AquaTracker Build Notes

There were more than 100 bug fixes and probably about the same number of cosmetic changes and added features for this version of AquaTracker. The following is a list of the major bug fixes, annoyance fixes, and changes to the user interface which did not involve adding new features.

Major bugs are shown in **boldface type**
Bugs which may have affected program accuracy are shown in **underline type and are also boldfaced**

Bugs are preceded by an asterisk *
Fixes to Annoyances and other enhancements are marked with a >

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>Track was not erasing previous track (problem was only in V1.2A)
*Eliminated bug: while redrawing the track window, the diel window no longer
redraws
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underline type and are also boldfaced
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*Found error in histogram that incorrectly displayed overlapping bins and
distorted the graph in the x-axis (x pos was scaled, width was not scaled)
>Eliminated dead-ends and dead code
>Menu name: Show density --> Density Plot
>TORTUOSITY VALUE NOW REPORTED AS LINEARITY or 1/T (where T is what was
previously calculated).  Thus, now all tortuosity is between 1 and 0
>Change all reference from tortuosity to linearity
>Made it so that receivers that are invisible can't be used in any
calculation (internally, receiver.detections_ttl returns 0 if receiver's
invisible flag is set to true)
>Density now uses marker fill color instead of marker size to convey density
of detection
>Autoredraw set to TRUE on mapimage
>Rearranged the Receiver Information Window
>Increased limits once more...
>>Global Const MAX_FISH = 300
>>Global Const MAX_RECEIVERS = 300
>>Global Const MAX_DETECTIONS_PER_RECEIVER = 2 ^ 21 'about 2 million
detections per receiver
>>Global Const MAX_DETECTIONS_PER_FISH = 2 ^ 21     'and fish
>Fixed J-plot issues....
>Eliminated transect mode support
>Rejected entries are now dumped into a rejection file
*Progressbar not showing.  SizeAdjust for form was not firing up on start if
no map loaded.
*Width of progressbar was fixed.  Made it change with size of canvas.
>Fixed position/size of main form
>Track detail window can be moved somewhere else...
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>Optimized all RECEIVER DENSITY and SCATTER PLOT
*Still issues with Grouping of Receivers. Will need to change Receiver object so that it treats grouped receivers as a single receiver. (FIXED)
>Jplot is now "Detection Scatter Plot". "First/Last" detection for day shown as a split-box. Added full clipboard support (right click popup menu)
***Bug allowed a blank fish entry in imported file to generate a "stamp up" event for fish 0**
***Found bug with receiver grouping. In a couple of places, base 0 error.**
***Fixed bugs concerning receiver grouping which did not allow the receivers to be "linked" in all tools when a new "fake receiver" was used as a stub for the group. This new stub receiver was a new feature of version 1.3A which became 2.0 so this problem was not a concern for any of the other release versions.**
>Database now allows for a delete: set receiver name or fish id to 0. Will be used to delete singletons.
***Bug fix: Excursions analyzer was not resetting between receivers: only affected context menu "Show Excursion"**
***Bug fix: V1.2 and/or 1.1 had an issue affecting the following metric %R. ACTIVE was miscalculated in whole. Track calculator had been returning the number of detections instead of the true %R active.**
The above bug was probably not present in v1.0 and the earlier alpha versions.
>Fish receivers can now be moved around. This changes only the X,Y not the orignal LA/LO
>Tracks are loaded on the background into the map/canvas and then displayed (i.e. drawn in memory)
>Program now loads up map image in memory as "all-water" if no map is loaded.
>Fixed diel cycle analysis form so it shows histogram as soon as it loads up
*Bug that did not allow auto-scale to work if there was any invalid coordinates. Had to move code around to avoid trapping error before setting the bounding box for auto-scale
>Eliminated unused menu option "Make receiver invisible"
>Reorganized file menu
>Improved edge detection of map by using a Kirsch Edge detector
***Found a bug in the digital differential analyzer that I implemented so I changed it to a standard implementation of the Bresenham's algorithm. The bug only affected lines going at 90 degrees from origin and only for DX=0.**
The above bug only affected shoreline following in the land avoidance algorithm...
>Corrected mistake: current version still showing as 0.4A on the "export track function"
>Added source file name to export track function
***MAJOR BUG FIX: "Number of fish" (loaded) was not reported correctly and it was changed just before displaying the dropdown list on the "Actions" window.**
B/C Of the above bug, in a couple of places a fish # already reported was shown having 0 detections. DOES NOT AFFECT CALCULATIONS of track based parameters but **could have affected fish density reports** (base 0 error)
*When using the distance heat map, group receivers did not get the heatmap color. Corrected it by assigning color to "fake receiver" (receiver created and assigned to group of receivers) too

***did not properly work when assigning receivers to group near 0,0... Changed internal base value for begining_x/_y of selection box to -1,-1...**
>eliminated temp "command1" from main window (used for debugging land-avoidance)
>expanded the limits for the subgroups used in fish grouping. Made the upper limit for number of fish groups the same as the number of receivers
>Changed arrangement of floating window (icons are now on top instead of side)
*Canvas was not updated after rescaling or switching to blank canvas...Fixed
***Fixed errors on grouping window by expanding subgroups DIM from 100 to 500**
***Error when playing animation by date: Was trying to write data into tablefile (which is unused in this version. Should be eliminated or reserve for future use?) FIXED BY REFACTORING CODE AND REBUILDING THIS FEATURE**
>New feature: select/deselect fish by treatment
>Select/deselect receivers now affects diel window
*Added error trap to fish group window: won't crash if any errors occur while searching for groups!
>Made all filenames = "" before opening file open window. Was annoying and risky to have someone overwrite the main detections file!
>hourglass icon displayed when updating diel cycle window
>Does not ask if you want to "read" map everytime you load the data. Assumes map is to be read if valid map is loaded.
*Fixed a couple of bugs related to window resizing
***Fixed bug which saved map name and path on registry without asking user first...**
*Move date list and fixed all errors related to it
*Eliminated PLAY ALL button and re-factored all code related to day list window. To animate all fish tracks, select Animate and make user "ALL" is selected in fish list. Code related to this function was also refactored.
>Added a VALID boolean flag to Stamp, which allows dates (and perhaps fish, etc) to be checked against a table before the stamp is read. Now, when reading a stamp, I will have to add code that says "If Stamp.Valid then DO CODE"
>Change name of diel window to dyel cycle histogram
>Erases list when closing fish corridor window
***Fixed land-locked receiver navigation error (any navigation into a land locked receiver went to 0,0 or top left corner of screen)**
>Redid date window and Fish Track window
>Measure tool now erases lines after use
>Zoom-in effect added
*Zoom now does not affect control points. There was a bug in which everytime you used the zoom tool, the program asked if you wanted to redo the control points on exit!
>After grouping, new grouping receiver is shown
***12 on diel cycle now shows more accurately**
>Ref track is now "remembered" not just erased every time
>Updated marker shown on receiver tab after change in marker
*Fixed a couple of minor bugs with the heat-map scale window
>Zoom window now shows densities, as well as fish tracks
***Fixed bug related to showing groupped receivers on map**

>Added a tiptool with time of timebin to diel cycle
***Fixed a bug that caused the program to crash if the diel cycle window was open before data was loaded**
>added crosshairs to map calibration
>Supports full video capture of map/canvas using avi compressor. Auto selected FourCC based on users codec's
>Too much of a memory hugger so I changed the amoung of total stamps to 2M (had it at 8M for the alpha version). I think that anything larger than about 500k will cause the program to be too slow so its really not realistic to use the program if your file is larger than about 1M stamps...
>Can now startup with blank canvas
>Can animate all tracks at the same time (by date)
>Improved speed of rendering tracks by more than 1000% for larger files... (before it was >>20 secs, now its <<2 secs)
>The above improvement also solved a problem whereareas the program would crash often when large track data was rendered...
>Fixed bug that limits size of navigation string to 10,000 characters or about 1,000 moves (?)...
>While fixing this bug I added the following:
      ->Bidirectional arrows in Nav String
>Optimized speed of Astromechanical calculations and diel cycle rendering, mostly by way of memoization
>increased speed of loading data by about 25% (added more memoization, added hashing function and table, optimized some do/whiles, cut one loop out of the 3 for loading the file, and also added a table of values for fish and receiver number for each entry!)
***Fixed bug which show first fish twice on list of exported fish (at bottom)**
*Changed font throughout most of the converter.exe application and on the receiver information window in AquaTracker as they were not displaying properly on W7. Also changed the layout of the Receiver Information window a bit…
*Found a bug that affected scaling of the map on the Receiver Information window. It was a rounding error!