BaleenWhale Acoustics Inspection Tool: Summary of important changes since *MERIDIAN Detection Browser*

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This document outlines all the significant changes in how to use the baleen whale detection validation tools since its transformation from the "*MERIDIAN Detection Browser*" version to the Git-managed "*BaleenWhale Acoustics Inspection Tool*" (BAIT) version.

MATLAB script files

There are two important organizational changes to the scripts that users of the MERIDIAN Detection Browser were used to running:

1) **The script for generating clips or spectrogram images (formerly *extract_LFDCS_detections*) is no longer independent.**
   It has now been integrated into the package and may not work properly if it is moved.

2) **All scripts have been renamed**.
   The name changes of each script are summarized below:

validateMeridianDetections	→	BAIT_validate
LFDCS2MERIDIAN	→	BAIT_convertLFDCSTable
extract_LFDCS_detections	→	BAIT_isolateLFDCSDetections

Multi-channel recordings

The validator GUI now officially supports audio files with multiple channels. The choice of which channel to use is controlled via the parameter file. It is possible to specify the channel number directly within the param file; alternatively, the channel number may be set to 'prompt', which will allow the user to choose the channel interactively if a multi-channel recording is detected (this is the default).

Parameter files

All three scripts now support parameter files. In the case of the LFDCS detection isolation script (*BAIT_isolateLFDCSDetections*), most of the command-line arguments have been replaced by parameters within the param file.

- Each script has its own subfolder within the *PARAMS* folder where parameter files may be placed. This is also where default param files are stored. **Do not move or rename any of the default parameter files or any of the folders in the *PARAM* folder hierarchy!**
- Check out the default files to see which parameters are supported and how to specify them

As a reminder of how to use parameter files:

- When wanting to use a custom parameter file while running a script, specify the correct parameter file from the command line like so (example for BAIT_validate):
    - `BAIT_validate('params','my_param_file')`
        - where `'my_param_file'` may be either:
            - the name of the file only, if the file is stored within the appropriate *PARAMS* subfolder for that script
            - the absolute or relative path to the file, if it is stored anywhere else
    - For users who are savvy with MATLAB, it is also possible to store `'my_param_file'` as a variable:

```
paramFile = 'my_param_file';
BAIT_validate('params', paramFile)
```

- Custom param files can be named anything, but they should all be text files with a .txt extension. It is recommended to follow the naming convention used by the default files, though this is not strictly necessary. The default files cannot be renamed.

Library dependency

Some of the code that was integrated into the MERIDIAN version was duplicated from code that is also used in other projects. To avoid having to maintain multiple copies of the same code, the BAIT version now requires an additional (custom-written) package to function, called *MATLAB Utilities for Cetacean Acoustics* (MUCA).

In order to use this software, the repository "*MATLAB-Utilities-for-Cetacean-Acoustics*" will also need to be cloned from the MARTeamWhale GitHub and added to your MATLAB path.

Spectrogram colour maps

New colourmaps have been added. Specifically, it is now possible to use inverted versions of each colourmap. There is also a new "blue" colourmap, which is a custom map taken from the Toothed Whale Detector.

The same colourmap library is shared between both the *BAIT_validate* and *BAIT_isolateLFDCSDetections* scripts, so it is possible to use the same maps in both.

+BAIT folder

The MERIDIAN version contained various folders that contained resources that were required for the code to run, but were not meant to be edited by end users. This included the following:

- *+BrowserClasses*
- *+Utilities*
- *BrowserResources*

To make things simpler and less confusing for users, all of the above folders have been removed. They have instead been replaced by a single *+BAIT* folder.

Files within the *+BAIT* folder should generally not be opened.

These files do not need to be accessed manually to run any of the BAIT applications. Feel free to review the code within this folder if you are curious, but be warned that editing any of these files could break the functionality of the BAIT scripts.

Other miscellaneous changes

- All references to MERIDIAN have been removed
    - This includes prompts for "initial MERIDIN CSV" files. The code for processing these files was removed, since the MERIDIAN detector's output format has changed since then anyway.
- Scripts have been made to detect if CSV files produced by LFDCS have been altered by Microsoft Excel – specifically, if detection times have been rounded to the second. Using files that have been altered in this way will generate a warning. While it is still possible to use those files, doing so is strongly discouraged, as it will cause issues later on.
- Hard-coded file and folder paths have been removed (notably paths to the Team Whale NAS folders, which are always changing anyway)