

# PAMGuard Maintenance and Support Activities

**1 April to 31 July 2017**

This report details work conducted by the University of St Andrews in continued support of the PAMGuard software using funds available through the voluntary contribution system.

## Tasks Completed

### Bug Fixing

A number of bugs have been fixed in PAMguard:

Bug 317. Rocca Module Data Purging. The ROCCA module was not performing data purging when using classifiers developed for Hawaii/Temperate Pacific/North Atlantic datasets. This has been corrected.

Bug 320. Pamguard stopped reading Click Detector Event data from database when target motion analysis information was encountered. Corrected.

Bug 321. Problem reading Soundtrap 4 files. Fixed.

Bug 322. Click detector average event templates were not displaying correctly. Fixed.

Bug 323. DIFAR configuration. Due to changes in the DIFAR localization system from a third party developer, older PAMGuard configurations would not work. Code has been modified to correctly set new parameters in old configuration files which now work with the latest PAMGuard versions.

Bug 324. AIS Module crashing. Added some better error handling to manage corrupted AIS strings without crashing.

Bug 325. Error in Complex number handling of addition and subtraction. Fixed.

Bug 327. GPS Logging Error. Code modified to handle database logging errors. Requires further testing since the problem cannot be recreated here.

Bug 328. NMEA Errors. Better handling of errors in NMEA data acquisition to avoid program crashes.

Bug 329. Updates to Java 3D graphics libraries. These have been updated to the latest version and some unused libraries removed from PAMGuard. However, these libraries continue to be unstable. See note below on future work priorities.

### New Features

1. Added Copy-to-Clipboard button to Warning dialogs, to store error messages and stack trace information on the Windows clipboard. This information can then be easily pasted into emails, text documents, etc when contacting Pamguard support.
2. Enhancements and bug fixes made to Difar module during 2017 ACE voyage.

3. Rocca Module: added StartHr, ProportionWhists and ProportionClicks parameters to Event classifier
4. The installer now allows the user to enter command line switches/parameters to be included in \*.ini files.
5. The PAMGuard launcher has been modified to include improved instructions on installation of the correct Java version since several users encountered problems following installation of a 64 bit version of PAMGuard and a 32 bit version of Java.

## Software Releases

PAMGuard version 1.15.11 was released in May 2017 containing the above new features and bug fixes up to bug 321. Other bug fixes have been shared with those affected by those particular bugs as required and will be included in an official release in September 2017.

PAMGuard Beta version 2.00.10 was also released in May. This contains a number of features implemented with funding from NOAA fisheries. These are summarized in Appendix A of this report. The modifications funded by NOAA are quite extensive and involved alterations to some of the underlying data management structures within PAMGuard. All of these should be of use to many PAMGuard users and following a period of testing and feedback from users, so intend to make this the main PAMGuard version for all users.

## Downloads

There have been 487 downloads of V 1.15.11 and 39 downloads of V2.00.10 between April and July. There have also been 399 downloads of the older versions 1.15.10 during this same period.

## Support

The team received and answered a 123 support emails during this period, although 96 of them were from a single user, mostly concerning the graphics problem described below.

## Graphics Drivers – future work priority

A user encountered severe problems with one of the PAMGuard displays used during click detector localization. This problem could not be recreated on computers in St Andrews, but nevertheless was traced to a problem in a 3D graphics library used by several PAMGuard displays. This 3D library is now considered to be obsolete and has been replaced by the newer JavaFX graphics system. While only affecting a small number of users, we consider that removing all usage of the older library within PAMGuard and replacing displays with new Java FX based graphics should be a priority for future development and will allocate between 2 and 4 weeks of time to accomplish this through the autumn.

## Appendix A. Summary of modifications to PAMGuard carried out under contract to NOAA fisheries.

PAMGuard Version 2 contains major updates. You should read and understand these notes before proceeding with installation and use of this version. These changes have been funded under contract to NOAA Fisheries, contract no. WE-133F-16-SE-1126.

## Binary File Structural Changes

The Binary File structure has changed to accommodate additional information for each unit of data stored. This means that any data generated with PAMGuard Version 2.00.00 and above will not be compatible with older versions of PAMGuard. If you open older data sets with the PAMGuard Viewer the older data will be converted to the new format (see below for details).

The most significant change in the binary file format is the addition of a Unique Data Identifier (UID) to each unit of data. This is intended to aid in offline analysis by making it easier for the user to link what they are seeing on different PAMGuard displays and also to link with any data post processed in Matlab or other custom analysis software. UID's are also added to PAMGuard database tables.

### Converting Old Data

If old data are opened with the PAMGuard viewer they will automatically be converted. For safety, the original binary files will not be overwritten and the new data will be placed in a new folder on your computer with the same path as the old data, but suffixed with '\_WithUID', e.g. if your binary data were previously stored in the folder C:\MySurvey\binarydata the new data will be written to C:\MySurvey\binarydata\_WithUID.

The additional UID column will be added to all database tables and populated with unique values. For data which are stored in both the binary files and in database tables, the same UID's will be used in both data stores.

### New Displays

A new time based scrolling display has been added to PAMGuard which can display multiple types of data on the same time axis. It can for instance be used to display bearings to whistles on a bearing-time type display similar to that commonly used in the click detector. Composite display graphs containing data from more than one detector are also possible. For details, see the PAMGuard help file (Displays / Time Display FX). Note that this display is only available if you are running Java 8 or later.

### Event Marking and the Detection Group Localiser

A new system of event marking which can be used both online and offline has been added to PAMGuard. Details are in the PAMGuard help file (Displays/Display Marking). Data can be selected on the Map, the Spectrogram Display and the new Time Display FX in a similar way and sent to other PAMGuard modules. The new marking and data selection system works with the new Detection Group Localiser. The Detection Group Localiser extends the functionality which always existed in the click detector to other types of data (e.g. Whistles) so that they can be grouped and tracked using target motion analysis in a similar way. Details of the Detection Group Localiser are in the PAMGuard help files (Localisation/Detection Group Localiser).

### Display Colours

A new system for handling display colours has been implemented across all PAMGuard displays. This gives greater flexibility to the user to control how data units are shown. For instance, you might simply want to show clicks in blue and whistles in green. However, for clicks and whistles that have been assigned to a Detection Group, you may want to colour them by the colour assigned to the group.