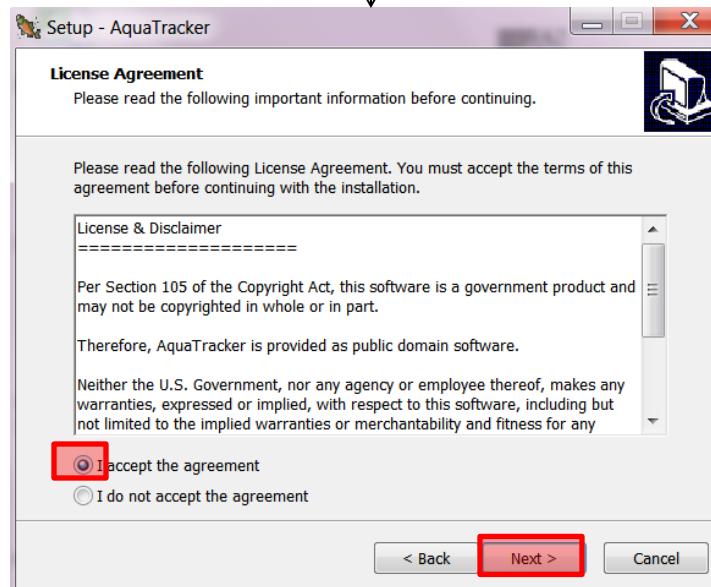
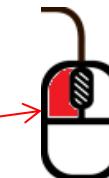
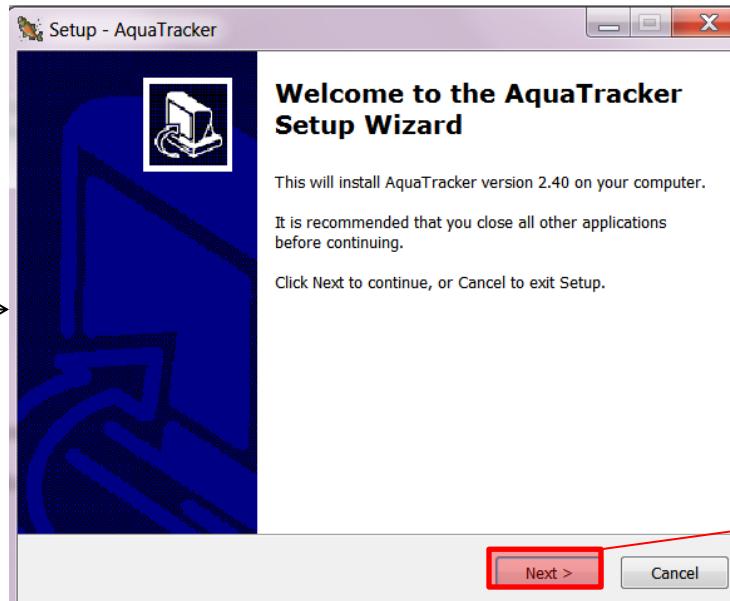


Installing AquaTracker



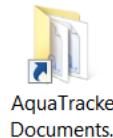
AT240_setup.
exe



The next prompts will ask where you want AquaTracker to be installed. Make sure you remember where you installed it.

(There has been occasion when a user has installed it somewhere else and can't find the location of the AquaTracker.exe program. I suggest you install it in its default directory and that you allow a shortcut on your desktop menu.)

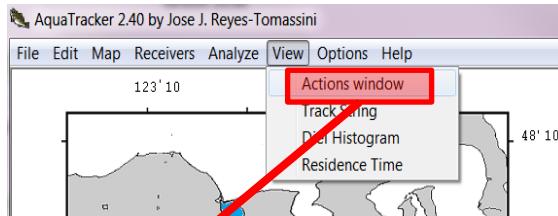
Once the installation is completed, you should see the following folder shortcut on your desktop:



AquaTracker
Documents...

We will be using the sample files in this folder throughout this guide. Thus, before you continue, make sure you know where the *AquaTracker Documents and Samples* folder is located on your computer!

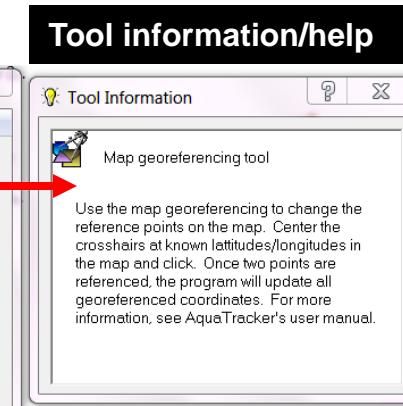
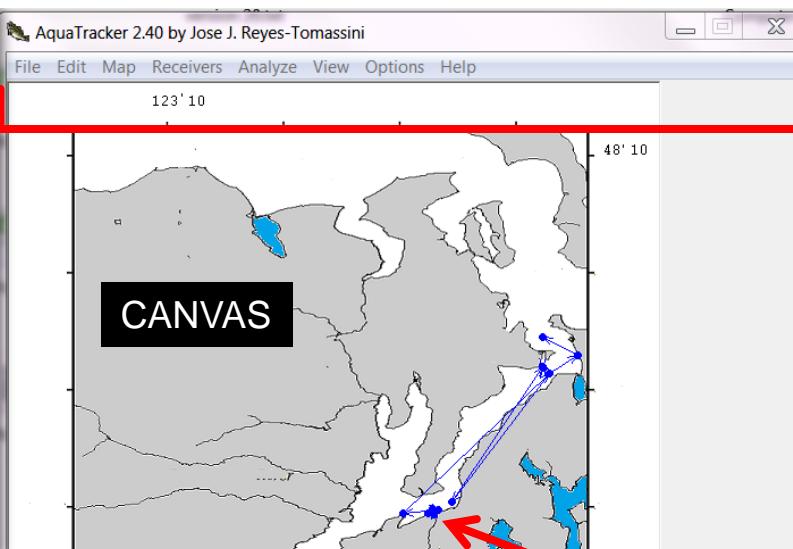
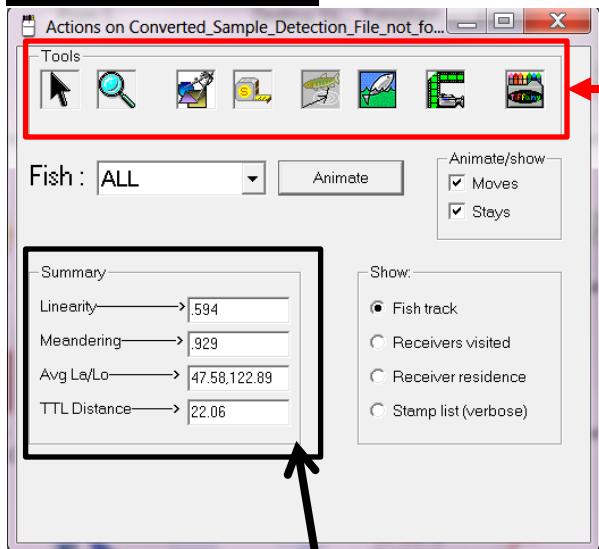
Quick guide to the Program Interface



1

Do this first: If you have no data loaded, you need to go to **View→Actions window** to see the **Actions window** shown here.

Actions Window

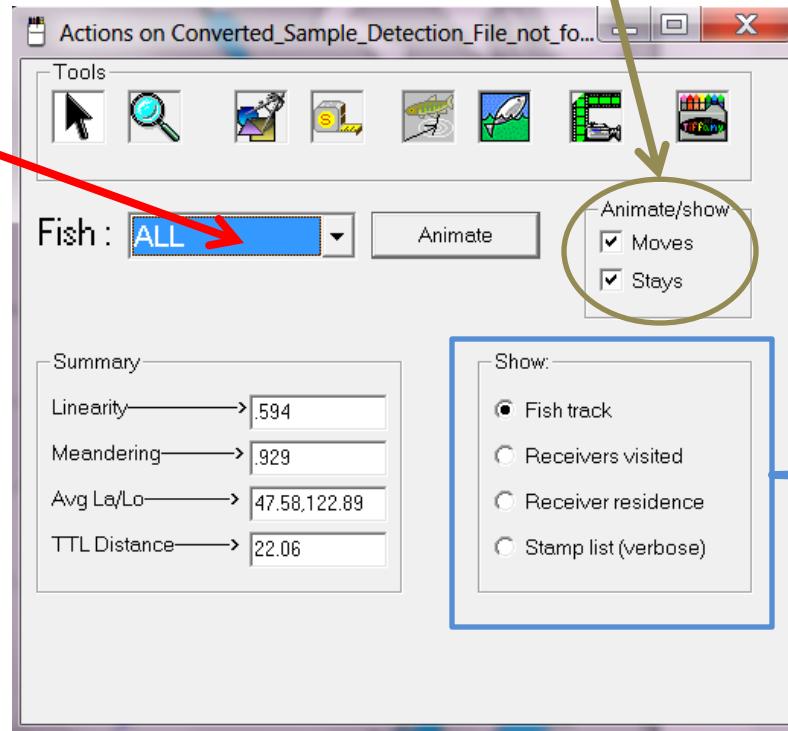


Using the right mouse button to click on a receiver will bring the receiver context menu.

Averages for all tracks or the track selected

Moves: Shows track.
Stays: Shows receivers visited.
Can be used to “filter” detection histograms

Select fish from pull-down menu



Fish track: Graphs fish path thru receivers

Receivers visited: Shows receivers where fish was detected

Receiver residence: Heatmap and table of time spent at receivers

Stamp list: Shows “raw” detection data

If ALL is selected, some of the actions from the Show section will not work.



Together with the context menu for the receiver, the selection tool is used to obtain information about receivers and to select multiple receivers into a receiver group or draw a “geotag” zone.



The zoom tool allows you to focus on a particular area of the map to better visualize receivers and tracks.



Map calibration tool is used in AquaTracker only to geo-reference a map or canvas



The tape measure tool is used to find the distance between two points in a map or canvas



Fish track reference tool is used to draw a reference track for analysis or to analyze a reference track already selected



Fish corridor tool is used to draw fish corridors in the map. In combination with land-avoidance, it allows you to force the path of the fish so that it “stays in the water”



Animation/canvas capture tool. For computers with available codecs (most computers with stock versions of Windows), creates an AVI file that can be played as part of a scientific presentation. An example demo AVI is included in the installation package

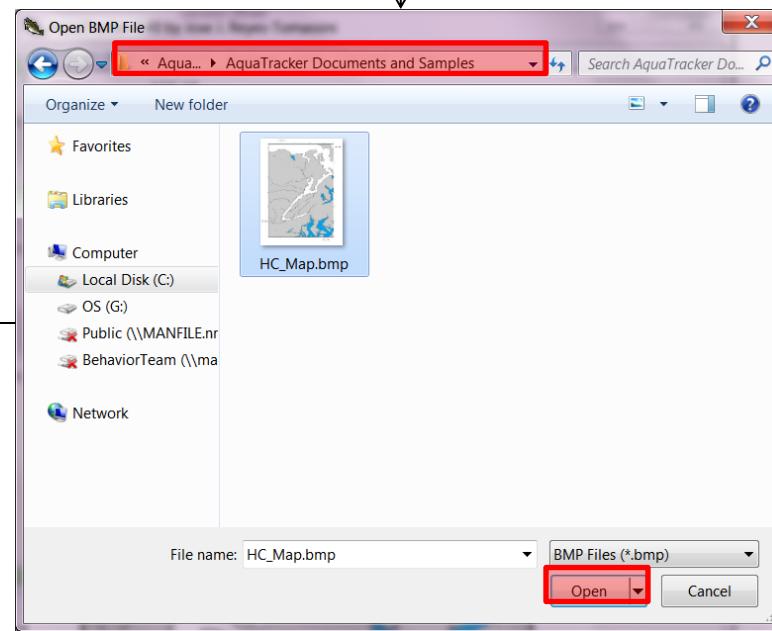
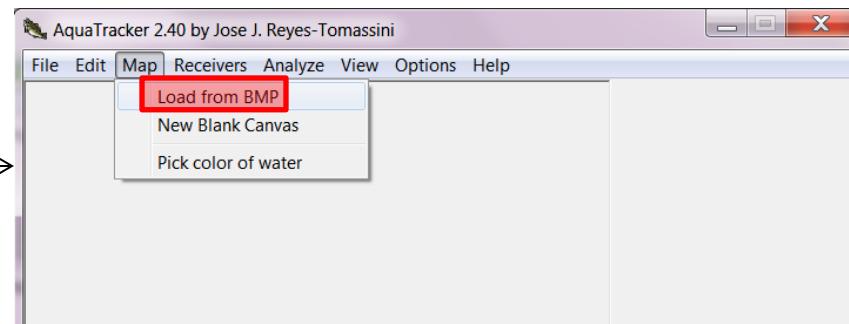


The color selector tool is used to select a track color for the selected fish track

Loading a map



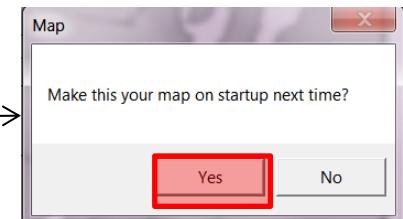
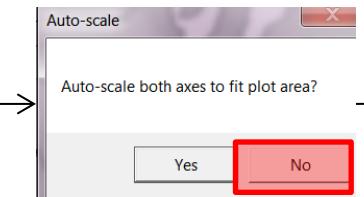
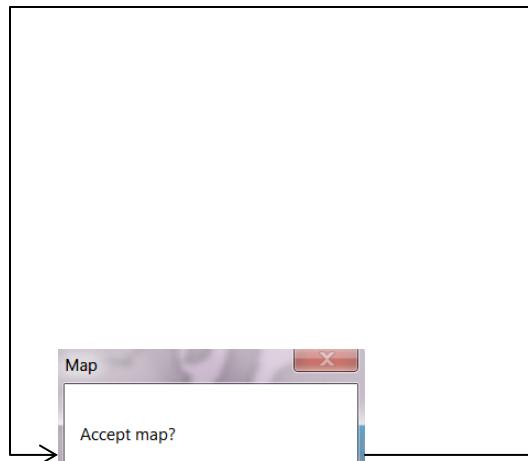
AquaTracker.
exe



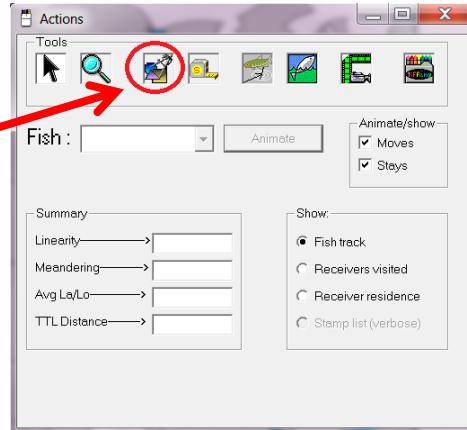
Locate the shortcut in your
desktop to AT's samples



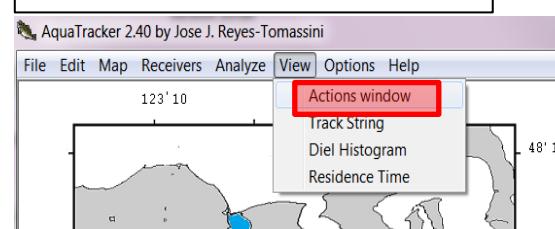
AquaTracker
Documents...



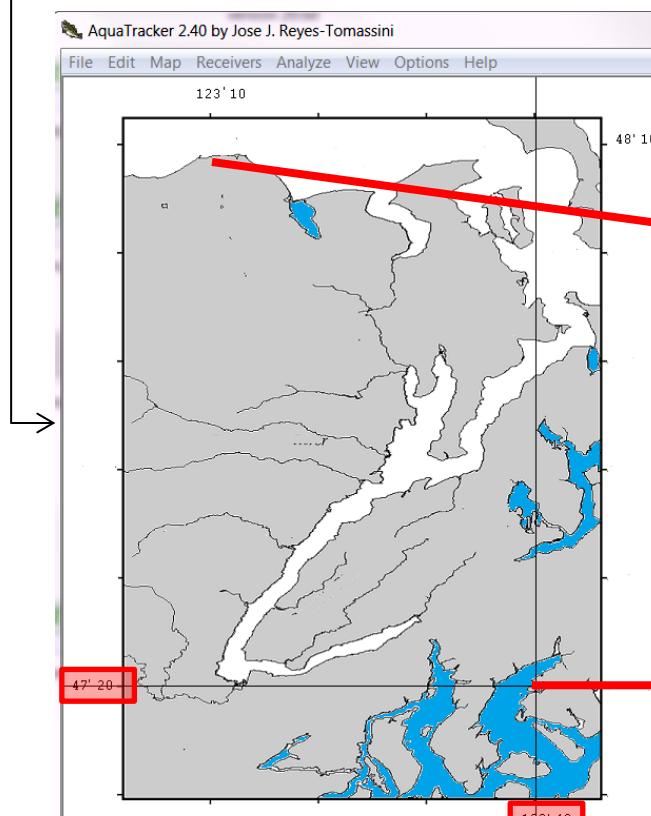
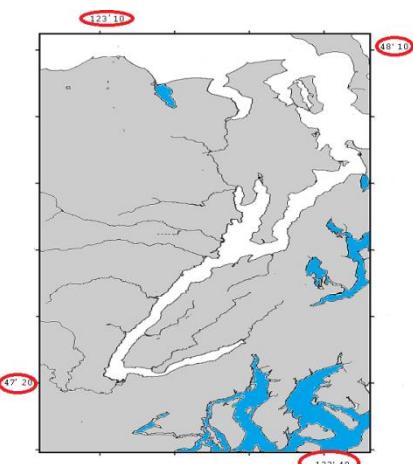
Georeferencing a map



If this window is not displayed, go to View→Actions window



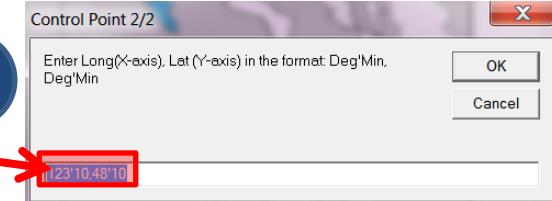
Notice:



Move cross hair to coordinates

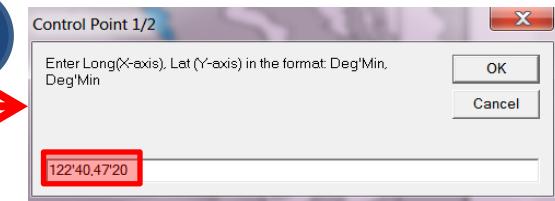


2



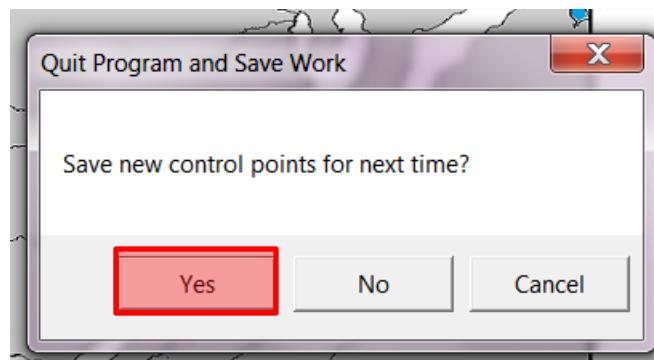
Enter the coordinates

1



Note that you only have to do this once. However, if you change your map or decide to use a blank canvas, you may lose your control points.

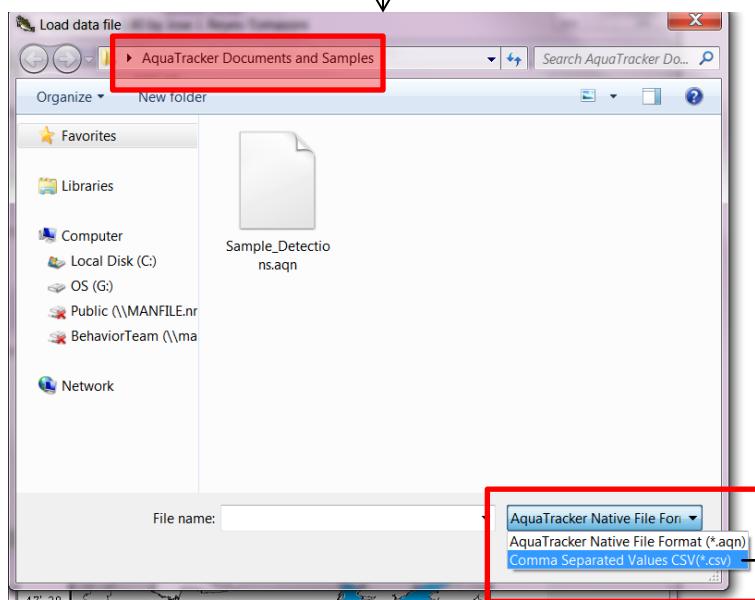
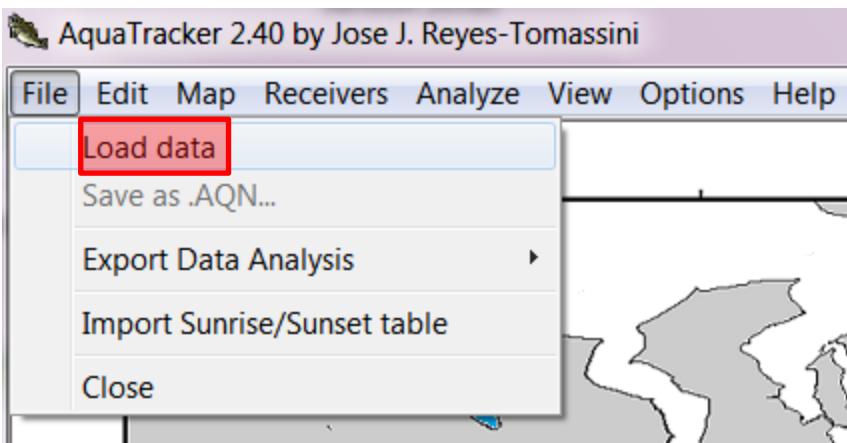
AquaTracker gives you a chance to save the geo-reference information just before you quit the program



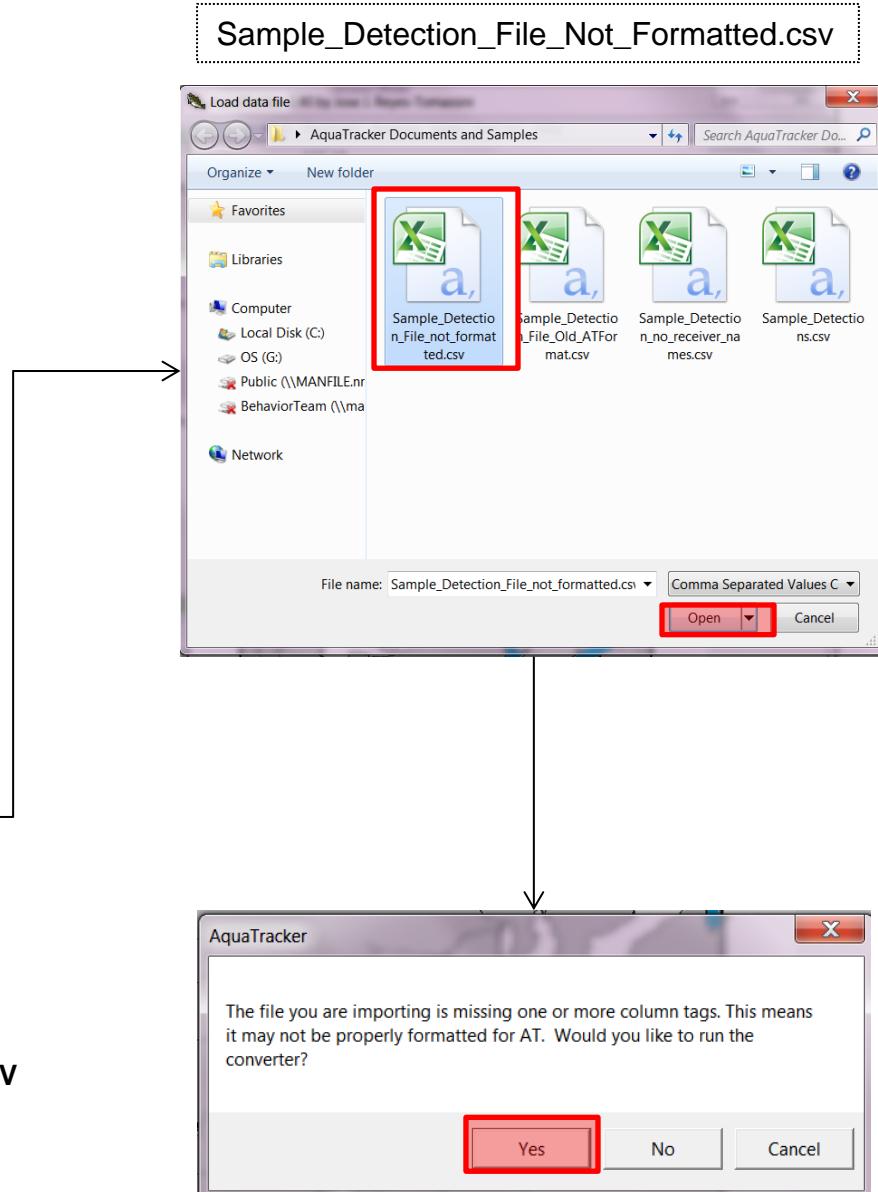
Loading data that is not AT formatted

Using the sample file:

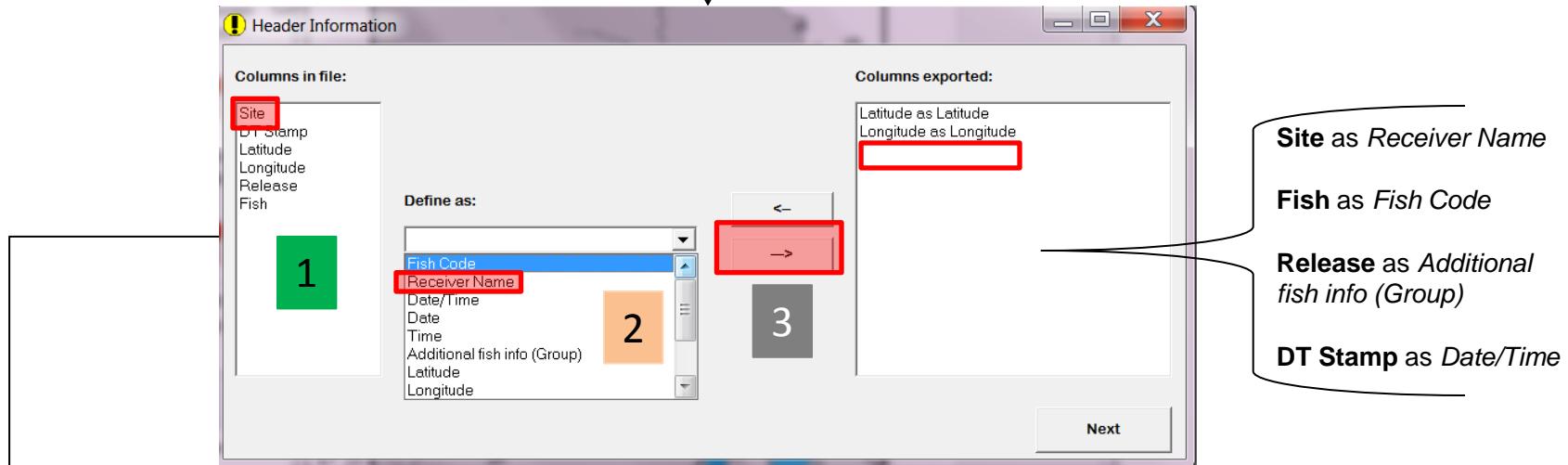
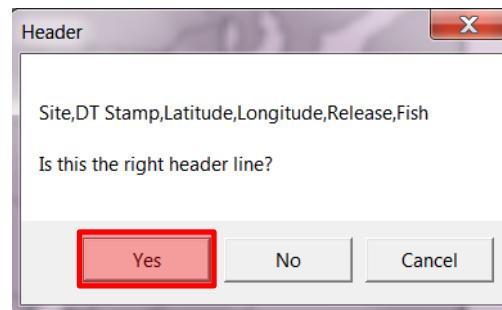
Sample_Detection_File_Not_Formatted.CSV



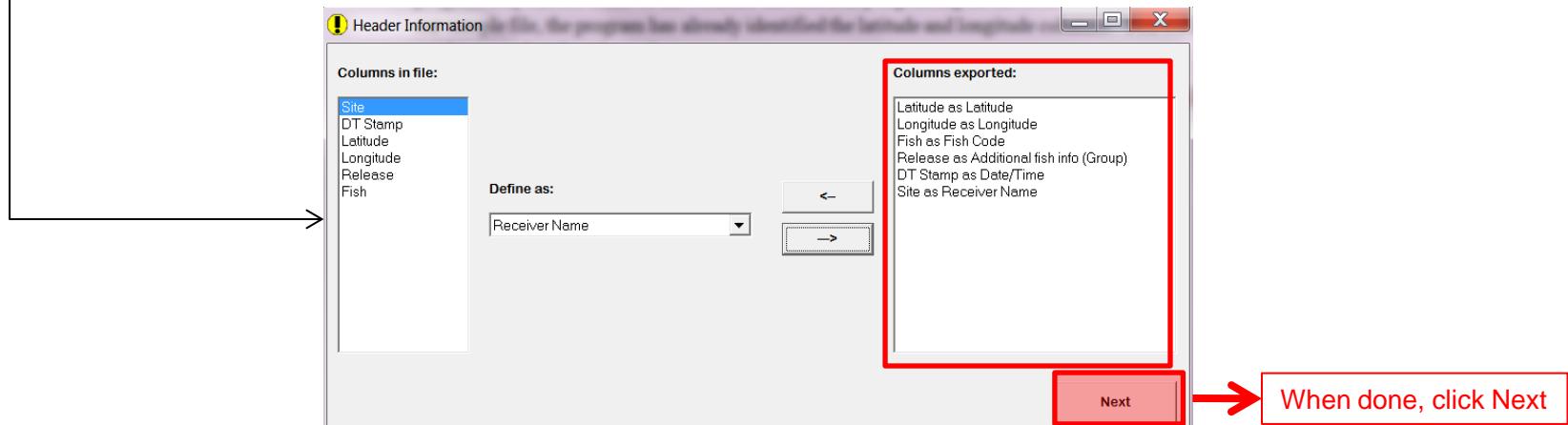
Select CSV

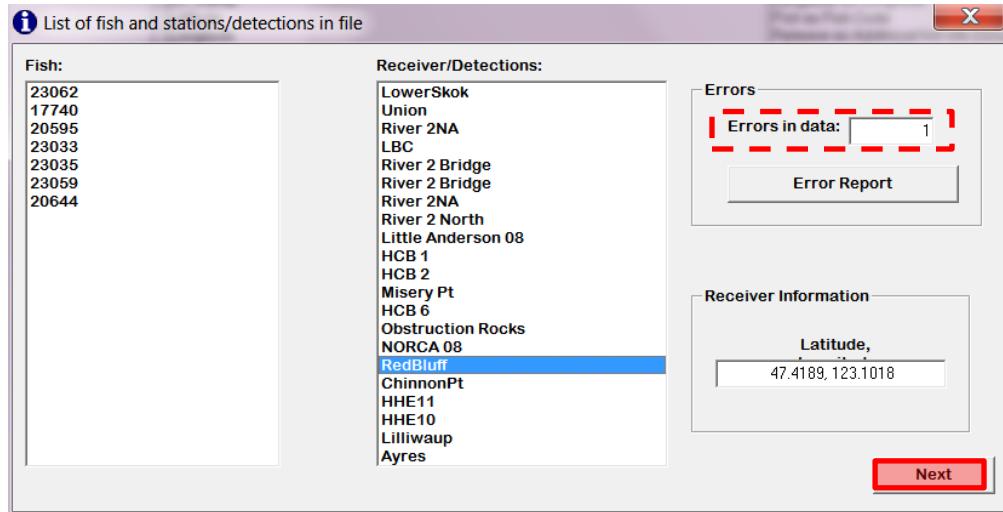


After you click Yes on the last window, the Converter program will run. See next page.

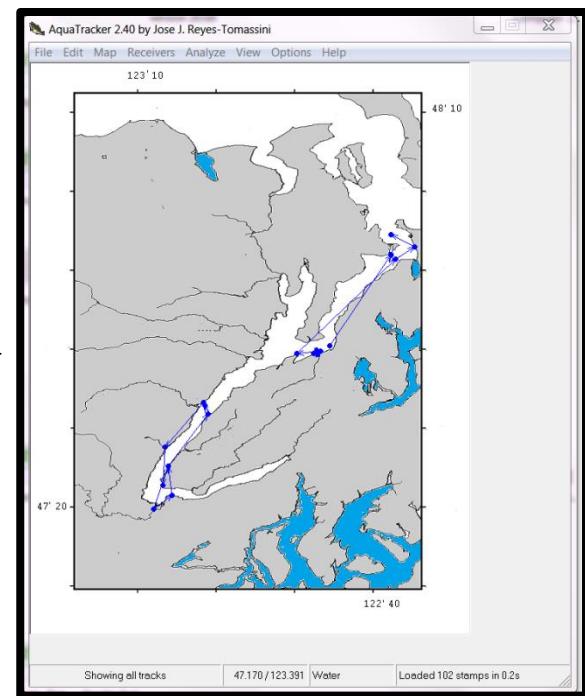
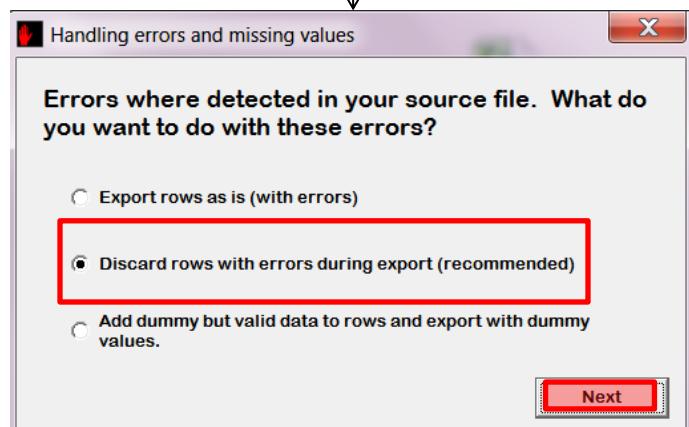


Use pull-down menu and arrow to generate the exported column assignments





The sample file has an error to illustrate how errors are handled.



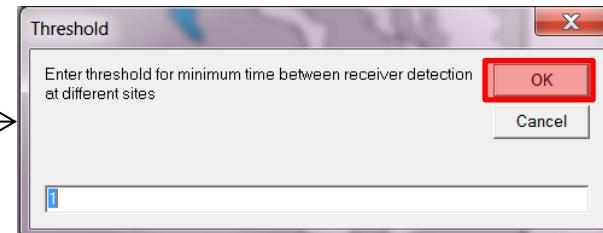
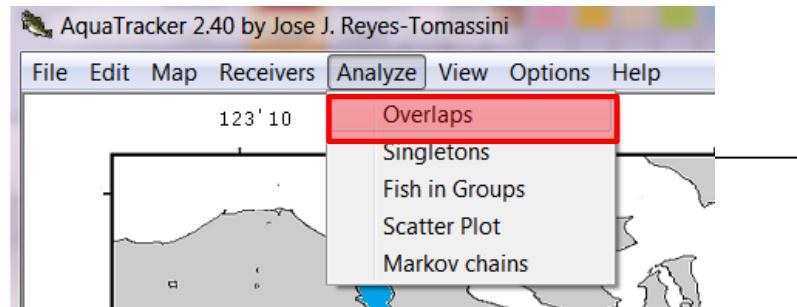
NOTE: The converted file is now in the same folder but with the name
Converted_Sample_Detection_File_Not_Formatted.csv

Data QC and Filters

Singleton detections and Overlapping Receivers

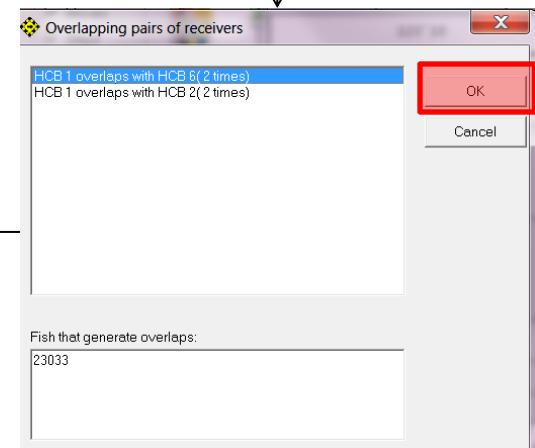
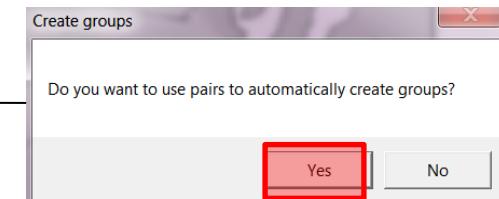
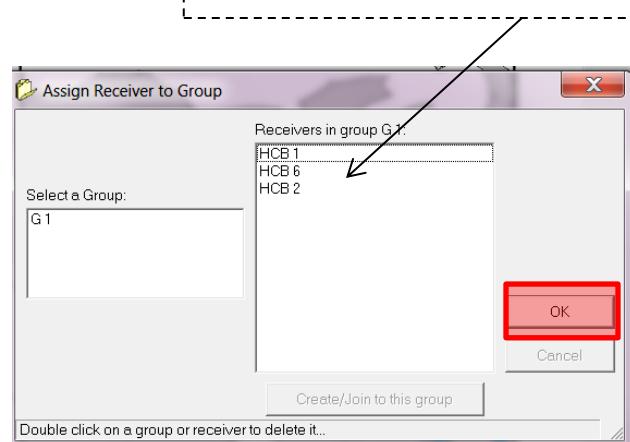
Note: I suggest you group receivers with overlap analysis BEFORE deleting any singletons...

Overlap Analysis



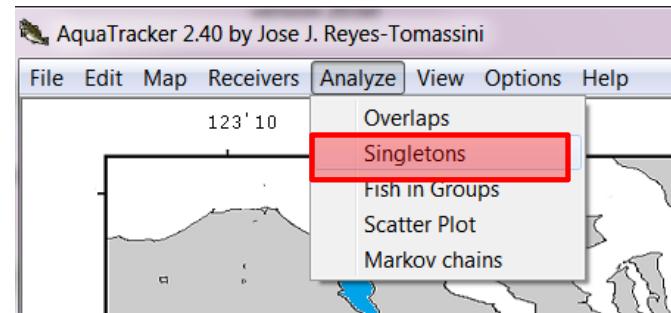
Default threshold is 1 minute. Do not change for this example...

These receivers will become one (G1)

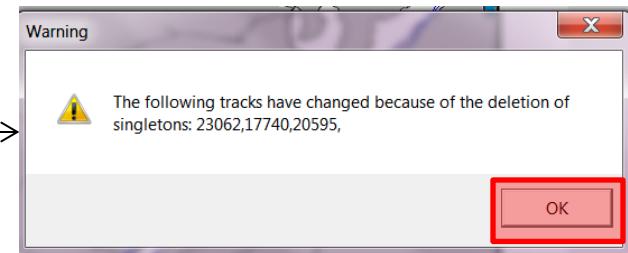
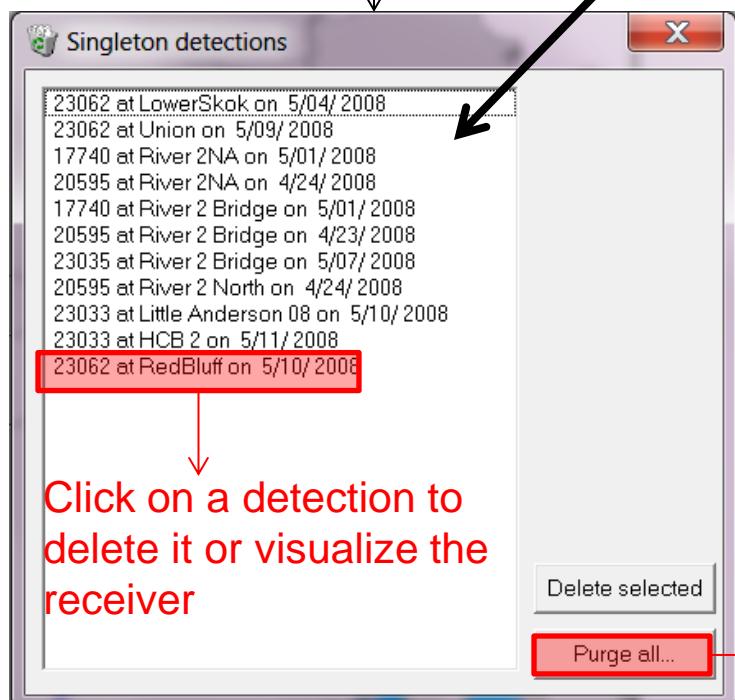


NOTE: When using overlap analysis, you don't need to click on **Create/Join to this group**. However, if you manually define groups, you will need to join them first before clicking **OK** on this window.

Singletons



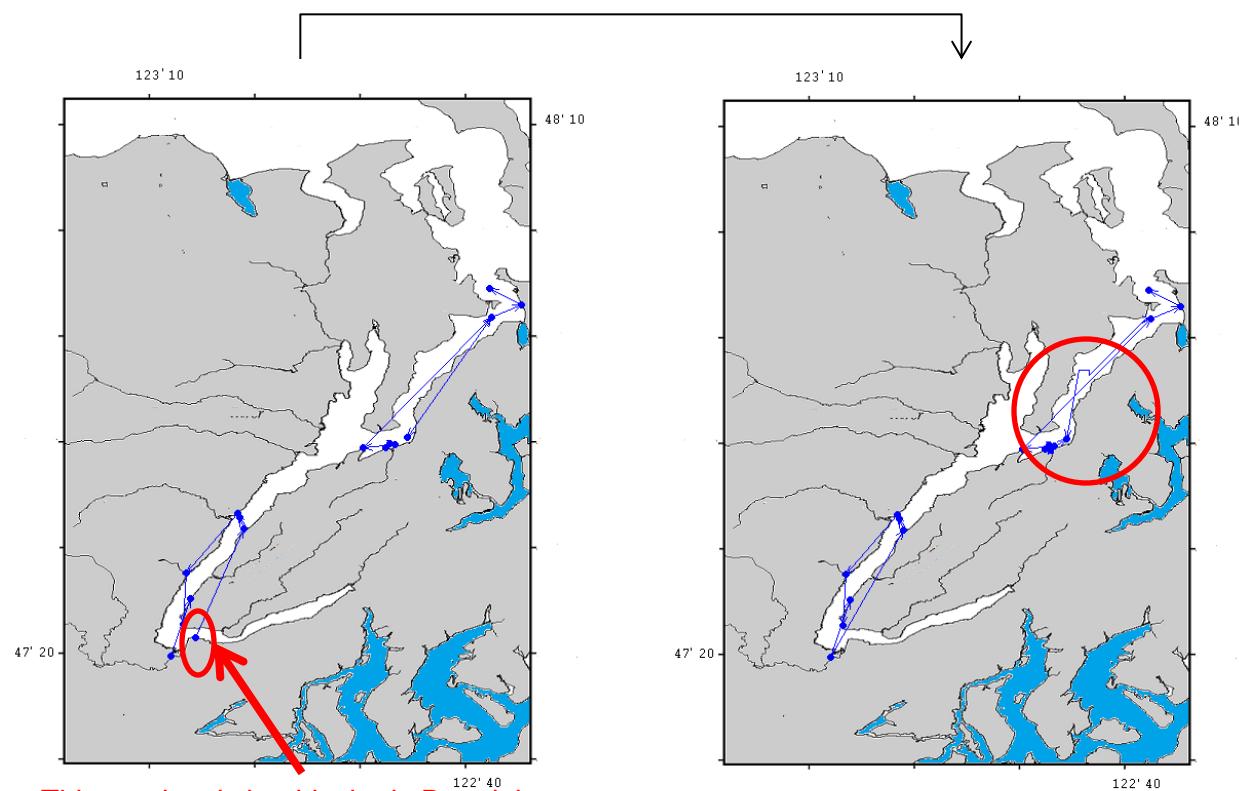
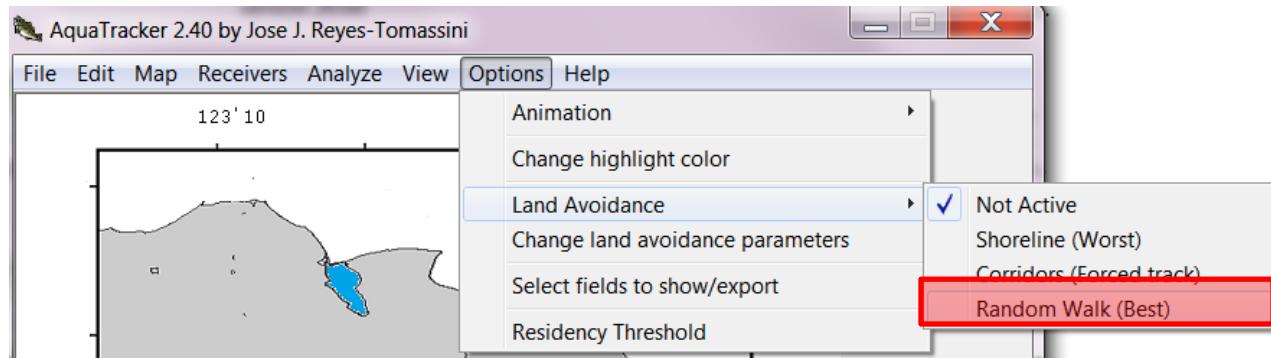
This are singleton detections. In each instance, the fish XXXX was detected at receiver YYYY once in a 24hr period.



AquaTracker will issue a warning if a track changes due to deletion of singletons.

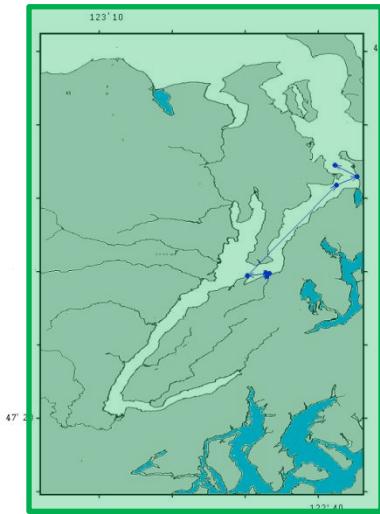
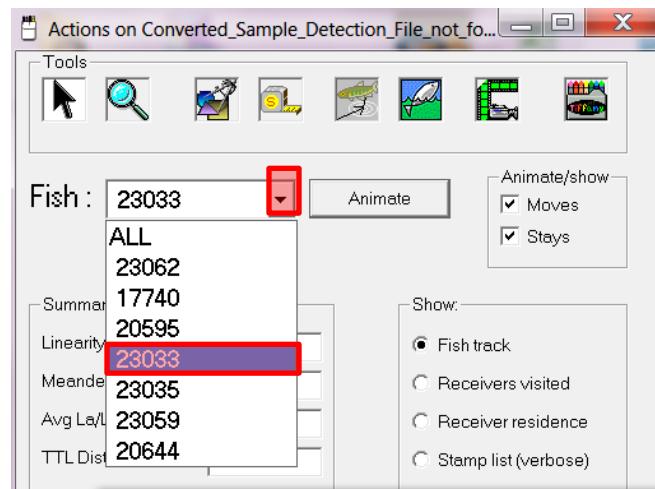
Land-Avoidance

Random Walks

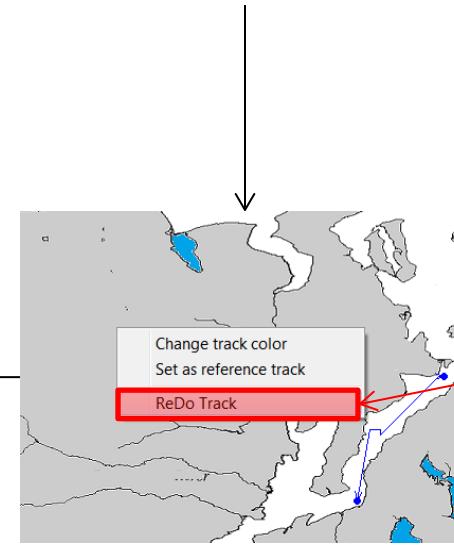
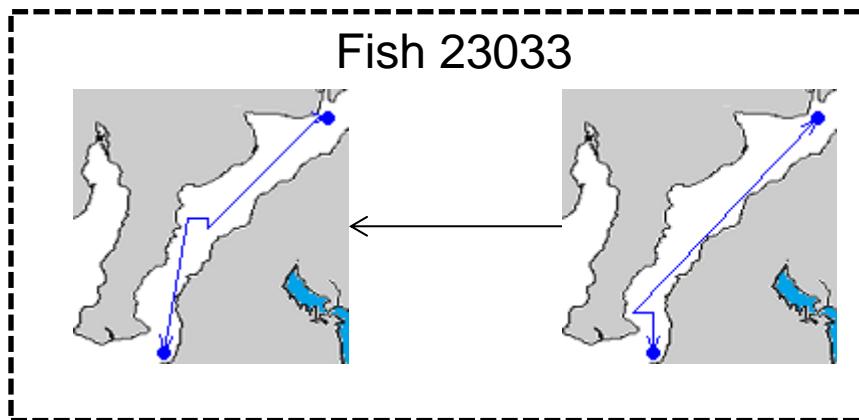


This receiver is land-locked. Drag it into the water to enable Land-Avoidance on this track.

Re-plotting random walks



Position mouse over canvas (only track 23033 is displayed) then **right click** to show canvas context menu



Note that because this is a randomized algorithm, the track will look different in your system

Land-Avoidance Threshold

The figure illustrates the process of adjusting the Land-Avoidance threshold in the AquaTracker software to improve tracking accuracy.

Left Panel: A screenshot of the "Actions on Converted_Sample_Detection_File_not_fo..." window. It shows a list of fish tracks with Fish ID 23035 selected. The "Animate" button is highlighted.

Middle Panel: A screenshot of the "AquaTracker 2.40 by Jose J. Reyes-Tomassini" window. The "Options" menu is open, and the "Land Avoidance" option is selected. A red box highlights the "Change land avoidance parameters" option.

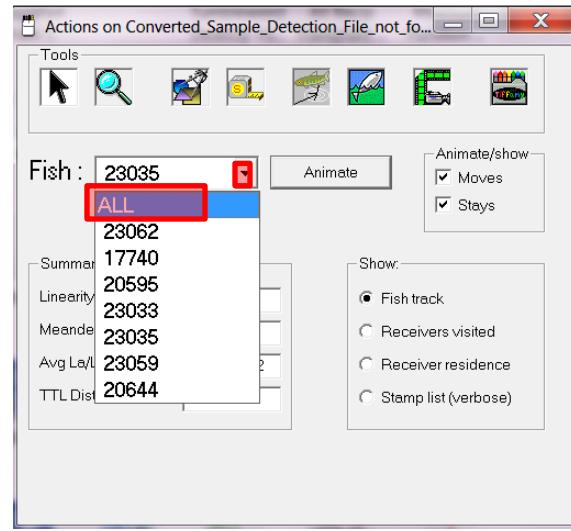
Right Panel: A screenshot of the "Land Avoidance Options" dialog box. The "Minimum length of Valid Segment" field is set to 50, which is highlighted with a red box. A red arrow points from this field to the "OK" button, which is also highlighted with a red box. Below the dialog, a text box contains the instruction: "Change from 50 to 5, then hit OK."

Bottom Left Panel: A map showing two versions of the same fish track. The left version shows a long, thin blue line representing the track. The right version shows a shorter, more compact blue line, indicating that the land avoidance threshold has been reduced.

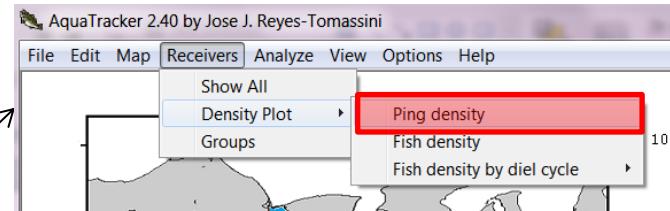
Bottom Right Panel: A screenshot of the "Actions on Converted_Sample_Detection_File_not_fo..." window after the change. The "Summary" section now includes a "Linearity" value of 0.761. An annotation states: "This number changes as the distance is now different." An arrow points from this annotation to the "Linearity" field in the summary table.

Visualizing detections

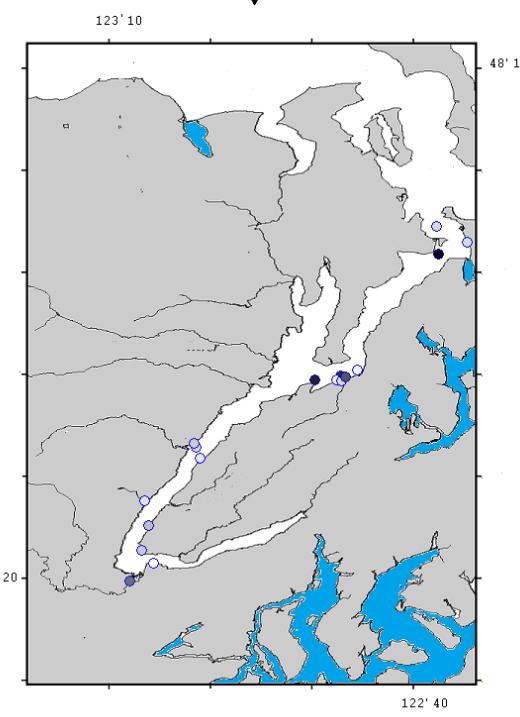
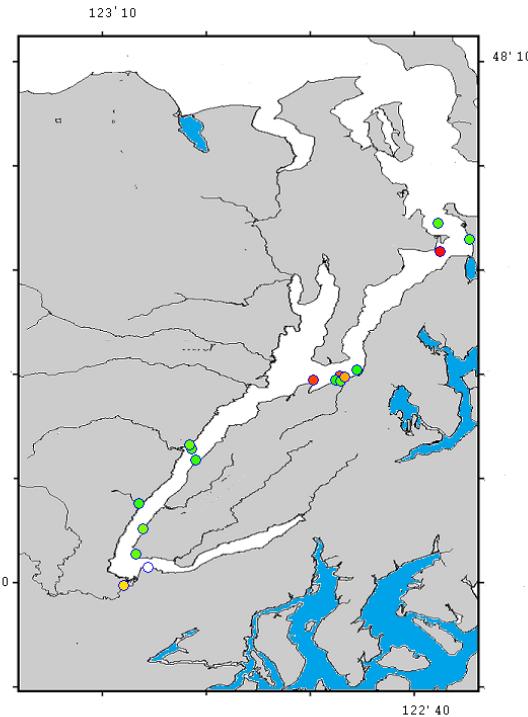
Detection densities



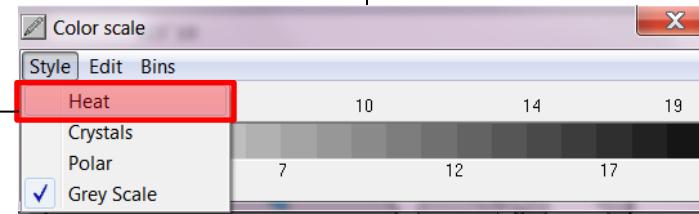
Click on the pull-down menu and select ALL



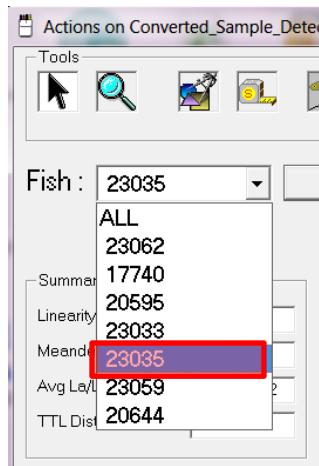
Ping density = Total number of detections



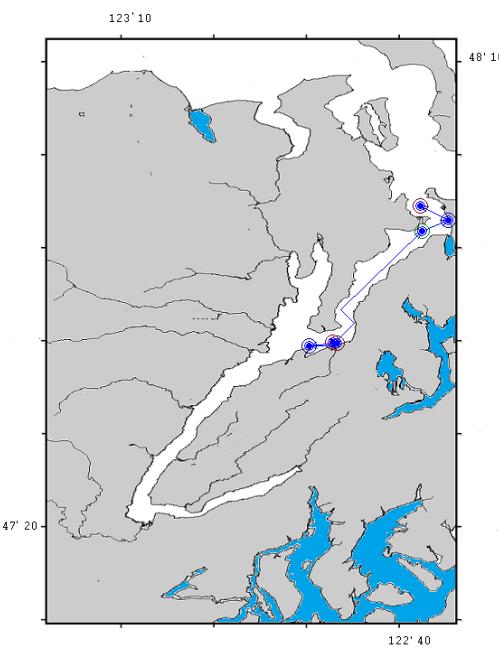
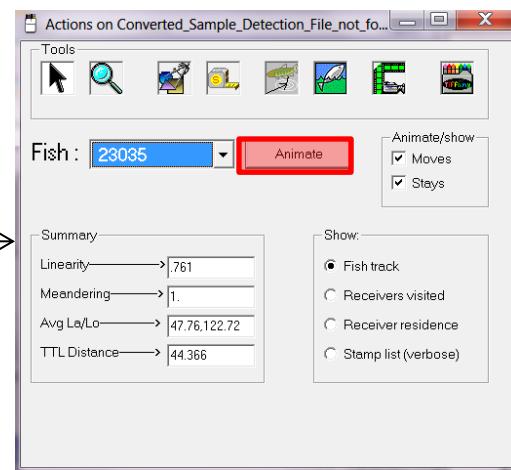
You can disable (not show) receivers with the bin value by right-clicking on the bin and selecting **Disable bin**.



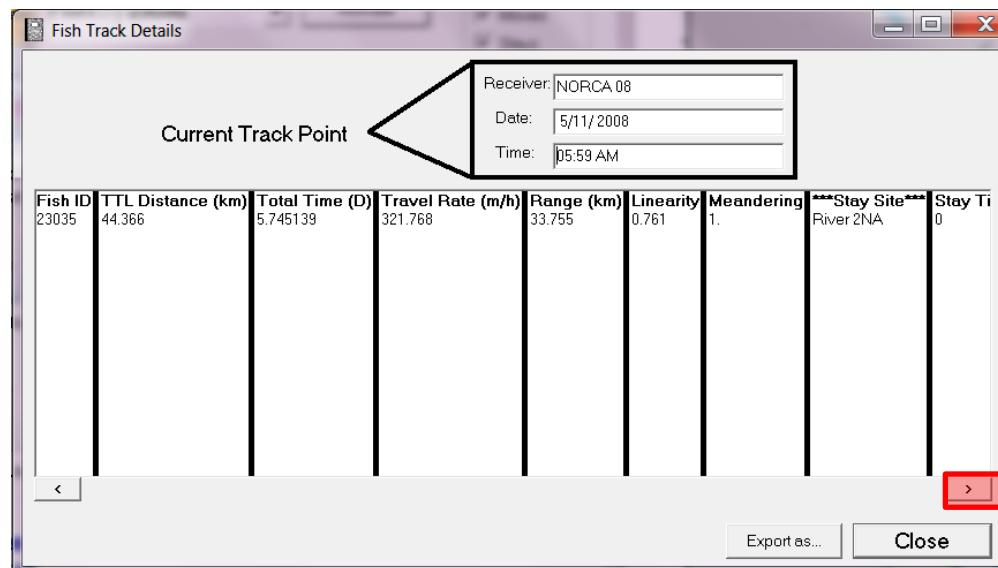
Visualizing fish tracks



Fish 23035



Animation begins...

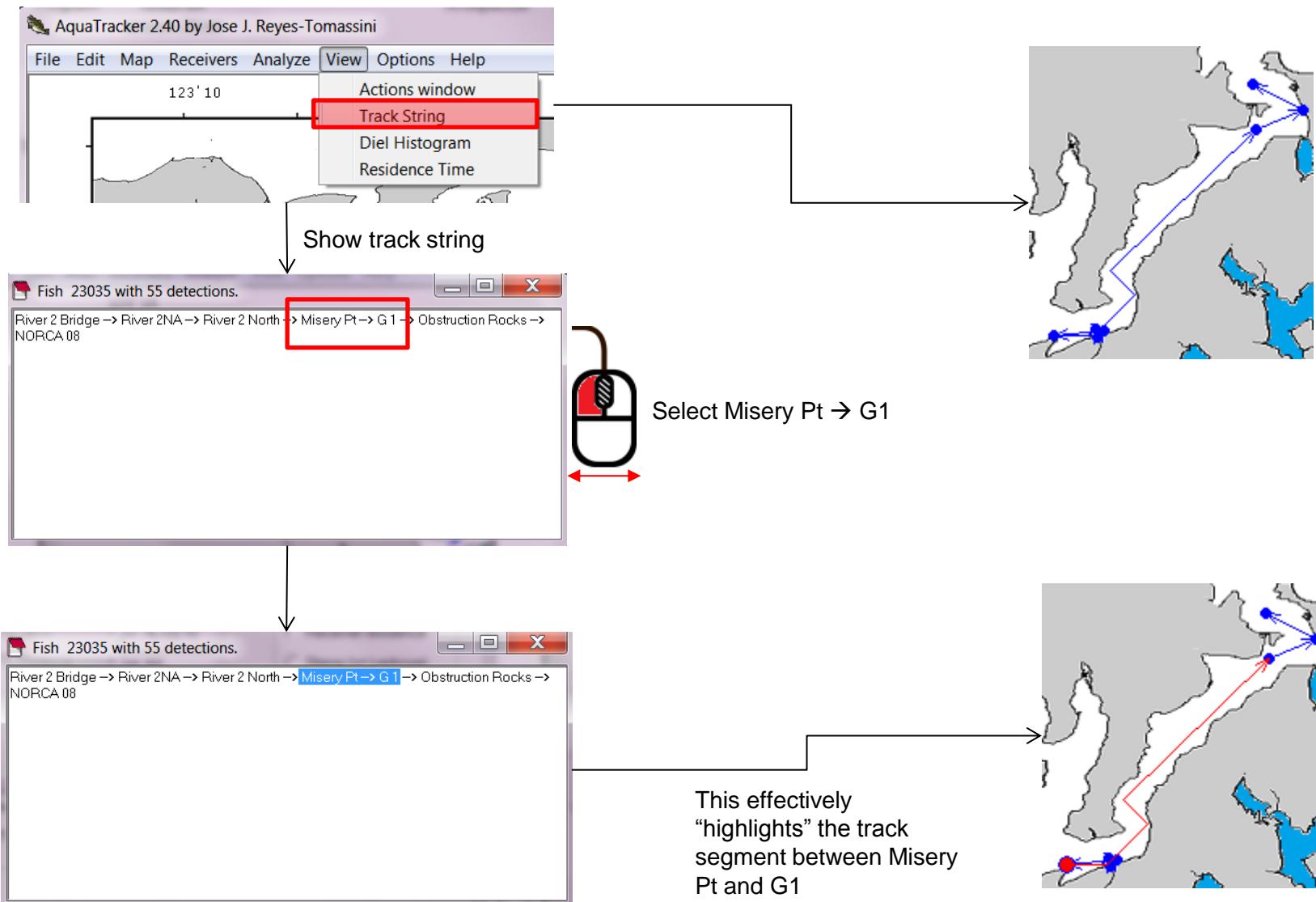


When it ends, you can see all the track parameters

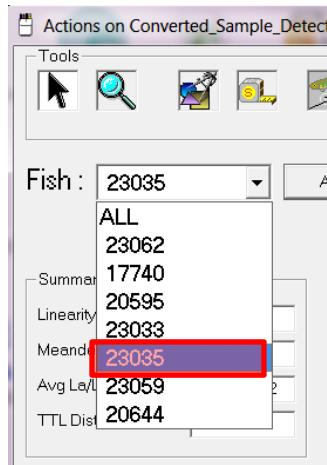
More parameters!

More track visualization...

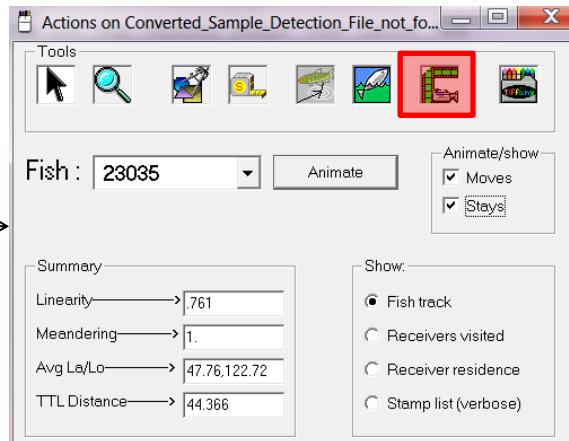
Fish 23035



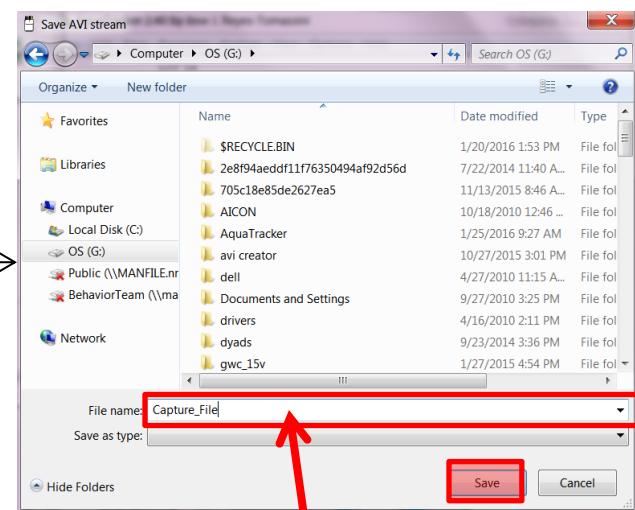
Capturing animations for export



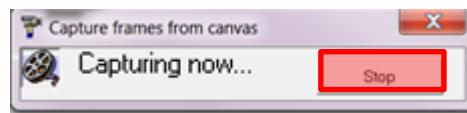
Fish 23035



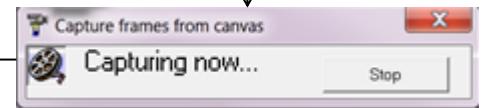
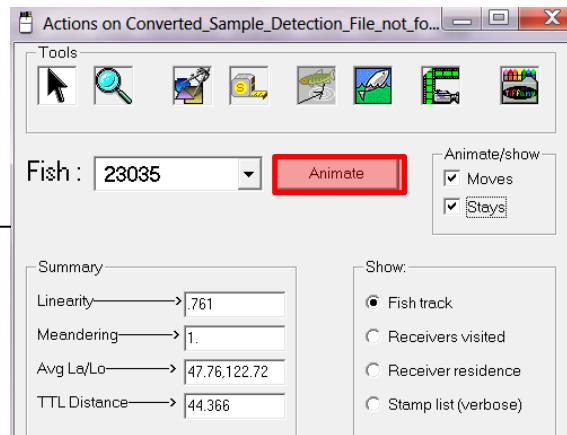
Click on Canvas Capture tool



Write here the file name you want to use for this video

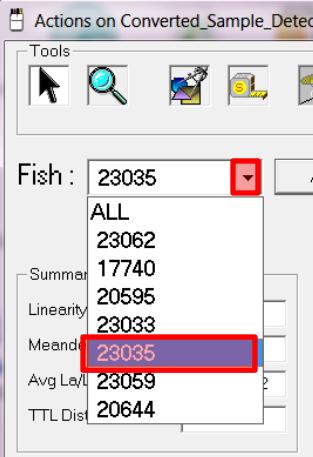


Wait until animation finishes,
then click **Stop**

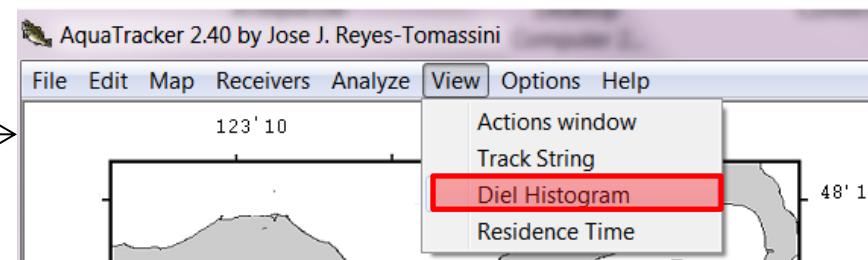


When you see "Capturing now..." on the
capture window, capture has started.
Anything you display on the canvas will
be recorded, until you hit **Stop**.

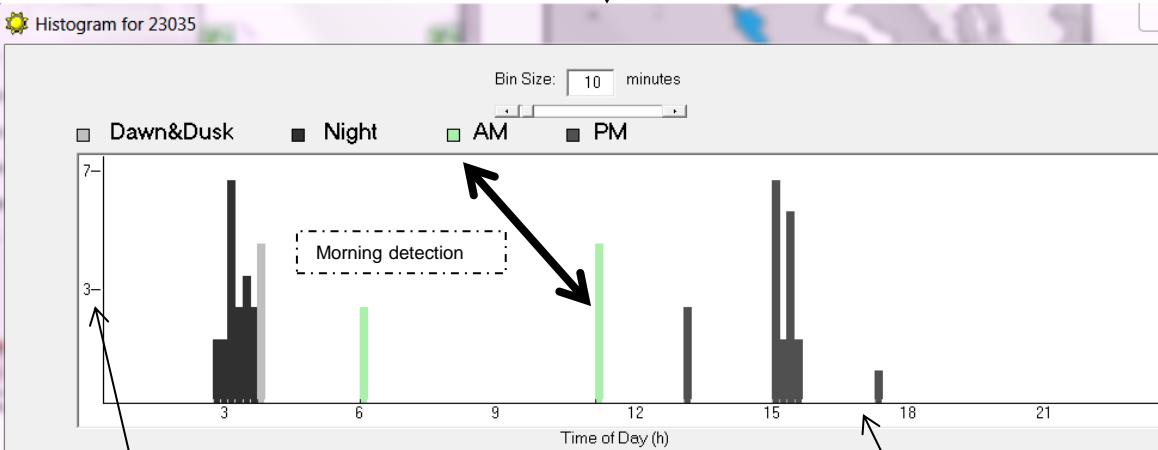
Diel phases and tracks



Fish 23035

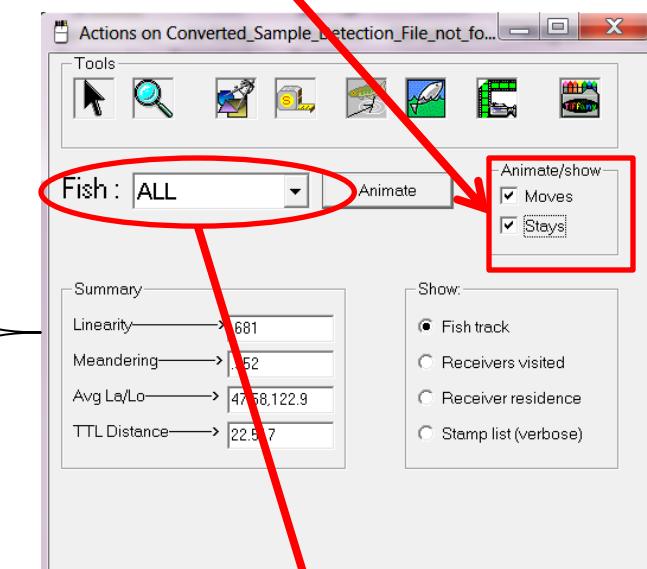


Select or Deselect to see the effect



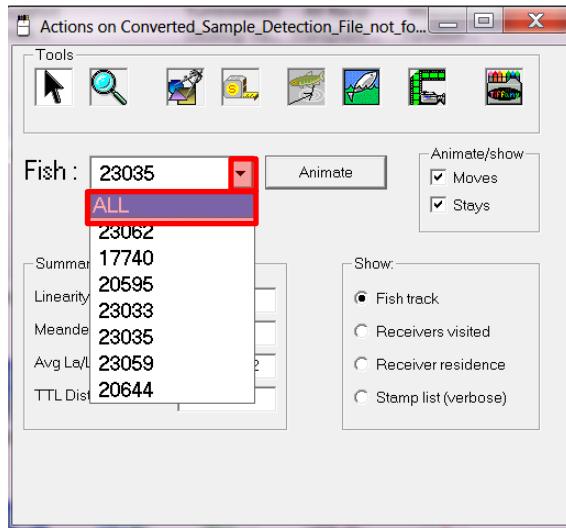
Number of detections

Time of day

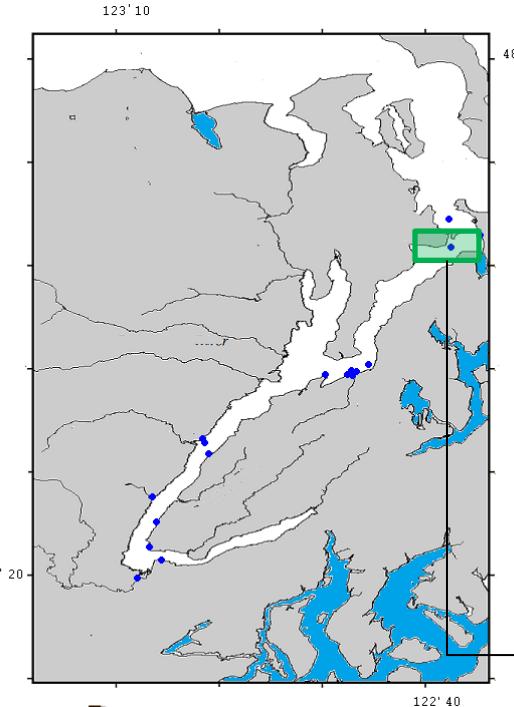
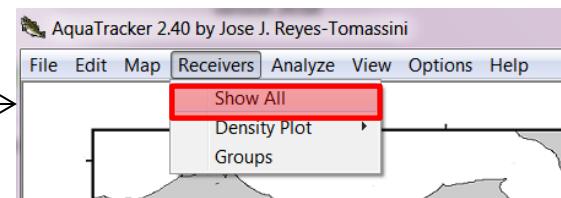


Change to all or change to another fish!

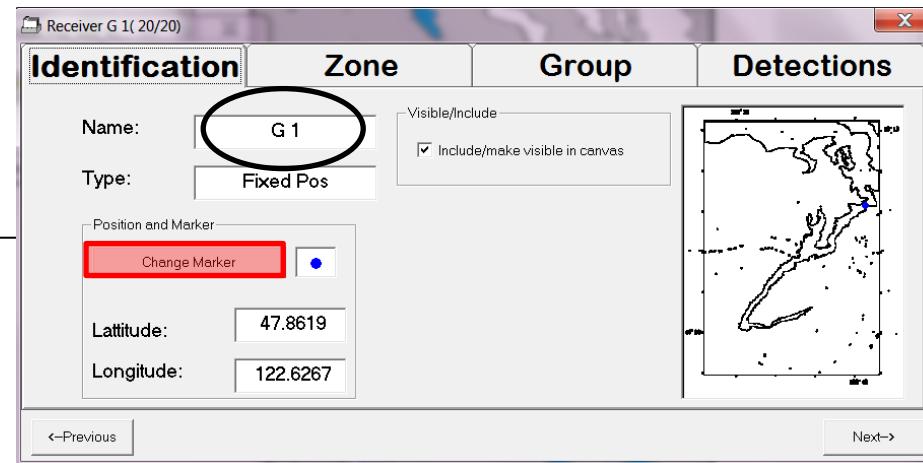
Changing Receiver Marker Color



Click on the pull-down menu and select ALL

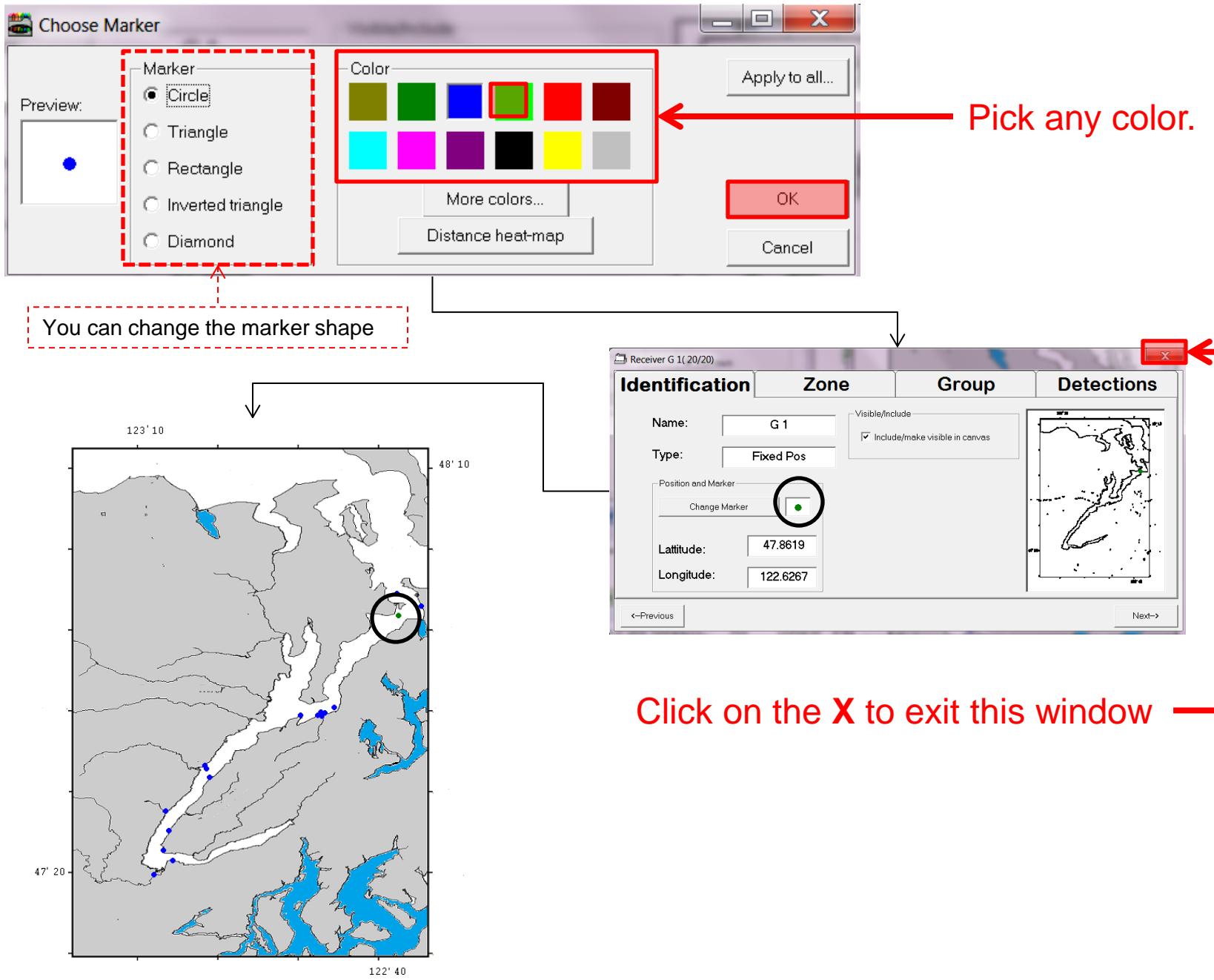


Place mouse pointer over G1, then right-click to reveal canvas context menu

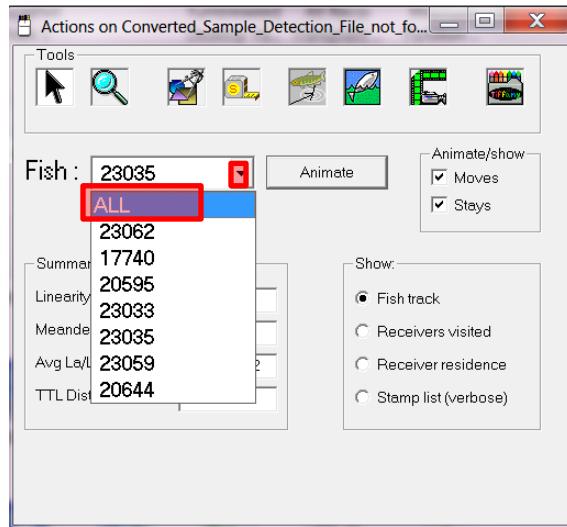


Continue on next page... ←

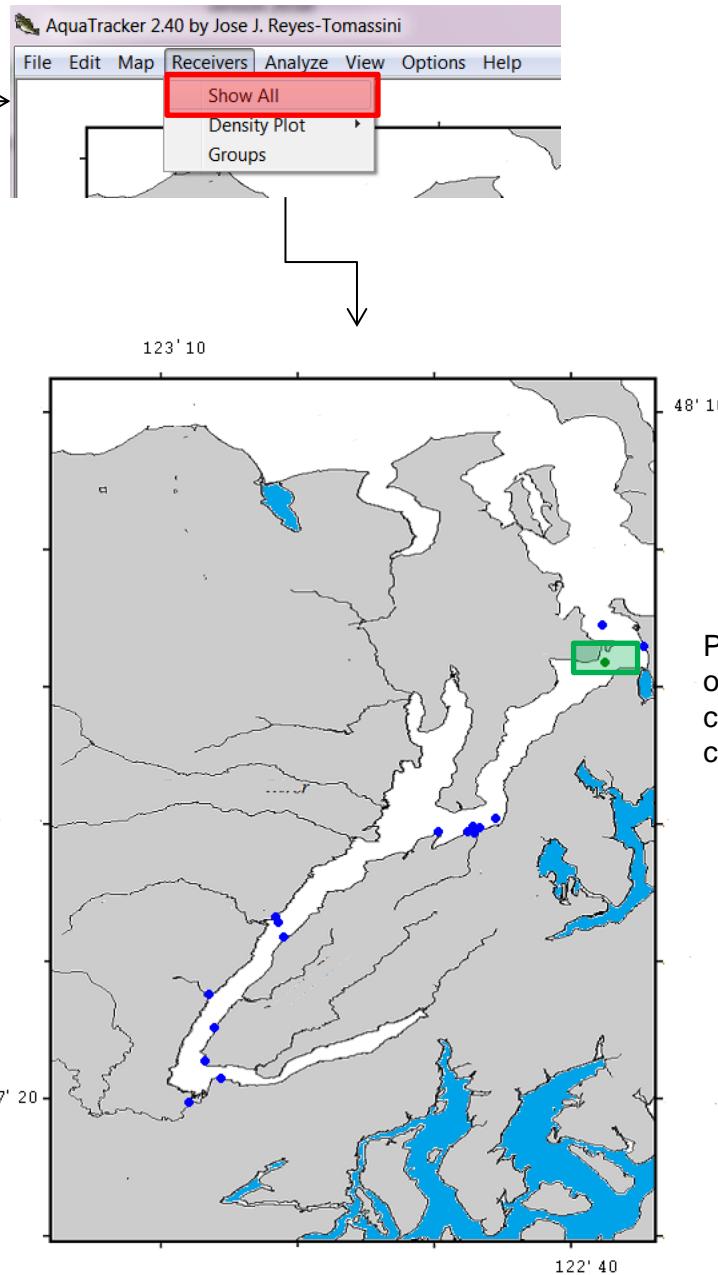
Receiver Information
Define Geographic Zone
Show Excursions
Show stamps
Diel Pattern of stamps
Add to Group



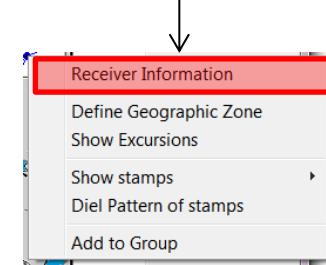
Visualizing fish going thru a
particular receiver



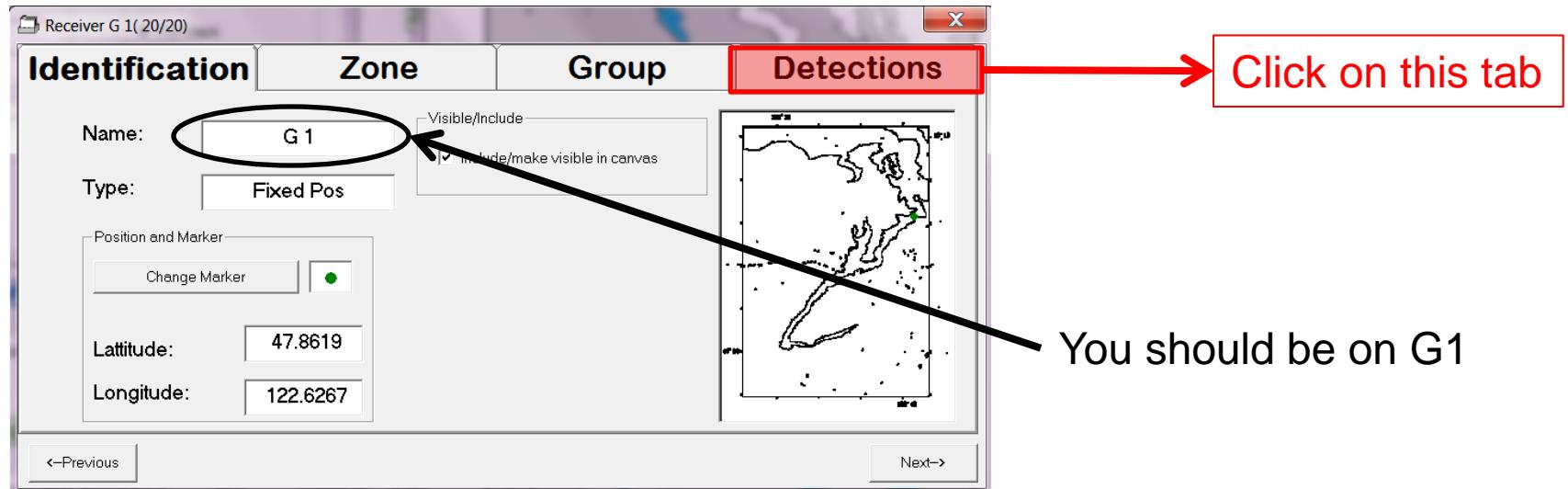
Click on the pull-down menu and select ALL



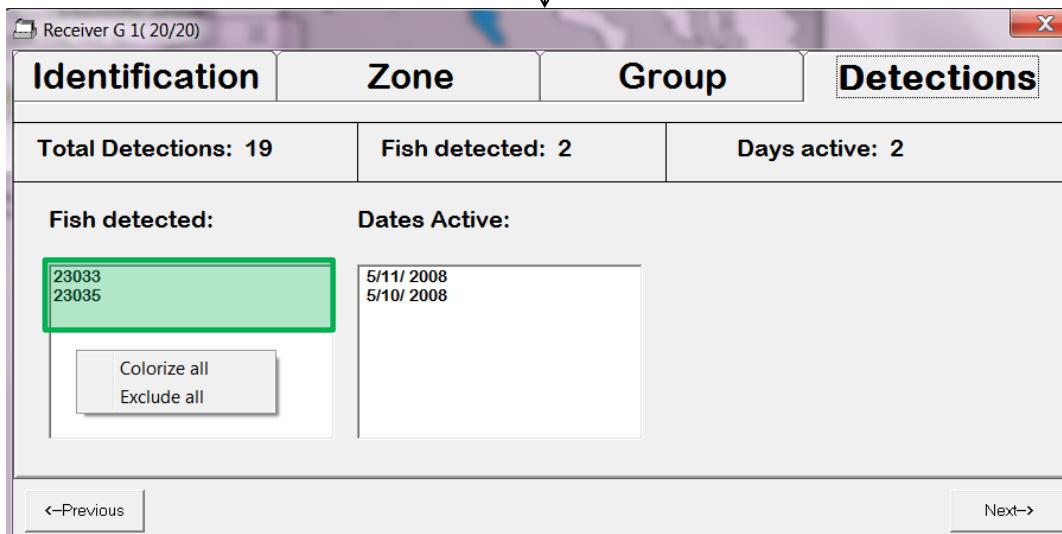
Place mouse pointer over G1, then right-click to reveal canvas context menu



Continue on next page...



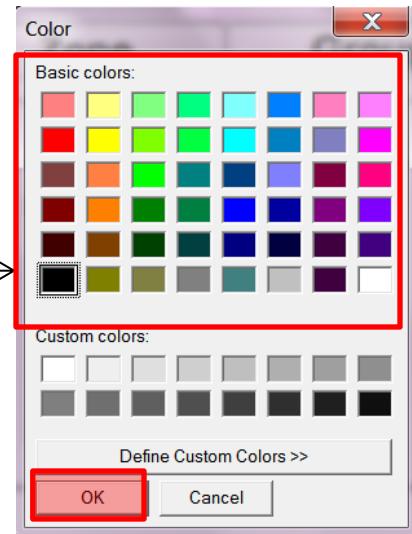
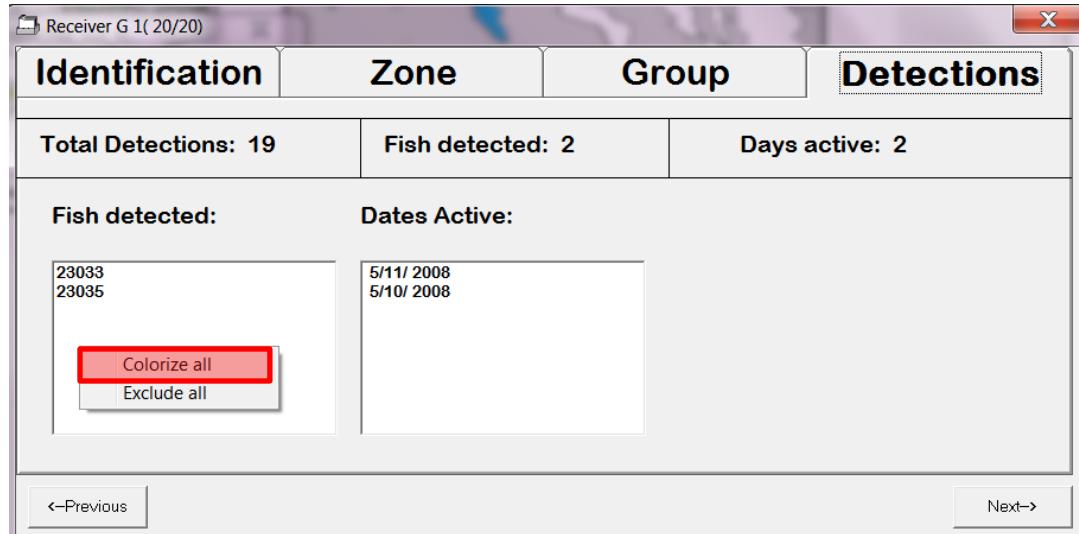
You should be on G1



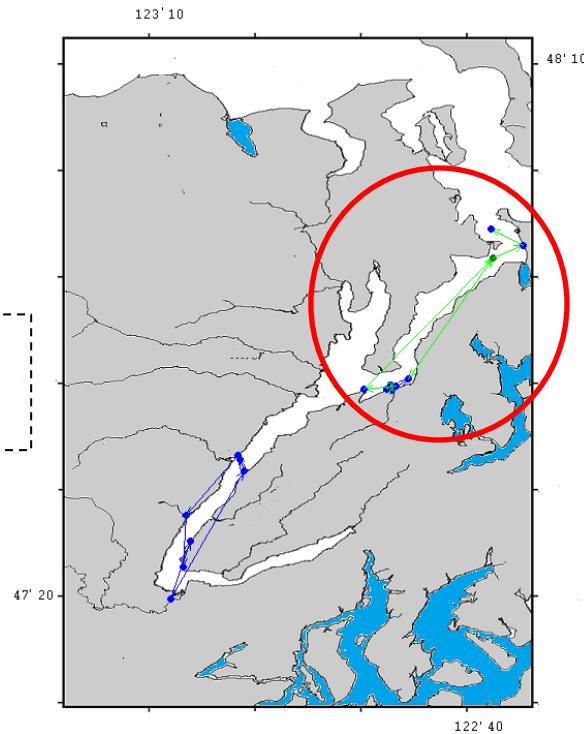
Right-click anywhere in the **Fish detected** list

Continue on next page...

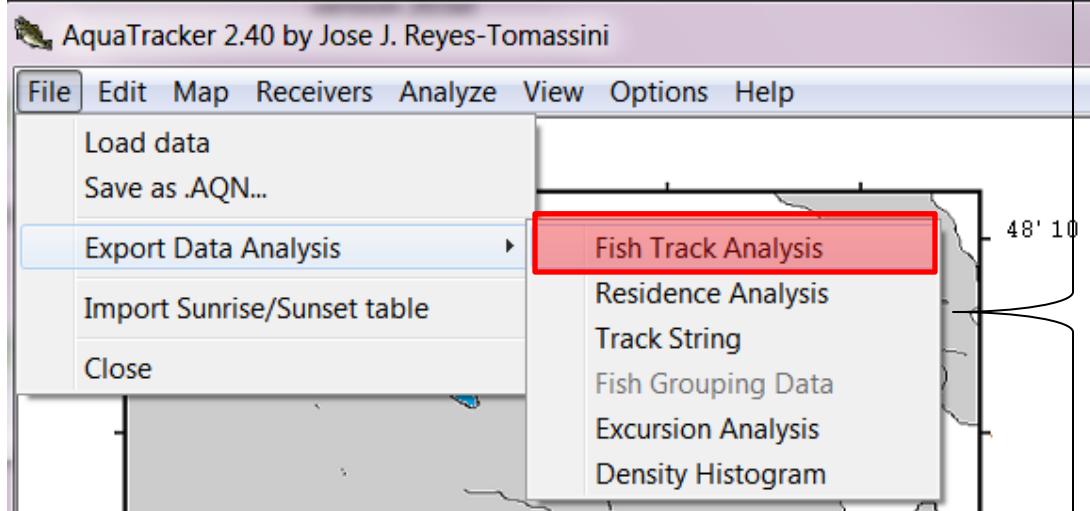
On this context menu, click on **Colorize all**



Choose any color you want, then click **OK**



Exporting data analysis



Fish track analysis: Exports fish track parameters (this example) to CSV file

Residence Analysis: Exports the time spent at each receiver by each fish to CSV file

Track String: Exports the track strings for each fish seen in track string window

Excursion Analysis: See manual

Density Histogram: Exports the detection totals for each receiver

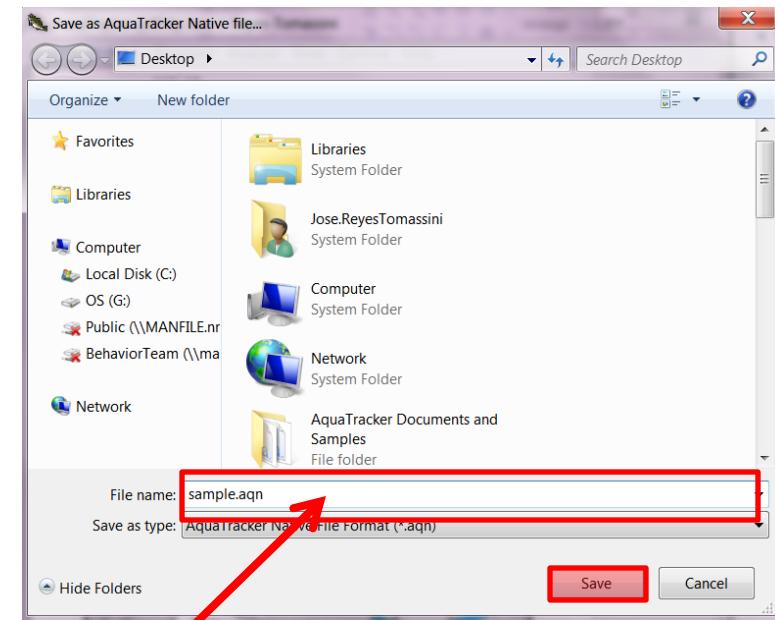
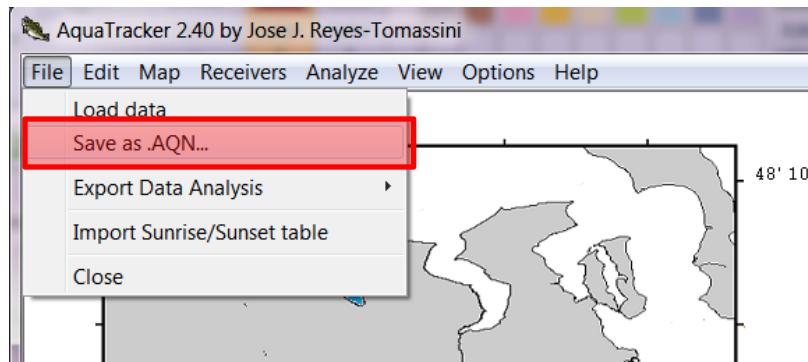
Continue on next page...

Use a spreadsheet program to look at the analysis of the file

Fish ID	TTL Distan	Total Time	Travel Rat	Range (km)	Linearity	Meanderir	***Stay Si	Stay Time (hrs)	Avg (La)	Avg (Lo)	%R. Active Release Site
23062	48.824	9.647223	210.871	26.463	0.542	1	Lilliwaup	1	47.446	123.078	40.00% A
17740	1.719	0.431944	165.828	1.078	0.627	1	Lilliwaup	1	47.659	122.789	15.00% B
20595	1.451	1.619444	37.327	1.017	0.701	1	Lilliwaup	1	47.66	122.784	15.00% A
23033	55.036	1.665278	1377.051	23.296	0.423	0.667	G 1	0	47.799	122.671	10.00% B
23035	44.368	5.752083	321.393	33.755	0.761	1	River 2NA	1	47.755	122.717	35.00% B
23059	.	0.016667	.	.	.	1	River 2NA	1	47.328	123.133	5.00% A
20644	10.409	0.479167	905.168	10.409	1	1	River 2NA	1	47.373	123.117	10.00% B

The meaning of the parameters calculated by AquaTracker is explained in the glossary at the end of the manual!

Saving your data as an AQN file



Select a file name

After you exit AquaTracker, the next time you run it, the program will ask if you want to load the last AQN file you work with...

