

INSTRUCTIONS FOR USING THE ECHOCLASS ACOUSTIC ID PROGRAM

(Version 2)

U.S. Army Engineer Research and Development Center

IMPORTANT NOTES

- **As with all software, we will continually be working to improve the software. If you encounter issues please send me a copy of the files and a brief description of the issue you encountered.** Both internal and external evaluation will result in periodic updates.
- Output of this program is an Excel file (.xlsx) with 3 sheets. Thus, you need to have Excel (2007 or later) installed on the computer in which the program is running. If you do not have excel, open office (www.openoffice.org) is available for free and can be used to open .xlsx files.
- This program includes options for GPS and Sunset/Sunrise. Do not click these options. There are specific instructions for the correct use of these options that will be provided later. Clicking them without having followed the proper procedure will result in an error in the program.

UPGRADES FROM VERSION 1.1

- Improve filtering of bat calls to better determine call fragments, broken pulses, and identifiable calls
- Identification of sequences with two bats
- Reporting of P-value from maximum likelihood estimation
- Modification of some of the output columns/calculations
- Upgrade to run datasets up to 1 million files (was 65k in V1.1)

DOWNLOADING AND INSTALLING THE SOFTWARE.

1. If you have utilized a previous version of the EchoClass software make sure to check that you have the appropriate version of the Matlab Compiler Runtime.
 - a. Go to the control panel and then the list of programs. If you have Matlab Compiler Runtime 7.16 then you have the version you need and you can simply download the new version of the EchoClass exe file.
 - b. If you have a previous version of the Matlab compiler then you need to remove it. Once a previous version is gone or you determine it is not installed, then you must download the MCRinstaller and EchoClass exe file.
2. Determine if your computer is running a 32-bit or 64-bit operating system.
 - a. If your computer uses Windows XP or Windows 2000 then chances are you do not have a 64-bit system and you should download and install the 32-bit version as instructed below.
 - b. If you are running Windows Vista or Windows 7, Click **Start/** Right click **Computer/** Click **Properties**. Under “System” or “System & Securities”, view the system type. If you see the phrase “64 bit” then you need to download and install the 64-bit version as instructed below.
3. Download the appropriate zip file from the USFWS’s Indiana Bat Summer Survey Guidance Website
<http://www.fws.gov/midwest/Endangered/mammals/inba/surveys/inbaAcousticSoftware.html>

There are 4 zipped files available for download.

1. The 32 bit version of the EchoClass exe file
 2. The 32 bit version of the MCRinstaller and the EchoClass exe files
 3. The 64 bit version of the EchoClass exe file
 4. The 64 bit version of the MCRinstaller and the EchoClass exe files
4. Downloading simply the exe files is short (~ 2MB), however if you have to download the installer the file increases to about 400MB. Thus if you have to download the installer please be patient as the internet connection may time you out before completion.
 5. Unzip the folder.
 6. To run the program, simply double click the exe file to get the menu to pop up.

ORGANIZING THE DATA

Your data file structure must have at least 2 levels (no maximum) of folders for the program to run. Additionally, the structure must be consistent throughout. Keep the folder names short and do not include the “&” symbol in any folders or filenames. Also, all of the files must be in a folder named with 8 numeric characters (e.g., 20120805). As the output of the analysis software includes information from the directory structure, following the below example directory structure will populate the output with project and site information that is then ready for inclusion in a report.

Example structure:

Bats2012

Project1

Site1

20120601

20120602

Site2

20120701

1. If you select the folder 20120601 the output file would be empty
2. If you select the folder Site1 you would get results from all of the folders named with 8 numeric characters under the Site1 folder (e.g., 20120601 & 20120602)
3. If you selected the folder Project1 you would have get results from all of the folders named with 8 numeric characters in all of the sites under the Project1 folder (e.g., 20120601, 20120602, & 20120701)
4. If you selected the folder Bats2012 you would have get results from all of the folders named with 8 numeric characters in all of the sites of all of the projects under the Bats2012 folder.

RUNNING THE PROGRAM

1. Double click the file **Echoclass.exe**. A window should pop up titled **Echoclass V2** (Figure 1).
2. Click the Browse button and select the desired directory. In the example above, navigate to and select Project 1 to run all of the files contained in that project.
3. Select the appropriate **Species Set**. The map in Figure 2 is provided as a guide in selecting an appropriate species set for your area. Surveyors with detailed knowledge of the bat community for a specific sampling location should select the species set that is most appropriate.
4. Supplemental Data Options are currently not available, please do not select these
5. Click the Process Data button.
6. As the program runs a series of popups will appear and disappear. Once completed, a Microsoft Excel file titled **User ID Report** will be created in the directory that was selected in Step 2.

Figure 1. Screen shot of EchoClass pop-up window.

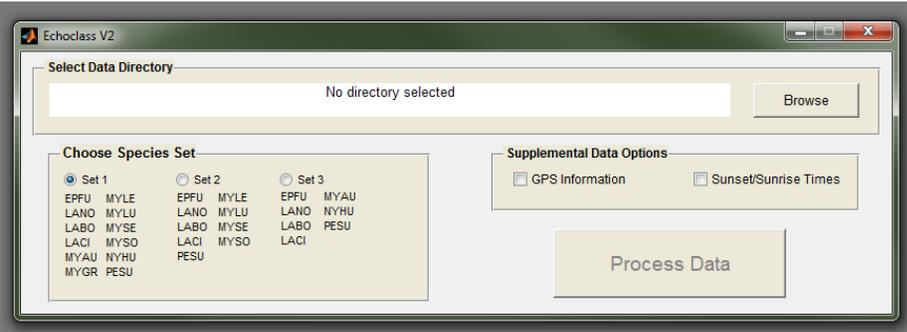
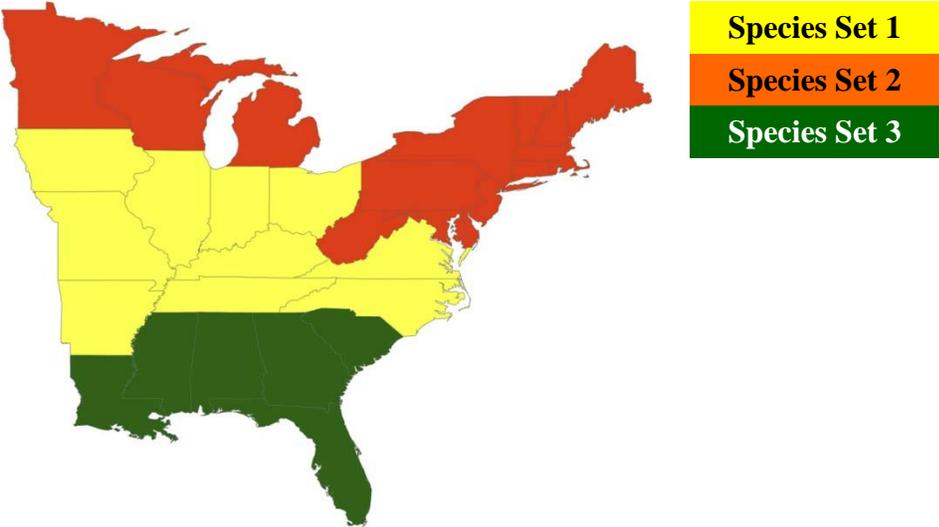


Figure 2. Generalized species set selection map



EXCEL USER ID REPORT OUTPUT

File Level Info

Left columns	your data structure (i.e. folders)
File name	The filename analyzed
Adjusted Date	The night that recording started. (e.g., a recording on June 2, 2012 at 12:01 AM will be given the adjusted date of June 1, 2012)
Time	Time in 24 hr format
Minutes Past Sunset	(Not Available)
Total Minutes Darkness	(Not Available)
Latitude(N)	
Longitude(W)	
Empty	1 if file is only noise
Original Num Pulses	The total number of bat pulses detected by filtering, regardless of quality
Feeding Buzz Removed	The number of pulses determined to be part of a feeding buzz and therefore not identified
Fragments	The number of pulses determined to be fragments
Adj Num Pulses	The Adjusted number of pulses that were determined of high enough quality to be identified (Original-Feeding Buzz-Broken-Invalid)
High	The number of Original pulses that are High Frequency (>35khz)
Low	The number of Original pulses that are Low Frequency (<35khz)
Broken	The number of broken pulses (i.e. part of call is missing between the start and end)
Species List (determined by the species set chosen)	the number of pulses in each file identified to that column's species If two bats were identified, these columns only represent the identification of the first bat
Unknown	the number of good quality pulses that could not be identified to species
Invalid	The number of pulses that were present but not attempted to be identified because there were not enough pulses present in the sequence
Prominent Species	The species to which the file was assigned
Prominent Species 2nd bat	If a second bat was present, the species of that bat (number of pulses not given)

Night Level Info

A summary of file level for each site/night combination. This includes the total number of files (i.e. sequences) and pulses (of various quality, see above for descriptions) that passed filtering. The number of files identified to each species follows.

Maximum Likelihood (ML) Results

This is the p-value for the null hypothesis that the species is falsely identified at a site on a given night, given the error rates for identification. Therefore, a low p-value indicates that a species is likely present at a site.

- -1 indicates that a species was not detected at a site and therefore not tested for MLE
- 1 indicates that a species was detected at a site but only by a single call sequence. Because of the classification rates of the species in these models, a single file is not allowed to determine presence

If you have comments or questions please contact Eric Britzke at Eric.R.Britzke@usace.army.mil