INSTRUCTIONS FOR USING THE ECHOCLASS ACOUSTIC ID PROGRAM
(Version 3.0)
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, you can install open office (www.openoffice.org)

DOWNLOADING AND INSTALLING THE SOFTWARE.
1. If you have utilized a previous version of the EchoClass software you will need to remove the Matlab Compiler Runtime.
   a. Go to the control panel and then the list of programs. Then find the Runtime Compiler and uninstall.

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. Visit the following link to download the new Runtime installer: http://www.mathworks.com/products/compiler/mcr/index.html. You will need to select the version 8.1 (2013a). Once downloaded install this program.

4. Download the appropriate file (either 32 or 64 bit) Echoclass file from the USFWS's Indiana Bat Summer Survey Guidance Website http://www.fws.gov/midwest/Endangered/mammals/inba/surveys/inbaAcousticSoftware.html

5. 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 **BAT_ID** (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. Click the Process Data button.

5. 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.

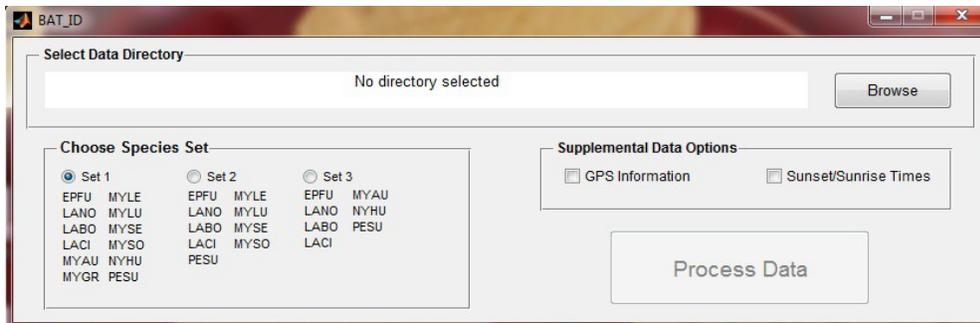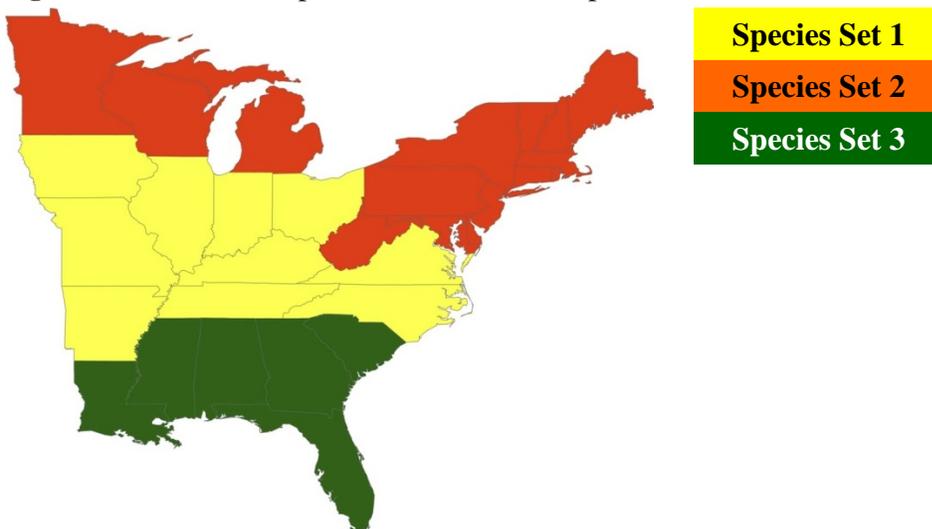**Figure 1.** Screen shot of EchoClass pop-up window.

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 would have 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	Minutes past since your sunset time (must have selected Sunset/Sunrise Times in Supplemental data options for this field to be populated)
Total Minutes Darkness	Total minutes between sunset and sunrise (must have selected Sunset/Sunrise Times in Supplemental data options for this field to be populated)
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

Night Level Info

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 with 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 of questions please contact Eric Britzke at
Eric.R.Britzke@usace.army.mil