should always be by internal exam, but for some fish, that isn't possible, in which case Morphology and Unknown are nearly synonymous in practice. After all, morphological sex determination on most fish is imprecise. Therefore, if the sex is unknown, then the sex determination also has to be unknown.



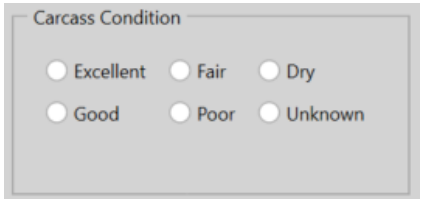
If the sex is female, then the Percent Spawned box will be shown. Percent spawned is calculated differently for males, and need not be entered, while for an unknown sex, percent spawned is meaningless.

Percent spawned will generally be either 0% or 100%, with Unknown also being very likely. The 25%, 50%, and 75% buttons are made available for people who feel that a female has lost some number of eggs, but not all. Such an amount is usually going to be a judgment call, though some agencies do try to make even finer estimates for partially spawned females. For that reason, there is also a box that allows other values to be entered.

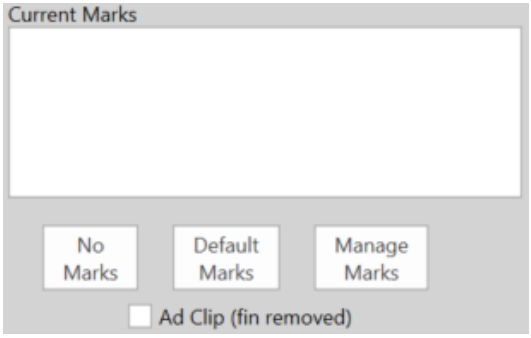


Chinook spawning ground surveys only use fork length anymore. In the past, both MEHP and total lengths were measured, but that is no longer done. The means to enter MEHP and total lengths have been hidden to avoid confusion, though they are still available. If there is a need to be able to enter MEHP or Total lengths, the ability to customize this form can be added to the Tools menu on the Initial form. So far, that has not been done simply because it is more likely to cause trouble than benefit.

Lengths for Chinook can be entered in either mm or cm. The lengths will be stored as mm. This works because the acceptable range for mm and cm do not overlap. A Chinook above 130 cm is not going to be found in Idaho, while a Chinook below 140 mm is not going to be sampled on the spawning grounds, as it would count as a precocial male.

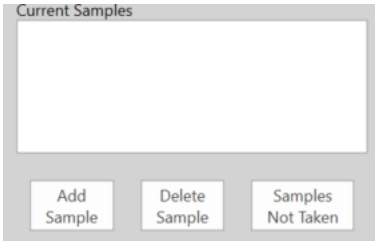


Carcass condition is generally determined by the state of the gills, except in the case of a totally dry carcass, in which case the gills are usually not going to be all that representative. Carcass condition is highly related to the likelihood of getting a good DNA signal from a DNA sample. Fish that are excellent or good will have the best DNA, while those that are poor or fair may not be worth the effort to process unless the data is considered highly valuable.

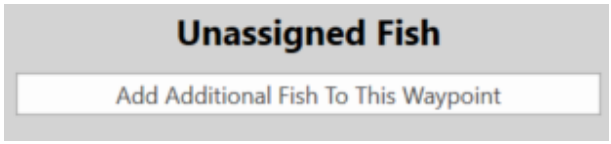


Marks on the fish will show up in the current marks box. Marks can be added or removed using the Manage Marks button, while the Default Marks button will add all marks at their default setting as set in the Tools form from the Initial form. The No Marks button was added because an empty set of marks could either mean that there were no marks, or that the marks had never been addressed. Therefore, if there are no marks, you must click the No Marks button, as just ignoring the marks is not the same thing.

The Ad Clip checkbox was added simply because the Ad Clip mark is by far the most common and consequential mark used on Chinook these days. Quite often, that is the only mark found on a fish, so being able to simply check that checkbox, without needing to go to the whole Mark Fish form just to add that one mark, saves time.

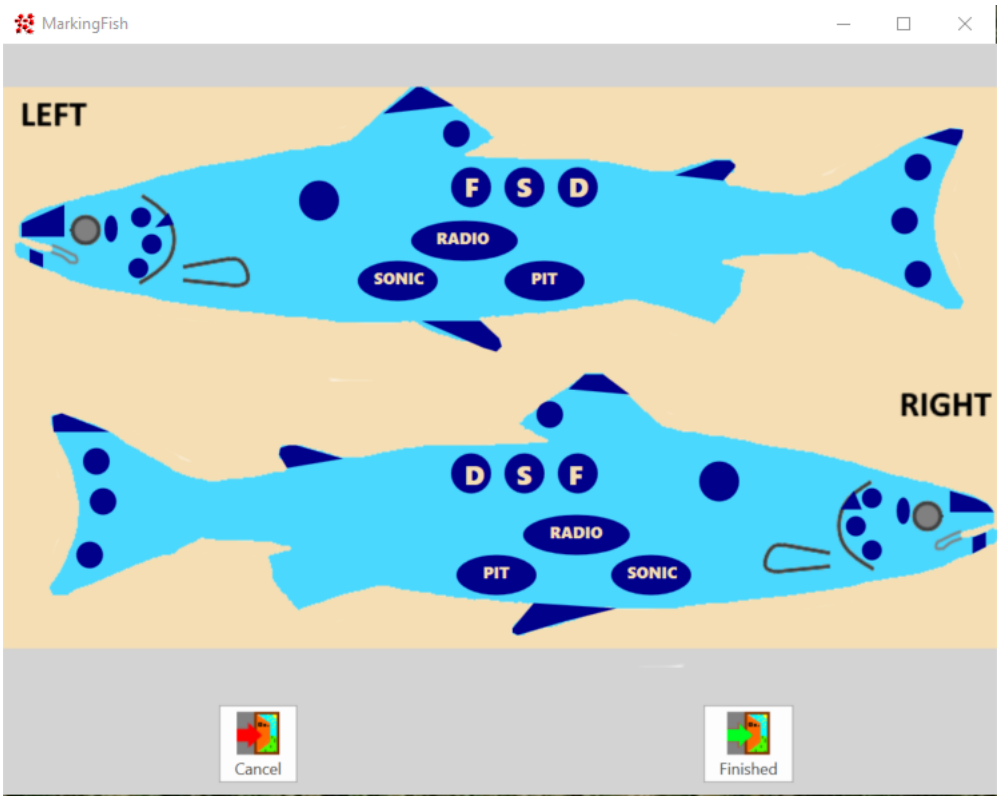


The Samples list shows all samples on the current carcass. Samples can be added by clicking the Add Sample button, and they can be removed by selecting a sample and clicking the Delete Sample button. The Sample list cannot be left empty, so if no samples were taken, it is necessary to click the Samples Not Taken button. Without that, it would be impossible to determine whether samples were not taken, or entering samples had been overlooked.



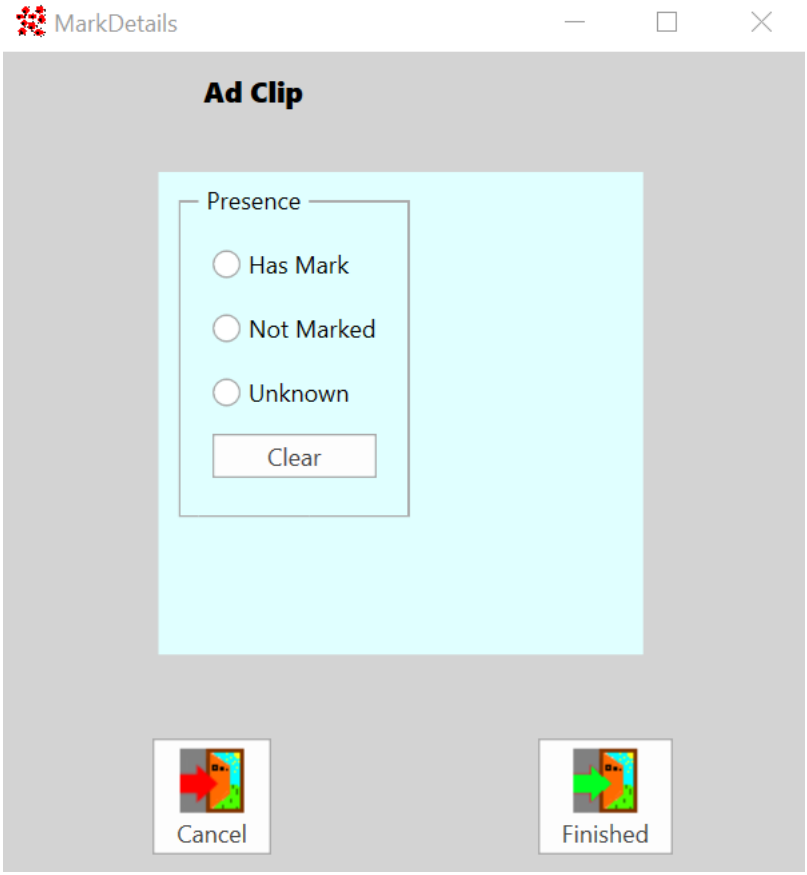
A waypoint can have more than one carcass at it. This tends to be the case when a large number of carcasses are collected at a weir, or several are processed together. This button allows more fish to be added to whichever waypoint is currently showing. Of course, if the carcasses do not have waypoints, then they would be entered on the Fish Grid with the Add Fish w/o Waypoint button. In that case, adding additional carcasses using this button is just a shortcut to going back to the Fish Grid each time.

MARK FISH FORM



The Fish Mark form is an updated version of the Fish mark form from SGS II. In SGS II, the fish was a picture, which was a bit too busy to see marks all that well, so all the marks were represented by standard rectangular buttons. In SGS III, the fish is a cartoon outline of a fish with no details, such that the marks show up in the location (and at least roughly the shape) that they would normally be found.

To add a mark to a fish, click on the location of the mark, all of which are indicated by dark blue regions on the mark fish. If you hover the mouse over one of the regions, the associated mark will be shown in a tooltip. Clicking on the mark region will bring up the Mark Detail form.



The Mark Detail form can take on several different appearances, depending on the mark type and whether there are multiple marks on the fish. In all cases, it will have the Has Mark, Not Marked, and Unknown options. If there are multiple marks on the fish, the form will have left and right arrows on either side of the Presence box, which allows you to navigate quickly through all the marks on the fish. Also, if the mark requires other information, such as color, tag number, or any such thing, then other controls will appear specific to entering that additional information for the mark.

One thing to note is that mark terminology can get very strained. The major example would be the Ad Clip. If the Ad Clip mark is present, then the adipose fin is absent and vice versa. For that reason, the terms Has Mark / Not Marked was used rather than Present/Absent.

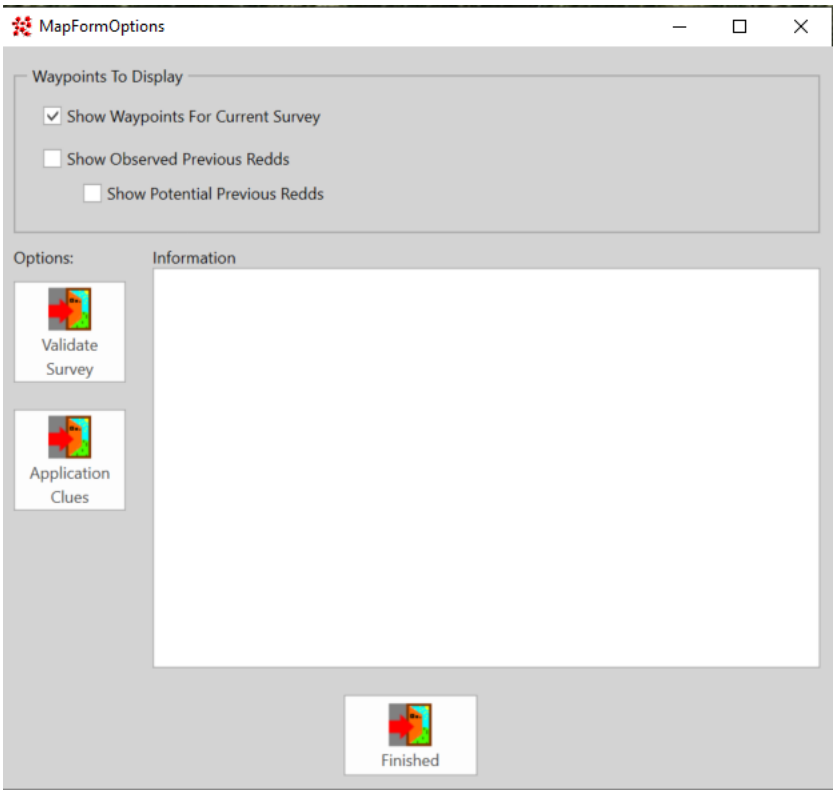
If the mark is present (Has Mark), then the mark region on the mark fish will become green:

If the mark is absent (Not Marked), then the mark region on the mark fish will become red:

If the mark state is unknown, then the mark region on the mark fish will become a lighter shade of blue:

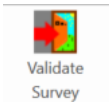
These colors may have to change a bit, as they may be difficult to see. Fortunately, the text is all there on the Mark Detail form, as well as in the list on the Individual Fish form.

MAP OPTIONS

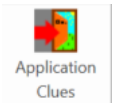


The Map Options form allows the user to change how previous redd waypoints are displayed, as well as giving information about the state of the current survey, and the whole program.

All waypoints associated with a survey are displayed at all times, but previous redds are waypoints that are not associated with the current survey. Previous redds are waypoints associated with previous surveys from the same reach of the same stream, recorded earlier in the same year. On streams that get numerous passes, the previous redds could clutter up the display quite a bit. Therefore, the visibility of previous redds can be toggled. By default, only the waypoints associated with the current survey are displayed, but you could also show all potential previous redds, or just previous redds noted as observed in the current survey.

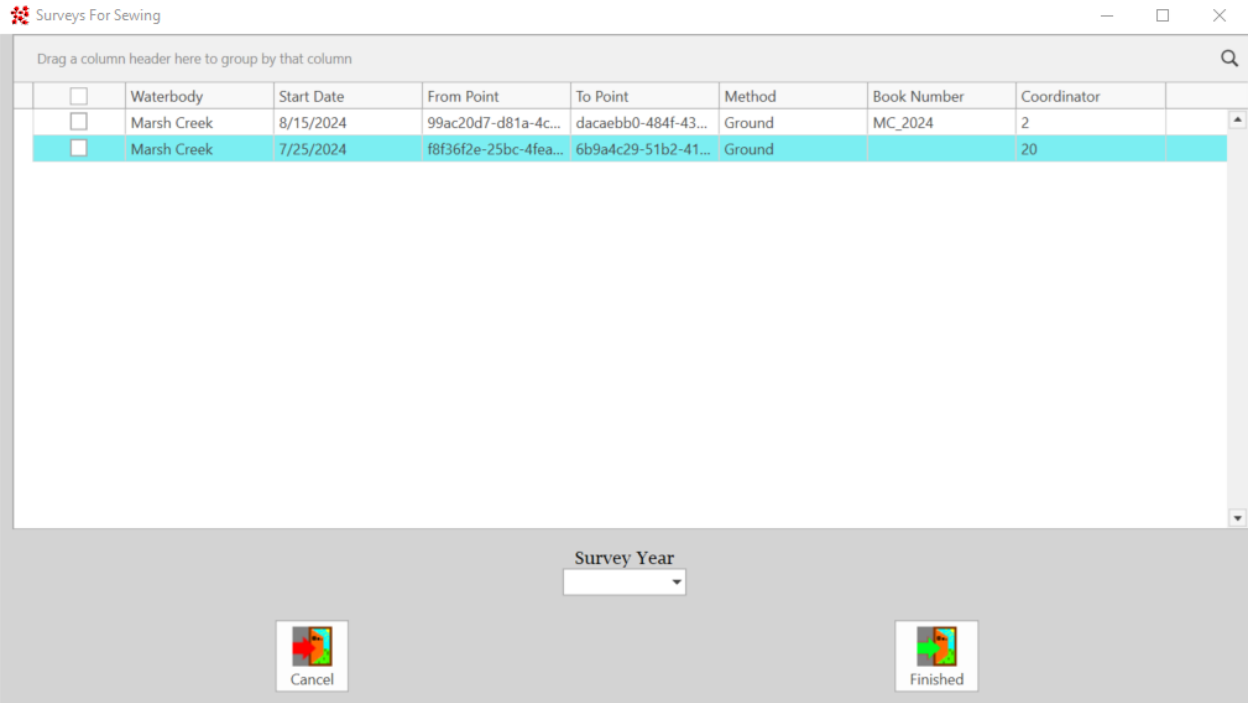


Survey validation can best be seen by the icon in the upper left of the Map form, but that may not be the most convenient for people. By clicking this button, the current survey will be validated and the results of the validation will be displayed in the information list.



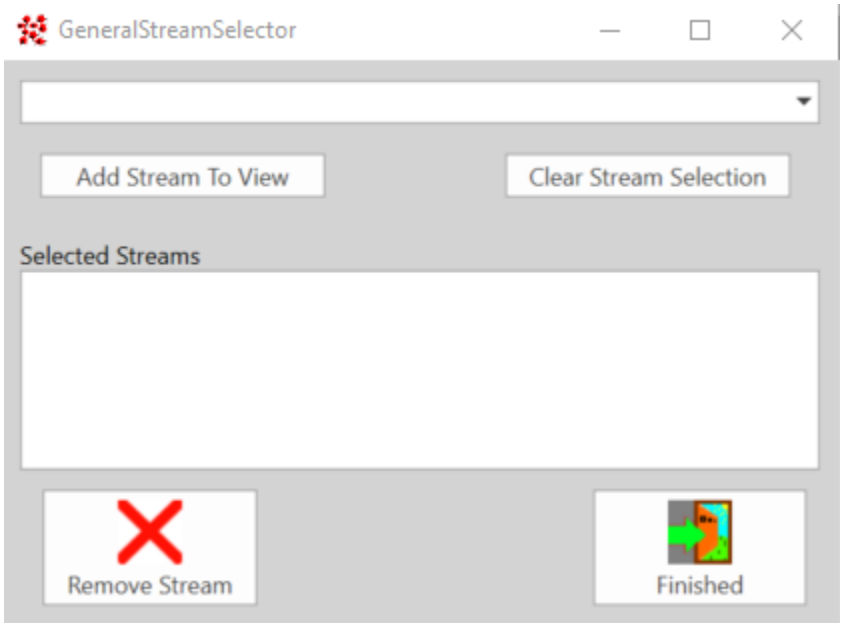
Clicking the Application Clues button will show the program log, which can also be seen in the Information form (the Diagnostic Dump form) from the Main form. The reason that the log can be displayed in this Options form is because some of the information logged in the application log could be relevant to any issues happening with the current survey. Therefore, all issues can be accessed through this form, just as they can be accessed from the Main form.

SURVEY STITCHER



The Survey Stitcher form is used to combine sub-surveys into one survey. The grid shows a list of all the surveys for the selected year (by default, the current year) in the database. To stitch together some sub-surveys, select more than one from the grid. The surveys do not need to be selected in any particular order, but they do need to be contiguous. The Survey Stitcher will put them in order by lining them up by endpoints. If the selected surveys are not contiguous, then the Survey Stitcher will end up with more than one segment, which will result in a message saying that the surveys cannot be stitched and explaining why.

STREAM SELECTOR



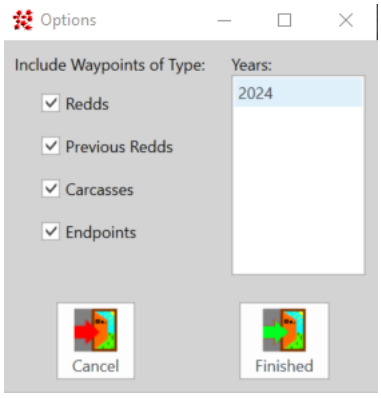
The Stream Selector is used to decide which waypoints to show in the Waypoint Visualizer. The Waypoint Visualizer will show ALL the waypoints found in the current SGSA database for the streams selected, for all years. This can be overwhelming, but the Visualizer has means to tame that.

To use the form, choose a stream and click Add Stream To View. Note that the only streams available to select are those for which waypoints exist in the SGSA database, so selecting streams for which no local data exists isn't even possible. This can greatly simplify the effort for using the visualizer, as you don't have to guess which streams you have data for in the local database.

Once you have made your selections, hitting Finished will take you to the Waypoint Visualizer, which will be showing all the waypoints for all the selected streams.

WAYPOINT VISUALIZER

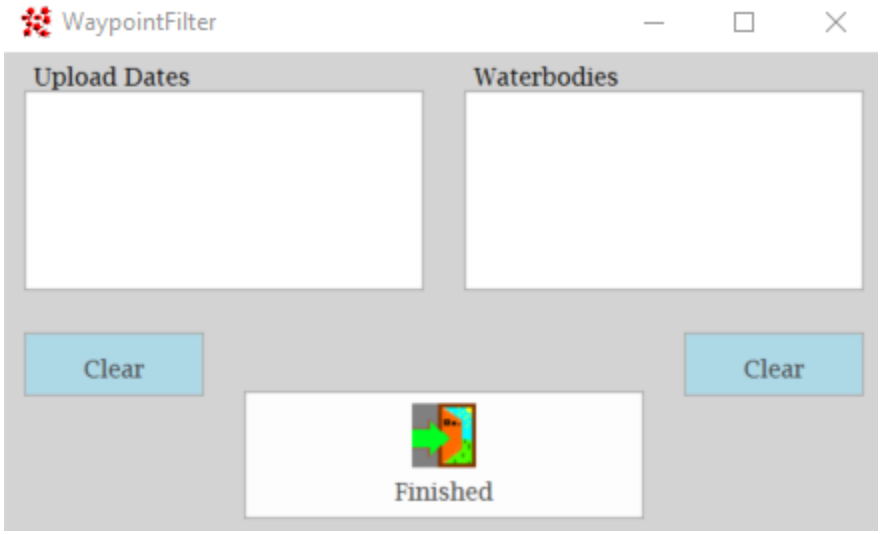
The Waypoint Visualizer is used for seeing some set of waypoints for some set of surveys. Note that by default, this will show all waypoints for all years in the selected streams, which can be an overwhelming number. This can be dealt with using the Options button, which looks like, but does not act like, the Options button in the Map form. The Options button brings up the Options form:



The Options form allows you to select the years to show, and the waypoint types to show. By default, all types of waypoints are shown. As for the years, what is shown by default will be the most recent year for which there are waypoints, which may or may not be the current year.

The waypoints for different years will be different colors. If there are more than seven years displayed, then the colors will start repeating, as even seven distinct colors is getting a bit complicated. The key will reflect this, with each year being indicated as to which color it will be using. Furthermore, within a year, the darker the shade of the color, the older the waypoint. Thus, newer waypoints will be brighter, lighter colors, while older waypoints will be darker colors. The coloring only applies to the label for the waypoint, though, as the waypoint icon itself will reflect the state of the waypoint.

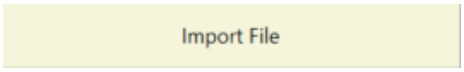
WAYPOINT FILTER



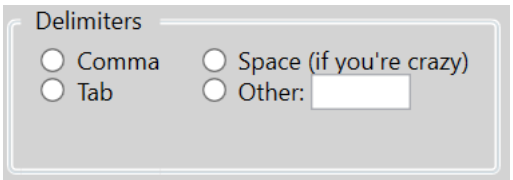
The Waypoint Filter form is accessible from the Waypoint Manager. It allows the waypoints shown in the Waypoint Manager to be filtered on either the upload date (when the file containing the waypoint was imported into the local SGSA database) or by the stream that the waypoints are associated with. All available possibilities are shown in the listboxes.

WAYPOINT LOADER

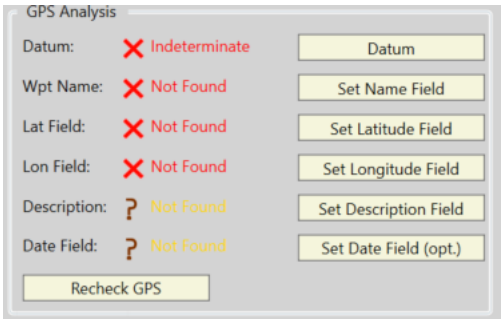
The Waypoint Loader is not much changed from SGS II, though some unused features were removed and some of the graphical feedback was updated. The point of the Waypoint Loader is to import files from either CSV or Garmin. Other types of files could be added as they are identified, but only CSV or the Garmin format are currently recognized. Furthermore, most of the CSV files are outputs of Excel spreadsheets saved as CSV files, which results in some peculiar CSV files if looked at outside of Excel.



The first step for importing a waypoint file is clicking the Import File button, which will bring up a dialog box for you to select the file to import. This may be all you need to do, as for a lot of files, all the rest of the steps will be handled automatically.



Most files will be comma delimited, and will be properly identified. Tab or space delimited files do exist, but they are exceedingly rare due to those formats only working in some cases. Therefore, the delimiter section can usually be ignored.



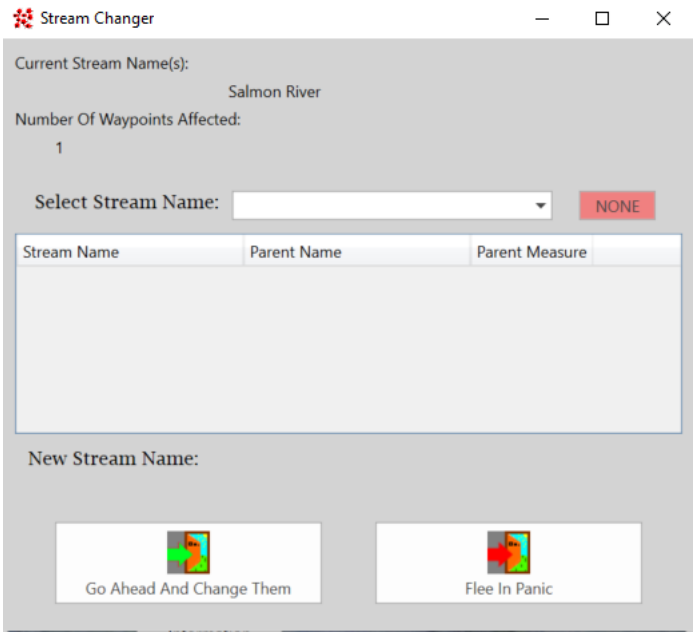
The GPS Analysis fields will often be set correctly right away, based on the format of the file being imported. If all of the red X are replaced by green check marks, then all is well with the file, as all the necessary fields have been identified. The most likely field to be missing is the Datum field. Datum should be WGS84 for all surveys conducted in Idaho, but the Waypoint Importer also allows for NAD27 and NAD83, which it will then convert to WGS84.

Neither the date field nor the description field are necessary, so if they remain question marks, that is fine. For the others, if any field remains a red X, then clicking the corresponding button and identifying the right field will be necessary.

The header rows are of little use to anybody, though they might be useful if something goes wrong, as they might contain some clue as to what was wrong about the file. If there are things in the header rows list that should be in the actual data, then it likely means that the file is incorrectly formatted in some way.

The data rows may be of some use in figuring out which field to use for the waypoint name, the latitude, or the longitude, if the identification of those fields did not happen automatically. Also, if the file does not have latitude and longitude, but instead uses UTM, the UTM may not be automatically identified, in which case seeing the data rows might be of value in figuring out which fields were the UTM fields.

STREAM CHANGER

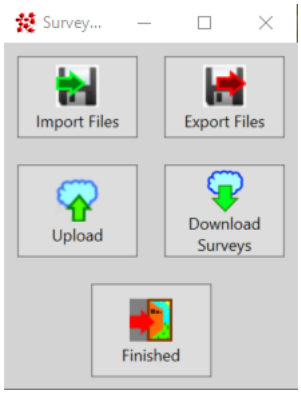


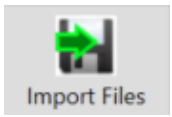
The Stream Changer form is used to switch waypoints from one stream to another. This form should be used with considerable caution, as any waypoints assigned to a stream were assigned due to their proximity to that stream. Waypoints located at, or near, the confluence of one stream with another might well be incorrectly located on the wrong stream, but it would be less likely that other waypoints would be incorrectly located. Therefore, if a waypoint is assigned to the wrong stream, it is best to consider how that incorrect assignment was made in the first place, and whether changing it is the right approach. Other alternatives are that the waypoint is, itself incorrectly located (the lat/lon are not what they should be), or that something is going wrong with the waypoint locator service (which is not something that the user can do anything about).

The form is a simple thing, as most of it is about giving the user enough information to allow them to make the right choice. First, the existing stream name and the number of waypoints is shown. Next, there is the ability to select a new stream. The grid is there because stream names in Idaho are often not unique. If a name such as Clear Creek is selected, the grid will show all the possible Clear Creeks found in the state, along with which parent stream they flow into, and the measure of the parent where the stream enters. Hopefully, this will be enough to identify the correct stream.

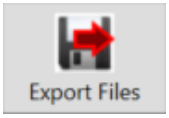
The user need only select a stream, then either change all the selected waypoints, or leave the form without making any changes. Note that the only waypoints that can be changed are those that have not been used by any existing survey. Changing the stream associated with a waypoint that has already been included in a survey makes no sense.

SURVEY MOVEMENT





The Import Files button imports only SGS files that have been exported from some other SGS II or SGS III installation. This is not used for bringing in surveys from the SQL Server databases, but only for transferring surveys between installations of the desktop application.

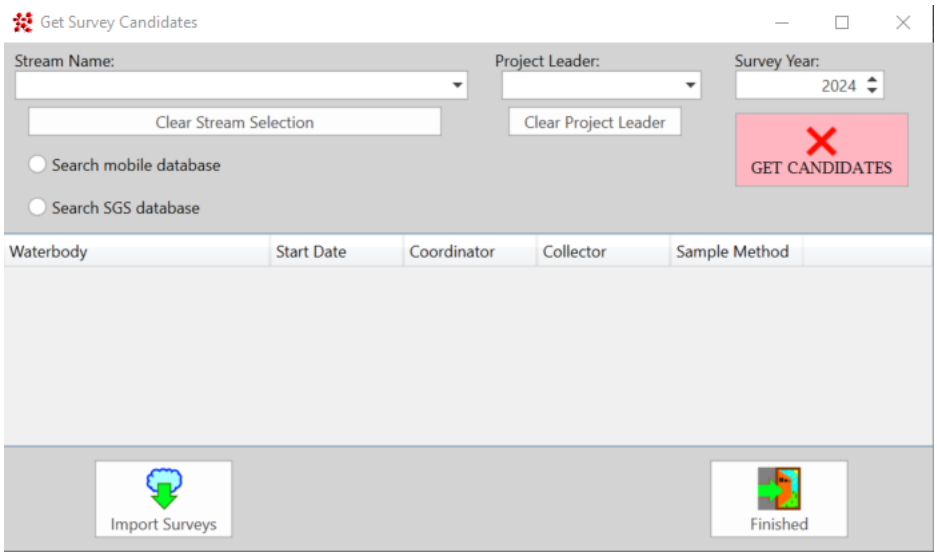


The Export Files button creates SGS files, which are zipped XML representations of a survey. These files can then be sent to others using the SGS desktop application for importing. Note that this has nothing to do with sending data to SQL Server.

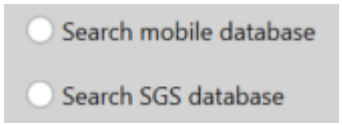
The Upload button allows uploading selected surveys to the SGS database in IDFG SQL Server. This functionality, and therefore this button, is only available for Coordinator versions of SGS III. Field versions of the program will not see the button.

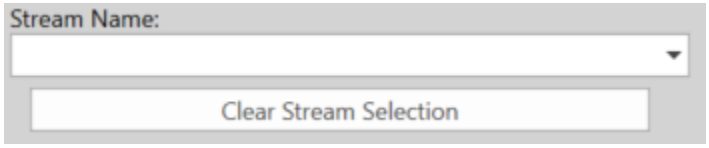
The Download Surveys button is used for bringing read only surveys from the IDFG SGS database, or editable surveys from the mobile database. Clicking on the button brings up the Survey Downloader Form which guides the user through selecting the surveys to download.

SURVEY DOWNLOADER



The Survey Downloader can be used to bring surveys into the local database from either the SGS database or the mobile SDE database. Surveys downloaded to the local database from the SGS database will come in as read only surveys, because surveys that are in the SGS database should only ever be altered after careful consideration and probably consultation with whoever is in charge of the SGS database. Surveys downloaded from the mobile SDE database can be readily edited, as it is expected that people using the tablets for collecting data may need to edit the data before uploading it to SGS.





You must choose both a stream as well as a source for downloads. If you set the stream first, then as soon as you choose a source, you will get all the candidates. If you choose the source first, then choose the stream, then you will need to click the Get Candidates button. You can also choose the coordinator and the year, but neither one is necessary, as the current year is chosen by default, and stream is usually more selective than coordinator.

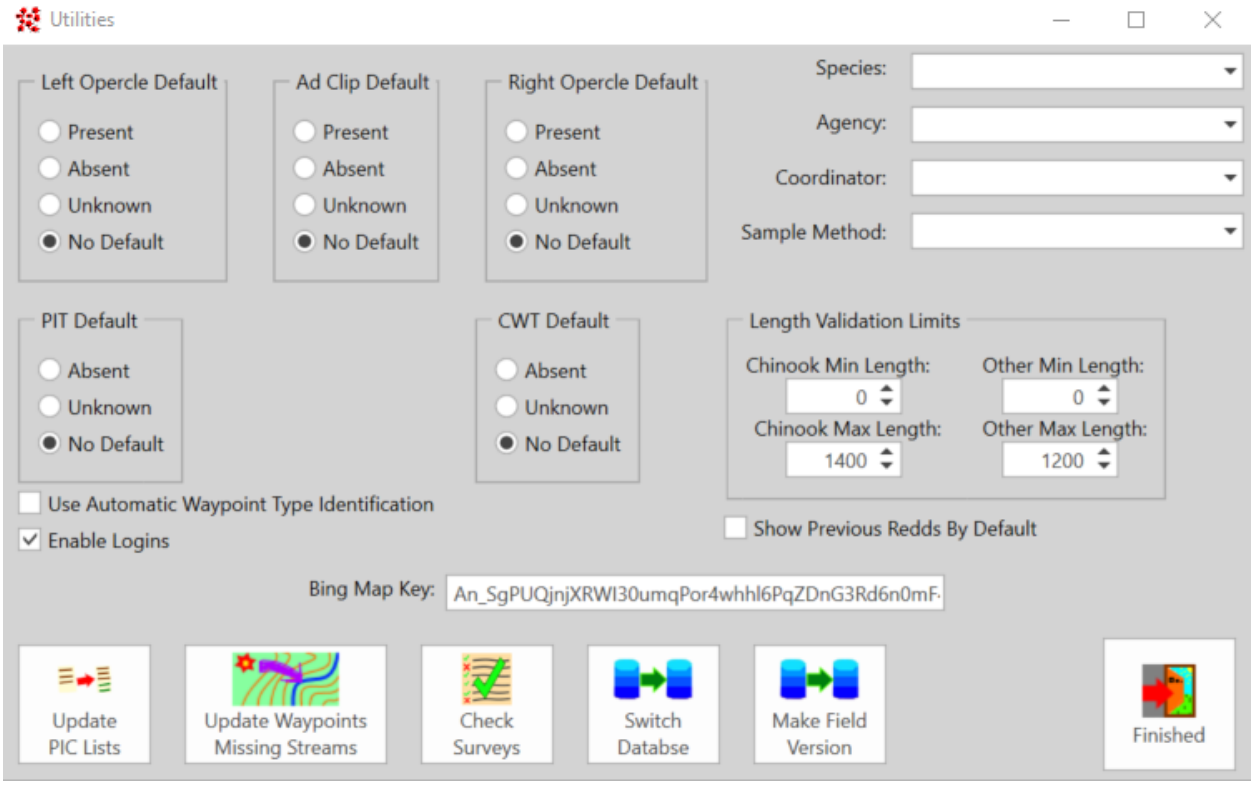
As long as both a source and a stream name has been set, the Get Candidates button will be green and show a green check. If one of those two has not been set, then the Get Candidates button will appear as shown, with a red background and red X icon. At any time, you can click this button, which will

get any surveys that fit the selection criteria, so long as at least source and stream have been set. If the button is clicked before the source or stream have been set, then the user will get a message telling them what to do.

Get Candidates will populate the grid with all surveys that match the criteria. One or more of these surveys can be selected for download.

Once one or more surveys has been selected, click Download Surveys. This may take a few seconds to complete, depending on connection speed, the size of the surveys, and the number of surveys selected. It should not take more than a few seconds, though. The result will be a message that indicates how many surveys were attempted, and of that number, how many downloads were successful. Most likely, they will all either succeed or fail, but if there are any failures, the user will be shown some information about the reason for the failure.

TOOLS



Default Marks

The Tools form takes the place of a variety of menu items from SGS II. For one thing, the default values that had been in the protocols is found in this form. Certain marks are frequently found in current spawning ground surveys. Default values for those marks can be set by choosing from the options shown. If a default is set for a mark, then any carcass added to a survey can be set to the default values for all marks with the click of a button. For example, if Ad Clip is set to Absent by default, then if a carcass is added to the survey, it will start out with Ad Clip Absent.

Default Species And Things

Default values for species, agency, coordinator and sample method can be set in this form. If values are set for these, then any new survey will start out with those fields already filled in with the default values. This goes a bit further than the default values in SGS II, as sample method and coordinator were not fields with default values, but they are fields that most people will end up filling out the same way for every survey, so allowing them to default to a value makes sense.

Length Ranges

A second option that can be set is the max and min lengths. These can be set for Chinook and for Other species. The reason that only those two options are available is because the vast majority of spawning ground surveys are conducted for Chinook, and Chinook have the interesting feature that their lengths in cm and mm can't overlap, which means that for Chinook, people can enter lengths in either cm or mm, and the program can determine which was used. That can't be done for Sockeye or bull trout.

Auto-Identify Waypoint Types

There is a checkbox for automatic waypoint type identification. If this is checked, then when waypoints are imported, an attempt will be made to automatically assign the waypoint as a redd, a carcass, or an endpoint. The way this works is any waypoints that start with either an "r" or an "R" are identified as redds, any waypoints that start with either a "c" or a "C" are identified as carcasses, and any waypoints that start with any of "s", "S", "h", "H", "e", "E", "f", or "F" are identified as endpoints. Why there are so many options for endpoints has been lost in the mists of time.

One thing to note is that auto identification of waypoint types can speed up data entry considerably, but it assumes that the user is not following a convention such that a waypoint name could start with any of the letters s, h, e, f, r, or c for any reason other than the waypoint type. For this reason, if the goal is to use auto identification, waypoint naming conventions should always follow the auto identification rules, and shouldn't sometimes be initials and other times be auto identifications. Of course, fixing the type in either Map or Waypoint Management forms is both possible and easy.

Enable Logins

The checkbox does nothing, currently, and probably will never be able to do anything. At the time this was written, requiring logins for uploads have been disabled throughout the SGS program simply because the login system has been broken for a couple years and it isn't clear when it will be repaired. If it ever gets repaired, perhaps this checkbox will do something, but even then it probably won't.

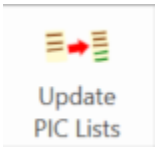
Bing Map Key

The maps shown in the Map form come from Bing, because Microsoft has been pretty good about making aerial imagery available for use free of charge. Every person has been allowed to get two free keys for Bing maps. However, usage is only free up to a certain level (a few tens of thousands of usages per year). If that level gets exceeded, usage of the maps would quickly become costly. No one individual will ever use up all the free uses, but this field is made available so that other keys can be supplied if total usage starts approaching the limit.

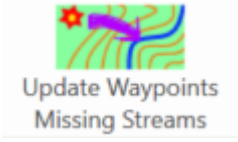
Additionally, keys are tied to an individual. Retirement and job changes could remove a person, and they might want their key to be removed, as well. Furthermore, Bing maps may go away, forcing the program to switch to a different map provider, but every map provider is likely to require a key of some sort, so this field allows the program to be more flexible, but can usually be ignored.

Show Previous Redds By Default

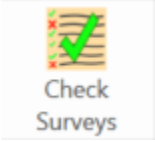
For people who enter multi-pass surveys, it might be convenient to show previous redds all the time, or not. Providing this option allows the user to customize the data entry experience somewhat. If the box is checked, then any redds located in the stream reach of the current survey, but which were counted on an earlier survey in the same year, will be shown, otherwise they will be hidden. This can be toggled for any one survey in the Options form from the Map form. What this setting does is set the default for any new survey.



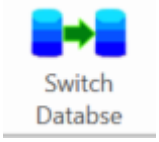
Update PIC Lists may update the PIC lists used in the SGS III program. When this button is clicked, the SGS III program asks the SGS database whether or not there are any PIC lists that need to be updated. If the SGS database indicates that no updates are necessary, then this button does nothing. Therefore, this button may do less than people expect it to do. What it does NOT do is grab all the PIC lists and update them whether the SGS database thinks it is necessary or not. In other words, this is not a hard refresh button for the PIC lists and shouldn't be expected to act that way.



Clicking this button will cause the program to look a the waypoints table in the local database to see whether there are any waypoints that are not associated with a stream. If any are found, then a web service is called to determine which stream the waypoint is closest to. This can be done on a finer scale in the Waypoint Management form, and likely will never need to be used, but this will update all waypoints in the database in one batch, which could be convenient.



Clicking this button will bring up the Survey Errors form which allows the user to select various surveys to check. This is essentially an archaic tool, as survey validation is happening when the survey is saved.

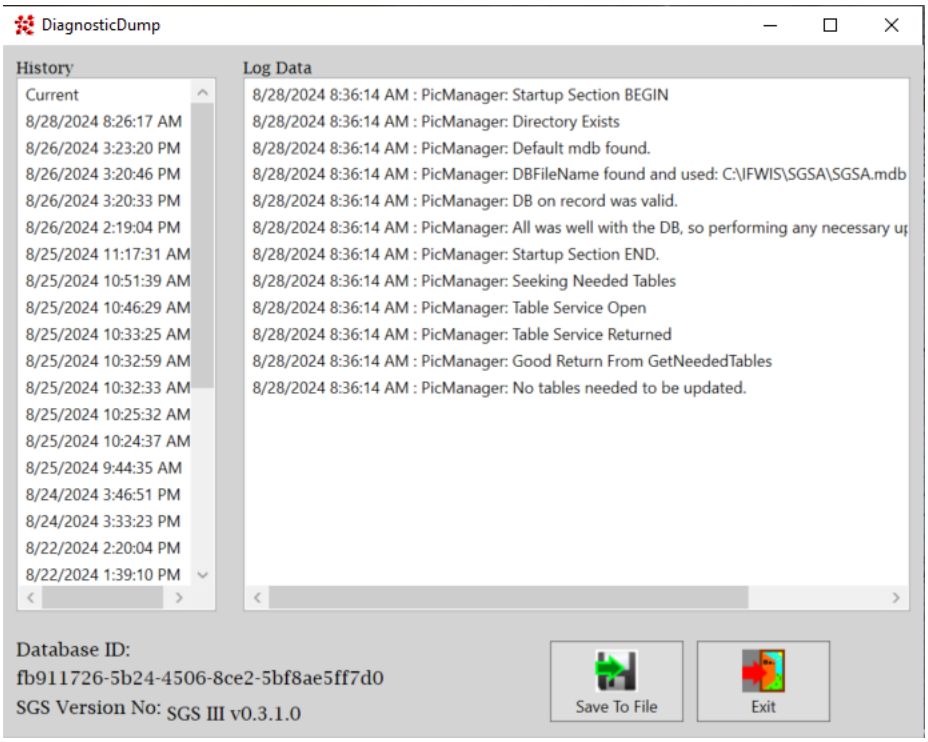


Clicking this button brings up a form to allow the user to switch from one SGSA database to another. Whichever is chosen becomes the default. Restarting the program after switching the database will cause the program to start with that newly selected database. This allows people to change the default database they are looking at.

Just like SGS II, the SGS III program has a field version and a coordinator version. The only difference between the versions is whether or not surveys can be uploaded to the SGS database. Only coordinator versions can upload surveys, while field versions do not have that ability. Field versions can only export surveys to a file, which can then be imported into a coordinator version. Technically, there is only one SGS III program which can be switched back and forth from coordinator to field and back.

This button only shows up for coordinator versions. Clicking the button will hide the functionality that the coordinators have, thereby making the program into a field version. There is no button that switches back to a coordinator version, such that field versions will remain as field versions and won't allow accidental uploads.

INFORMATION



Every time the SGS III program is run, a log is created of various items during the operation of the program, such as getting pic list updates, connecting to the database, and so on. All sorts of messages can get added to the log. Some are useful, some are not all that useful most of the time. However, when something goes wrong, the log can be invaluable to determining what happened. For this reason, the log is saved to the database. Past logs can be seen in the History list, and can be loaded by double clicking on one.

At any point, the log currently being displayed can be saved to a text file with Save To File, which is convenient for sending logs to the developer. What gets added to the file is just what is displayed in the Log Data window, so past logs can be loaded and exported to files, as well as the current log.