**PAMGuard Process Protocol**

**(PAMGuard to PAMpal)**

PHASE 1 : RUN DETECTOR

1. Open PAMGuard
2. Open configuration file: HIblackfish\_2022\_48kHz.psfx
3. Check binary’s location

**File> Binary Storage Options**

1. Check database location or create if needed (should be name of deployment – e.g., HI04\_01)

**File > Database> Database Selection> Browse/Create**

(Create a PAMGuard folder that is separate from the audio folder where the wav files are located. This is where the database will live along with the incoming binary files.)

1. Import Audio

**Settings < Sound Acquisition < Select Folder with wav files < OK**

Note: Make sure audio is divided into folders containing no more than ½ month (15 days) otherwise PAMGuard will crash. Before starting a deployment, make sure to have a folder with corresponding audio divided into 15- day chunks. **Make sure to close-down and re-open PAMGuard every time you want to run a new chunk of data.** If you try to run it consecutively it will give you an error and may not run properly.

File Scheme:

Text

Description automatically generated

1. Confirm file naming scheme:

**Settings < Sound Acquisition < Click on wheel cog to the right of File date < “Enter the date/time format to use” box**

File name: SanctSound\_HI04\_02\_1207992369\_200203175003

Format: ##############################yyMMddhhmmss####

(30 hashtags in front of string and 4 hashtags after)

1. **ONLY if starting new deployment**, you must change hydrophone array settings information. If .paf files available for site, use that. Otherwise, refer to table from Vessel Detector Protocol (below) to enter in information specific to that site:
2. Refer to table below to make sure all values are the same.
3. In Array configuration section, enter in new latitude and longitude (columns C and D in table). Add depth from column E in table, use value NOT in parentheses.
4. In Hydrophone Elements section, enter in hydrophone sensitivity ( as negative number) from column H in table.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** |
| **Streamer Name** | **Hydrophone serial #\*\*** | **Latitude**  **(N)** | **Longitude (W)** | **Depth\***  **(m)** | **Recorder Calibration (dB re 1 V)\*\*** | **+** | **Hydrophone Sensitivity (dB re 1V /μPa)** | **=** | **System Sensitivity**  **(dB re 1 uPa)** | **dB2count output (dB re 1 count/uPa)** |
| HI01\_01 | 671129683 | 20.80756667 | -156.65615 | 64 (67) | - 1.8 | + | 177.3 | = | 175.5 | 88.20 |
| HI01\_02a/b | 671129638 | 20.807340 | -156.655430 | 59.7 (62.7) | - 1.8 | + | 177.3 | = | 175.5 | 88.20 |
| HI01\_03 | 671895593 | 20.806983 | -156.654733 | 53 (56) | -1.9 | + | 176.4 | = | 174.5 | 87.20 |
| HI01\_04 | 1207992369 | 20.80709 | -156.65567 | 54.6 (57.6) | -1.8 | + | 178.4 | = | 176.6 | 89.30 |
| HI03\_01 | 1208496153 | 21.2852 | -157.5999833 | 77 (80) | -1.9 | + | 176 | = | 174.1 | 86.80 |
| HI03\_02a | 1208496153 | 21.28542 | -157.60012 | 76.4 (79.4) | -1.9 | + | 177 | = | 175.1 | 87.80 |
| HI03\_02b | 1208496153 | 21.285420 | -157.600120 | 76.4 (79.4) | -1.9 | + | 176.9 | = | 175 | 87.70 |
| HI03\_03 | 1208496153 | 21.28542 | -157.60012 | 76.5 (79.5) | -1.9 | + | 177 | = | 175.1 | 87.80 |
| HI03\_04 | 1208496153 | 21.28532 | -157.60005 | 76.3 (79.3) | -1.9 | + | 177 | = | 175.1 | 87.80 |
| HI04\_01 | 1207992369 | 22.263528 | -159.586528 | 87 (90) | -1.8 | + | 179.5 | = | 177.7 | 90.40 |
| HI04\_02 | 1207992369 | 22.26347222 | -159.5863889 | 77.8 (80.8) | -1.8 | + | 178.1 | = | 176.3 | 89.00 |
| HI04\_03 | 671653928 | 22.263472 | -159.586389 | 77.8 (80.8) | -1.9 | + | 177.3 | = | 175.4 | 88.10 |
| HI04\_04 | 671129638 | 22.26347 | -159.58639 | 77 (80) | -1.8 | + | 176.9 | = | 175.1 | 87.80 |
| HI06\_01a/b | 5373 | 19.95072 | -155.9005 | 48.8 (51.8) | -1.9 | + | 177 | = | 175.1 | 87.80 |
| HI06\_02 | 5373 | 19.95072 | -155.9005 | 48.5 (51.8) | -1.9 | + | 177 | = | 175.1 | 87.80 |
| \*Hydrophone is 3m above the seafloor. The first number is the hydrophone actual depth (3m off the seafloor) and the number in parentheses is the depth of the mooring.  \*\* Can check sensitivity values on this site: <http://oceaninstruments.azurewebsites.net/App/#/%23> | | | | | | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Hydrophone Streamer | | | |
|  | **24 kHz SoundTrap** | | |
| Streamer Name | [See table below – column A] | | |
| Reference Position | Fixed location (moorings and buoys) | | |
| Click on 3 bars to the right of lat/lon < Edit | | | |
| Unit Type | Decimal | | |
| Latitude | [See table below – column C] | | |
| Longitude | [See table below – column D] | | |
| Hydrophone Locator Method | Threading Streamer | | |
| Position |  | Position | Error |
|  | X | 0.0 | +/- 0.1 |
|  | y | 0.0 | +/- 0.1 |
|  | Depth (m)  [always + value] | [See table below - column E (not # in parentheses)] | +/- 0.1 |
| Sensor | Fixed value | | |
| Interpolation | Use the location for the time preceding each data unit | | |
| Hydrophone Elements | | | |
| General Info |  | | |
| Hydrophone ID | 0 | | |
| Streamer | Streamer 0, x = 0.0 | | |
| Hydrophone type | ST500 | | |
| Hydrophone sensitivity | [See table below – column H] (negative value) | | |
| Preamplifier gain | 0 | | |
| Coordinates (m) | X | 0.0 | +/- 0.0 |
|  | y | 0.0 | +/- 0.0 |
|  | Depth | 0.0 | +/- 0.0 |
| Interpolation | Use only the latest value | | |

1. Start running detector

Click on the red circle in the upper left-hand corner of the screen to start running the detectors.



1. After each run is completed, copy and paste the .sqlite3 database into the folder where the audio data is so there are a version at each step of the way in case something happens, data is lost and something has to be re-run again.

PHASE 2: SELECT ENCOUNTERS

1. Open PAMGuard Viewer Mode (green icon)
2. Import database
3. Select audio location (necessary to view spectrogram)
4. Select encounters in the following nine “species” categories:
   1. B\_blackfish
   2. D\_delphinid
   3. M\_novaeangliae
   4. S\_sonar
   5. MB\_humpbackblackfish
   6. MD\_humpbackdelphinid
   7. BS\_blackfishsonar
   8. MS\_humpbacksonar
   9. MDS\_humpbackdelphinidsonar
5. Record in .xlsx spreadsheet: requires 3 columns start, end and “species” category
   1. Only include hours and minutes
   2. Encounters can be no longer than 3 hours.
6. Add id column in column 3 (e.g., Kauai1, Kauai 2,….)
7. Add sr in column 4 = 48000
8. Add dB (database location) into column 5

PHASE 3: PAMpal

1. Open RStudio
2. Run PAMpal blackfish.R script