

# **Embedding and Exporting Mobile Transect Metadata in SonoBat**

The following document provides guidance for embedding and exporting metadata in bat acoustic recordings collected during mobile transect surveys using SonoBat auto ID software. Guidance for processing stationary point data can be found at <a href="https://www.sciencebase.gov/catalog/file/get/5e3de185e4b0e">https://www.sciencebase.gov/catalog/file/get/5e3de185e4b0e</a> db47be3d6e6?name=Exporting NABat metadata SonoBat.docx

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## Attribute Metadata

- 1. Open SonoBat Data Wizard.
- 2. Click the folder icon in the top right corner of the window and navigate to the folder containing your .wav/.zc files.

🛃 SonoBat Data Wizard					-	
	Search for .wav files and subfolders a	f .wav files	To begin, select a folder	of files or drag a folder	to this control	
NABat Attributer 📃 🥣	8					
						۲ 
Copy and Attribute to Output Folder						^
Output Folder:						
q						
NABat filename must follow this formula:						
[Grid Cell][GRTSID]_[SiteName]_YYYYMMDD_H	HMMSS.wav	NABat Metadata				
Completing the NABat Metadata fields will auto	matically generate the filename.	Metadata				
Note				-		

*NOTE: In order to embed and export metadata, mobile transects must be processed individually. Select a folder containing data for a single mobile transect.* 

3. To add/update NABat metadata, select "NABat Attributer" from the dropdown menu in the top left of the window. For users with older versions of SonoBat that do not feature the NABat attributer, select "Attribute Files." Check to ensure that the input folder is still correct and navigate back to the desired folder if necessary. Once the correct input folder is selected, specify an output directory location to save the final files (there is also an option to "rename and attribute in place"). Notice that the right panel of the application fills with a display of the existing GUANO metadata in the file. This will be augmented with NABat metadata fields. Required NABat fields and optional NABat fields are outlined on pages 3-4. Users with SonoBat versions that do not include the NABat Attributer can skip to step 9.

SonoBat versions that include the automatic NABat metadata attributer, click the "NABat Metadata" button. In the pop-up window, click the box to confirm that you are processing mobile transect data.

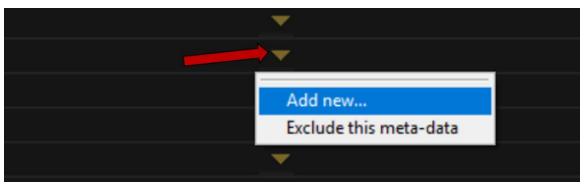
**	Suggested Meta-data		×					
	Location/Time (required) -	-						
	Must complete these data fields to fulfill minimum ABat requirements.							
	Mobile Transect: True							

The SonoBat NABat attributer is somewhat out of date, and several fields can be ignored while others must be manually entered (outlined in step 9). However, this tool is useful for entering required fields. If your mobile transect passes through > 1 cell and you have a record of the X,Y location where each call was recorded (using an external GPS or a GPS enabled detector), leave the Start/End GPS and NABat Grid Cell ID fields blank. The NABat system will use the X,Y locations to auto-assign the correct Grid Cell to each call. Otherwise, calls recorded outside the primary cell will produce a Lat/Long-Grid Cell mismatch error.

If you are unable to provide the X,Y location where each file was recorded, the NABat system will estimate the location based on user-provided spatial information for the route, timestamps of each

file, and the start/end times of the survey. In this case, <u>it is critical that users provide a spatial object</u> for the route **prior to uploading metadata**, ensure timestamps are provided for each file, provide start and end times of the route, and leave the GRTS Cell ID column of the metadata upload blank. Refer to page 15 of this document for instructions on uploading or drawing a spatial object for the route.

- 4. Complete the fields for **Site Name**, **Monitoring Start Time**, and **Monitoring End Time**, and click the arrow (bottom right) to proceed to the next page. These are required fields and must be completed before uploading data to NABat.
- 5. Complete the fields for **Surveyor** and **Habitat Type** (not required) and ignore the remaining fields. Click the arrow to proceed to the next page.
- 6. Complete fields for **Detector Type**, **Detector Serial Number**, and **Microphone Type** (not required) and ignore the remaining fields. Click the arrow to proceed to the next page.
- 7. Click "Finish" in the bottom right.
- Software Type and Species List are required fields that must be entered manually. Microphone Serial Number, Microphone Placement, and weather covariates are not required, but must also be entered manually if you wish to include these data. Guidance for manually adding metadata fields is listed in step 9.
  - \* Guidance on creating a species list is available at <u>https://sciencebase.gov/catalog/file/get/5e3de1</u> <u>85e4b0edb47be3d6e6?name=Create\_NABat\_Species\_List.pdf</u>
- 9. For users with older versions of SonoBat that do not include the NABat attributer, you must manually add metadata fields for which you have data using the instructions below:



a. To manually add a new metadata field, click on one of the yellow dropdown triangles and select "add new..."

- b. In the pop-up menu, enter one of the NABat field names exactly as it appears below (include the NABat | as well).
- c. Click the drop-down menu in the bottom left corner of the window and select "Create advanced metadata field" from the available options.
- d. Input the value for that field and click "Accept."

Create Column (Esc to Cancel)	×
Field Name	
NABat Grid Cell GRTS ID	
Value	
3773	
Create advanced metadata field - Accept	

e. Repeat the above steps for all NABat metadata fields for which you have data.

#### **Required NABat metadata fields:**

NABat   Grid Cell GRTS ID *	NABat   Activation start time *
NABat Latitude **	NABat   Activation end time *
NABat Longitude **	NABat Software type
NABat Site Name	NABat   Species List

\*\* Either GRID Cell GRTS ID <u>OR</u> Latitude/Longitude are required if no spatial object for the route is provided. If Lat/Long are provided and GRTS Cell is unspecified, NABat will auto-assign the appropriate cell. The SonoBat metadata form will automatically extract Lat/Long from files that contain embedded X,Y locations. Guidance on manually adding X,Y locations downloaded from an external GPS unit begins with step 9 of the Exporting Metadata section of this document.

#### **Optional NABat Metadata fields:**

NABat   Detector type *	NABat   Comments	NABat   Nightly High Weather Event
NABat   Detector Serial Number	NABat   Unusual occurrences	NABat   Nightly Low Wind Speed
NABat   Microphone type *	NABat   Nightly Low Temperature	NABat   Nightly High Wind Speed
NABat   Microphone Serial Number	NABat   Nightly HighTemperature	NABat   Nightly Low Cloud Cover
NABat   Microphone Placement	NABat   Nightly Low Relative Humidity	NABat   Nightly High Cloud Cover
NABat Habitat type *	NABat   Nightly High Relative Humidity	
NABat Contact information	NABat Nightly Low Weather Event	

\* These fields require specific formatting/values and the NABat system will produce errors for unrecognized values. Accepted values for each field are provided below.

#### Accepted NABat metadata formats/values

#### NABat | Activation start time:

YYYYMMDDTHHMMSS (e.g. 2019-08-13T19:30:00) \* Date and time must be separated by T

#### NABat | Activation end time:

YYYYMMDDTHHMMSS (e.g. 2019-08-15T06:30:00) \* Date and time must be separated by T

#### NABat | Detector type:

BINARY ACOUSTIC AR125|BINARY ACOUSTIC AR125-FG|BINARY ACOUSTIC AR180|BINARY ACOUSTIC AcroBat|BINARY ACOUSTIC iFR-V|PETTERSSON D1000x|PETTERSSON D240x|PETTERSSON D500x|PETTERSSON M500|TITLEY AnaBat Express|TITLEY AnaBat SD1|TITLEY AnaBat SD2|TITLEY AnaBat Swift|TITLEY AnaBat Walkabout|WILDLIFE ACOUSTICS EM-Touch|WILDLIFE ACOUSTICS EM-Touch2|WILDLIFE ACOUSTICS EM-TouchPRO|WILDLIFE ACOUSTICS EM3/EM3+|WILDLIFE ACOUSTICS SM2Bat+|WILDLIFE ACOUSTICS SM2Bat-192|WILDLIFE ACOUSTICS SM3Bat|WILDLIFE ACOUSTICS SM4BAT-FS|WILDLIFE ACOUSTICS SM4BAT-ZC|WILDLIFE ACOUSTICS SMMINI-BAT

#### NABat | Microphone type:

Pettersson M500 | TITLEY AnaBat Swift | Wildlife Acoustics SM3-U1 | Wildlife Acoustics SMM-U1 | Wildlife Acoustics SMM-U2 | Wildlife Acoustics SMX-U1 | Wildlife Acoustics SMX-US | Wildlife Acoustics SMX-UT | generic Directional | generic Internal | generic Omni-directional

#### NABat | Software Type

SonoBat 3.x | SonoBat 4.2 | SonoBat 4.x

### **Rename Files**

Users who attributed metadata using the NABat attributor can skip the renaming steps. The NABat Metadata attributor automatically renames files based on user-provided metadata.

 If your detector automatically embeds a date/time stamp into call files, these data should autopopulate and appear in the "Audio Recording Time" column of the SonoBat output in step 4 of the Exporting Metadata section. If so, files are not *required* to follow the NABat file naming format. However, following the NABat naming format is still strongly advised. Users should ensure that files contain an embedded date/time stamp before skipping the renaming process. Otherwise, file names must adhere to the NABat naming format outlined in the guidance below.

NABat naming format: GRTSID\_SITENAME\_YYYYMMDD\_HHMMSS.wav/zc

(e.g. 3773\_SW\_20190813\_215333) \*Fields MUST be separated by an underscore. Any other symbol or character will cause errors and files won't be recognized by the NABat system.

2. Select "Filename Editor" from the drop-down menu in the top left of the SonoBat Data Wizard.

💰 SonoBat Data Wizard		- 🗆 ×
Search for .wav files and subf	folders of .wav files 115 files found	
Filename Editor		
	Preview of filename changes:	
Rename all files	NABAT-1085NW_20170630_215350.wav	20170630_215350.wav
Filename Prefix:	NABAT-1085NW_20170630_231058.wav	20170630_231058.wav
Timestamp	NABAT-1085NW_20170630_231810.wav	20170630_231810.wav
	NABAT-1085NW_20170630_232434.wav	20170630_232434.wav
	NABAT-1085NW_20170630_234121.wav	20170630_234121.wav
	NABAT-1085NW_20170630_235449.wav	20170630_235449.wav
	NABAT-1085NW_20170701_000442.wav	20170701_000442.wav
This tool adjusts the filename only and does not adjust the meta-data at this time	NABAT-1085NW_20170701_000451.wav	20170701_000451.wav
	NABAT-1085NW_20170701_001752.wav	20170701_001752.wav

- 3. Add the Grid Cell GRTS ID and Site Name in the renaming window. This strips the text before the date/time stamp and adds a new prefix. However, the system may separate the new prefix and the date/time stamp with a dash rather than an underscore. All fields MUST be separated by an underscore. This can be corrected using the "rename with wildcards" function, available from the drop-down menu above the prefix box.
- 4. Use the "rename with wildcards" option to perform a "find-and-replace." Enter the text you wish to replace in the "seach pattern" field and the text you wish to replace it with in the "replace search pattern with" field. A preview of the resulting file names is provided, so you can tweak the formula before making final changes. Click "Edit Filenames" when you're ready to update the file names. You might need to make multiple file renaming runs to achieve the desired format.

## **Noise Scrubbing**

- 1. Open SonoBat Data Wizard.
- 2. Click the folder icon in the top right corner of the window and navigate to the folder containing your .wav/.zc files.
- 3. Click the drop-down menu in the top left and select "Batch File Scrubber."
- 4. Select "medium" from the filter options and ensure the appropriate frequency filter is selected.
- 5. Click "Scrub" in the bottom left of the window.

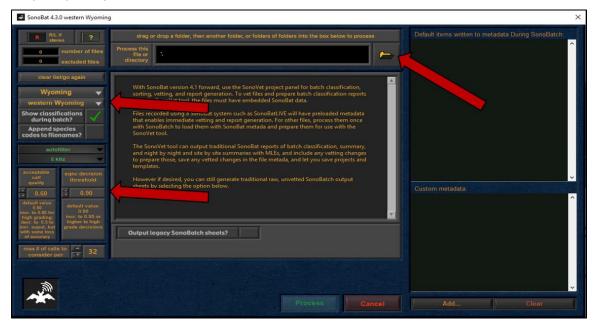
🔏 SonoBat Data Wizard		-	
Sec	rrch for .wav files and subfolders of .wav files	261 files found	ĺ
Batch File Scrubber	ebinar_Training\Unprocessed_Files\Stationary\SITE_1		
Please check that the designated file path- specifies the directory you wish to scrub. If you, attributed a set of files, you may need to specify output directory from that operation (the original path may remain in the path control above).			
The <b>Batch Scrubber</b> will scan through the specified di to recognize files lacking bat calls, for example files trig noise and move them into a directory named "Noise Fi the same directory as the searched files. The search log signals with a smooth trend in frequency. All but the w (and probably unusable) bat signals will remain in plac	gered by les" in ic seeks		
Note: SonoBatch will ignore files in folders named "Noise Files," "Deleted Files." or "Scrubbed Files."			
(medium) accepts all but poor quality calls; accep some noise with tonal content			
Search 20 kHz and above for bats			
If stereo file: Scan right cha	innel		
Noise files scrubbed Files with bat tonal feature			
0 0			
Scrub			

# **Assign Species IDs**

1. Open SonoBat universal and click the "SonoBatch" button in the lower left corner.

SonoBat 4.3.0 western Wyoming		500.00 kHz/16 545mono fa: 500 429410 TEST_20190826		compressed	ø ×
123- 123- 130- 190- 50- 50- 50- 50- 50- 50- 50- 50- 50- 5					File drop sound play sound Man 10 config upper transition for the formation for the formation format
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- 2. Click the folder icon in the top center of the window and navigate to the folder containing files you wish to process.
- 3. Select the classifier most appropriate for your location and recording conditions using the dropdown menus on the left side of the window.
- 4. Ensure "Append species codes to filenames?" is **not** selected.
- 5. Select "autofilter" in areas without low-frequency bat species and "auto-low" in areas with low-frequency bats present.



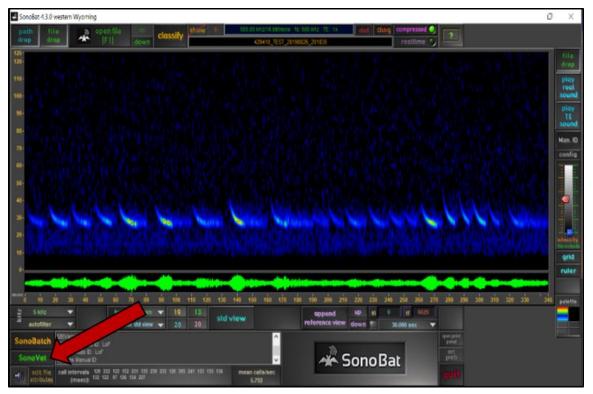
- 6. Set "acceptable call quality" to 0.80.
- 7. Set "sqnc decision threshold" to 0.90.
- 8. Set "max number of calls to consider" to 16.
- 9. Click "Process" in the bottom center of the window.

The "Guide to Processing Bat Acoustic Data for the North American Bat Monitoring Program" (<u>https://62dc12a5-f8a6-4e76-9a85-99a0a4197512.usrfiles.com/ugd/62dc12\_177ea7985796420699</u> <u>d87e630f9ca053.pdf</u>) provides detailed guidance for assigning species IDs using SonoBat and the manual vetting process.

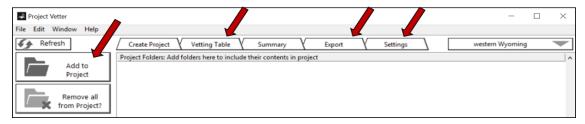
## Export Metadata into NABat Bulk Upload Template

The following steps can be used to export metadata from all processed deployments, resulting in a single CSV with metadata from numerous sites. Simply select the parent folder that contains all your processed deployments and follow the steps outlined below. The presence of non .wav files in the folder will not interfere with this process. SonoBat will ignore non .wav files.

1. Open SonoBat universal and click the "SonoVet" button in the lower left corner.



- 2. Click the "Add to Project" button in the Project Vetter window and navigate to the folder containing .wav/.zc files that have been processed, renamed (if necessary), and contain all required metadata. NABat requests that users provide metadata for scrubbed NOISE files. However, SonoBat automatically ignores any folder labeled "Noise Files", "Deleted Files", or "Scrubbed Files." To ensure scrubbed files load in the SonoVet table, rename folders containing scrubbed files as "NOTBAT" before loading folders in SonoVet.
- Click the "Settings" tab on the top menu bar and click the "Load Layout" button to load the NABat metadata form, available for download at <u>https://www.sciencebase.gov/catalog/item/5dcdd2b5</u> <u>e4b069579760b15a?name=NABat Metadata SonoBat Mobile.xml</u>.
- 4. Click the "Vetting Table" tab from the top menu bar. Make sure all required fields have values and that all fields for which you entered data are filled.



5. If everything is correct, click the "Export" tab from the top menu bar. Select a destination folder to save the metadata file and select "Output null as "" " or "Output null as an empty cell" from the dropdown menu in the bottom center of the window.

Save to the following Directory: <not a="" path=""></not>		
Filename:	.txt	
Use current layout	Output null values as an empty cell	Save to File

- 6. Click "Save to File."
- 7. The resulting .txt file must be converted to a .csv file. To convert the file in Excel, open a new workbook, click the Data tab → "Get Data" → "From File" → "From Text/CSV."
  - \* Note: depending on your version of Excel, the process may vary slightly.
- 8. In the pop-up window, navigate to the SonoBat text file and click "Import." Select "Tab" as the "Delimiter" and click "Load" in the bottom right of the window. Your data will now open in an Excel spreadsheet.
- 9. Users who recorded latitude and longitude of calls with an external GPS unit must manually add X,Y locations to the bulk metadata spreadsheet. To begin, download the locations file from your GPS unit. This is typically in the form of a text file with a column for filename, latitude, and longitude. Users with GPS enabled detectors that embed X,Y locations into call files (the latitude/longitude columns of your CSV will already contain data) can skip to step 16 (page 12).

GPS_Example - Notepad		
File Edit Format View Help		
File LATITUDE LONGITUDE		
61141_THRORD_20140811_204216.wav	46.95887	-103.50437
61141_THRORD_20140811_204223.wav	46.95887	-103.50437
61141_THRORD_20140811_204235.wav	46.95869	-103.50472
61141_THRORD_20140811_204242.wav	46.95820	-103.50483
61141_THRORD_20140811_204249.wav	46.95794	-103.50497
61141_THRORD_20140811_215151.wav	46.94906	-103.50163

10. Next, import the text file into Excel:

- a. Open a new spreadsheet. Click the "Data" tab and select "Get Data" → "From File" → "From Text/CSV."
- b. Navigate to your GPS text file and click "Open."

Aut	toSave 💽 Off	回ゥ・	<. ▪										
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	From Databa	ise	· 🗈	From <u>T</u> ext/CSV									
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	From Online	Services	+ JSON	From JSON		comma-sepa formatted te	rated value dt (space de	limited) f	ile.				

c. A dialogue box will appear with a preview of the data to be imported. The GPS text files are typically tab delimited. If your data are properly sorted into columns, click "Load." If not, use the "Delimiter" drop-down menu to select the appropriate delimiter and click "Load."

GPS_Example.txt			• ·	
File Origin	Delimiter		Data Type Detection	
1252: Western European (Windows)	* Tab		▼ Based on first 200 rows ▼	[a
File	LATITUDE	LONGITUDE		
61141_THRORD_20140811_204216.wav	46.95887	-103.50437		
61141_THRORD_20140811_204223.wav	46.95887	-103.50437		

11. When your data are loaded into an Excel spreadsheet, click the "Sort and Filter" button (under the Home tab) and select "Custom Sort."

Auto	Save 💽 Off	日ゥ・	Q- •		Book1 - Ex	cel		Table T	ools Query	Tools			imith, Dan	e (Contra	ictor) A	SD	B			<	
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			204235.wav	46.95869	-103.50472																
5 611	41_THRORD	20140811	204242.wav	46.9582	-103.50483																

12. In the dialogue box, sort the document by the column containing your filenames.

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+ Add Level X Delete Level	[ <u>□</u> <u>C</u> opy Level	ns My data has <u>h</u> eaders
Column	Sort On	Order
Sort by File 🗸	Cell Values 🗸	A to Z

- 13. Next, open the CSV containing your transect metadata. Follow steps 11-12 to sort the metadata document by the Audio Recording Name column.
- 14. The two Excel documents (metadata CSV and GPS spreadsheet) should now be sorted by filename. Double check to ensure that the filename columns match.

THRO Transect Metadata	AutoSave 💽 🗄 🏸 🤍 🗧	GPS_Example - Excel
Review View Help $ ho$ Search	File Home Insert Page Layout Fo	ormulas <mark>Data</mark> Review Vie
m 100% Zoom to Selection definition of the selection definition def	Get Data ~ 🗑 From Table/Range	Refresh All + B Edit Links
Zoom Win	Get & Transform Data	Queries & Connections
ble Content	SECURITY WARNING Application add-ins have be	een disabled. Enable Content
	B1 ▼ : × √ f <sub>x</sub> LATITUI	DE
X Y	A	B C D
ent Higl Audio Recording Name (*wav *zc) 🔰 Sof	1 ile 🔽 LATIT	UDE 🔽 LONGITUDE 🔽
16085_THRORD_20140811_204216.wav KA	2 61141_THRORD_20140811_204216.wav 4	6.95887 -103.50437
16085_THRORD_20140811_204223.wav KA	3 61141_THRORD_20140811_204223.wav 4	6.95887 -103.50437
16085_THRORD_20140811_204235.wav KA	4 61141_THRORD_20140811_204235.wav 4	6.95869 -103.50472

15. If the documents are sorted properly, you can now copy and paste the latitude and longitude columns from the GPS file into the metadata CSV. Select the latitude and longitude columns of the GPS document. Highlight the latitude and longitude columns, right click, and select "Copy." Next, select the Latitude cell of the first call for the deployment, right click, and select "Paste." The Latitude and Longitude columns should now be filled with the corresponding values.

THR	O Transect Metadata - Excel	Smith, I	Dane (Contra	ictor) A SD [	Ð			AutoS	ave Off	89				
w <u>View</u>	Help $ ho$ Search			පි	Share	₽ Comme	nts	ile	Home	Insert	Page Layout	Formulas	Data	Review
% Zoom to Selection	New Arrange Freeze Hide Window All Panes - Unhide	ED View Side by Side     D     Synchronous Scro     E     Reset Window Pos	lling Sv	vitch dows *				Get	From Text, From Web		Recent Source	nections Re	Proj	
oom		Window		Macros			^	-	Get	& Transfo	m Data			Connectio
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Audio Recor	rding Name (*wav *zc)	Softare Type	AUTO ID*	Species List	at B	I ≣ 🌺 -	<u>A</u> -	⊞••	iii →ii 🗳	A		LATITUDE	LONCITU	
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16085_THRC	DRD_20140811_215151.wav	KALEIDOSCOPE 5.1.X	NoID	SOUTH DAKOTA		LU L123 L	Ix LS	1	20		1_215151.wav	46.9490		50163
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- 16. For the NABat system to read your metadata, the column headers created by SonoBat must be replaced with the metadata field names from the NABat template. To do so: select and copy all the tab-separated column headers from Table 1 (page 14), select cell A1 of your spreadsheet, and paste the new column headers (which will now fill the first row of your spreadsheet).
- 17. The specific software version must now be manually added. Highlight the "Software Type" column, and using the find/replace function, replace "SonoBat" with "SonoBat 3.x," "SonoBat 4.2," or "SonoBat 4.x," depending on your specific software version.
- 18. Click File → Save As, select the folder where you wish to save the metadata spreadsheet, give the file a unique and descriptive name, and select "CSV (Comma delimited)" from the "Save as type" dropdown.
  - \* The NABat system will automatically overwrite duplicate file names with the most recent version, so it is critical that your file name is unique.
- 19. Your metadata is now ready for upload to the NABat Partner Portal. Open your NABat project page, click the blue "Upload Survey Data" button in the top right, select "Mobile Acoustic Transect," click "Full Metadata," and navigate to the metadata file you just renamed.

20. Once the file is selected, a preview window will appear with any errors highlighted in red. If the "Survey Start Time" and "Survey End Time" columns appear in red, ignore (this is caused by a minor formatting mismatch that our system will accept). Correct any other errors (use the drop-down menus to determine the correct formatting and accepted inputs), save the updated file, and click the refresh button in the top left of the preview window. Ensure all errors have been corrected and submit the metadata file to your project page.

K				
Y Survey at Time 1	✓ Survey End Time 1	✓ Detector 👔	✓ Detector Serial Number	✓ Microphon
mestamp e., 25/2018   12/25/2018 10:00 PM   12/25/2018 20:00:00   12/25/2018 08:00:00 AM   2018-12-25720:50:58 guired	Timestamp e.g. 12/25/2018   12/25/2018 10:00 PM   12/25/2018 20:00:00   12/25/2018 08:00:00 AM   2018-12-25T20:50:58 Required	BINARY ACOUSTIC AR125	String	Pettersson MS
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
I/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
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1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, 5:45:00 AM	Anabat Swift		
1/2015, 8:30:00 PM	7/8/2015, \$:45:00 AM	Anabat Swift		
1015 02000 DM	7/9/2015 5-45/20 AM	Analysis Collin		,

\* Rows with errors are dropped/ignored by the NABat system, so it is crucial that errors are corrected before the file is uploaded. Otherwise, metadata for those rows will not be saved in the NABat database. Once the metadata file has successfully uploaded, it should appear under the "Bulk Upload" tab of your project homepage. The number of rows processed and rows with errors will be listed. If errors are present in the uploaded document, click the blue hyperlink in the "Errors Found" column to download a CSV identifying which rows have errors and what error occurred (final two columns of the document). Correct the errors in the original document, and re-upload.



#### Table 1. NABat metadata column headers for mobile acoustic surveys.

| GRTS Cell Id Location Name Survey Start Time Survey End Time Detector Detector Serial Number Microphone Microphone Serial Number Microphone Placement Contact Comments Unusual Occurrences Event Low Temperature Event High Temperature Event Low Relative Humidity Event High Relative Humidity Event Low Weather Event Event High Weather Event Event Low Wind Speed Event High Wind Speed Event Low Cloud Cover Event High Cloud Cover Audio Recording Name Audio Recording Time Latitude Longitude Software Type Auto ID Manual Id **Species List** 

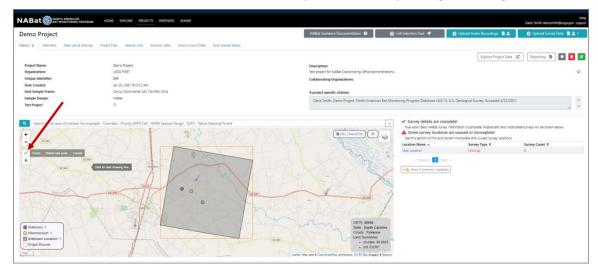
## Saving Transect Routes in NABat

Although it is not required, providing spatial data for the full transect route is important for future analyses. Users can easily upload/save mobile transect routes in NABat by drawing the route in NABat's cell selection tool (guidance below) or uploading a KML or geojson (page 17).

### **Drawing Mobile Transect Routes**

For users who did not record transect routes using a GPS unit (recommended), NABat provides the ability to draw mobile transect routes using the cell selection tool. This process should be completed before uploading route metadata. However, if metadata were added before adding route data, complete the steps below to add route data, then click the "Bulk Upload Status" tab from the project homepage and click the "Reprocess" button beside the upload that contains route metadata.

- 1. From your project homepage, scroll down to the project map, located below the project details.
- 2. Navigate to the GRTS cell where you wish to draw a mobile transect route (the search bar above the map includes a variety of filters including GRTS Cells, land jurisdiction, state, county, etc.).
- 3. Click the "Mark a transect route" button in the top left of the map to begin drawing the transect.



- 4. Click along your desired route. The mapping tool will drop points with each click and connect the points with a line. The mapping tool will also display the total length of the route.
- 5. When finished, either click "Finish" beside the "Make a transect route" button or click the last point on the route.
- 6. A dialogue box will appear with the option to edit route details. Name the transect, provide a description (if you wish), select "Transect Route" from the Survey Type drop-down menu, and save.

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	New Location
	Description SC 51 NABlat survey Location
	Survey Type
Scratton	Created On
	2021-02-22T1-02-03-148168 No surveys at this location.
Stationary: 1	No serveys at this located.
O Hibernaculum: 1	
Unknown Location: 1 Cooped	

- 7. The route can now be linked to your transect metadata in two ways:
  - a. List the transect name you just saved as the "Location Name" in the transect metadata upload. The names *must match exactly*. This will link the route you just saved to the route metadata. If metadata were uploaded before drawing the route, name the route (step 6) with the same name listed as the transect "Location Name," navigate to the "Bulk Upload Status" tab of the project homepage, and click "Reprocess" beside the upload that contains route metadata.

	А	В	С	D	E	F	G	н	1	J	к	L	м
1	GRTS Cell ID	Location Name	Survey Start Time	Survey End Time	Detector	Detector S	Micropho	Micropho	Micropho	Broad Hat	Contact	Commen	Transect C Un
2	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
З	16085	Test Route	2014-08-11-20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
4	16085	Test Route	2011 08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
5	16085	Test Route 🛛 🖌	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
6	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
7	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EN	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
8	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
9	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EN	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
10	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
11	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
12	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
13	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
14	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov
15	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	Acoustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.gov

b. Create a new mobile transect deployment in the user interface by navigating to the corresponding cell number on your project homepage, clicking the triangle beside the cell number to expand, clicking "Mobile Acoustic Transect Deployments," clicking , selecting single entry, and using the "Survey Features" drop-down menu to select the route you created in steps 1-6 (Figure 1, Figure 2). Complete the rest of the required metadata and then click the green "Save" button in the bottom right. This method can also be used to add route information to transect metadata that has already been uploaded to NABat. In this case, users must select the existing route (following the guidance above), expand the route information, and click the green "Edit Deployment Details" button in the top right of the deployment screen. Users can then select the saved route using the "Survey Features" drop-down menu (Figure 3).

EST PROJECT		
Details () Members Files Species Lists A	countin Data Bulk Upload	
Project Key:	82c85125-0a1a-47cb-9545-370a40f128e9	
Date Created:	September 4, 2019 at 10:19:27 AM GMT-0	
Owning Organization:	USGS FORT 2150 Centre Ave. Bldg C Fort Cotins, CD 80526	
Sample Frame:	Conus (Continental US) 10x10km Grid	
the Cull Selection Tool or built upload process to add addition    GRTS Cell ID: 2717	di nurvajni locatilanis. 👔	
GRTS Cell ID: 2749		
Stationary Point Accustic Org	kyments 🗈 -	Mobile Acoustic Terrisci Deploymenti: 🍙 -
No Mobile Acoustic Transact Deployments. To Add, click	on the 🚺 dropdown above.	Single Entry 🕼

Figure 1.

Create a New N	Aobile Trans	ect Acoustic	Deployme	nt				
Date Time Range 🛗								
Date Time Range fo	r Deployment							
Set Time based on GR	IS Location End Time:	45 minutes after Sunset 1 hour 45 minutes after Sunset se manually adjust for timezon		regions				
Choose an existing trans Survey Features Test Tramsect x	sect route within the	his cell. 🡔						
UnSelect All								
Test Tramsect					Maloney	1 7	P. Martin C.	
					[83]			12

Figure 2.

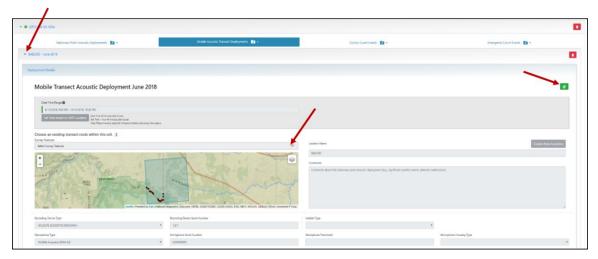


Figure 3.

#### Uploading Route Data in the Project Map

Users who record mobile transect routes using a GPS unit can upload that data directly into the project map as a KML or geojson file and save the route data as a spatial object. This process should be completed before uploading route metadata. However, if metadata were added before adding route data, complete the steps below to add route data, then click the "Bulk Upload Status" tab from the project homepage and click the "Reprocess" button beside the upload that contains route metadata.

Most GPS units save and export spatial data as GPX files, and many users are unfamiliar with the geojson and KML file formats. Luckily, most spatial file formats can easily be converted to KML or geojson using free online conversion tools. Simply perform a web search for "*convert* <u>your file format</u> to geojson/KML" for a long list of options. Once the file has been converted, follow the guidance below.

1. From your project homepage, scroll down to the project map, located below the project details.

2. Click the "KML | GeoJson" button in the top right of the map.

	HOME EXPLORE PROJECTS PARTNERS ADMIN					Dane Smith danesmith@usg	Help gs.gov Logout
Demo Project			NABat Guidance Documentation	Cell Selection Tool ◀	😮 Upload Audio Recordings 🛯 🛓	Upload Survey Data	841
Details 👔 Members Data Use & Sharing	Project Files Species Lists Acoustic Data Colony Co	unt Data Bulk Upload Status					
					Explore Project Data	🕑 Reporting 🖪 🔲	
Project Name:	Demo Project		Description:		L		
Organization:	USGS FORT		Test project for NABat Coordinating Office demonstra	ations.			-0-
Unique Identifier:	869		Collaborating Organizations:				
Date Created:	Jan 20, 2021 915:12 AM						
Grid Sample Frame:	Conus (Continental US) 10x10km Grid		A project specific citation:				
Sample Design:	NABat		Dane Smith. Demo Project. North American Ba	t Monitoring Program Database v6.0.12	U.S. Geological Survey. Accessed 2/22/202	3.	
Test Project							1 *
+ - KSB / Frish Dakes lad poet Coros 0 KSB	Die Verlander, Rooty GITS Celf, WARA Speeces Ranger, 199 Cel Manat anengen (Cel Manat anengen)			A Some survey focations that is action for a via of the state state of the state is a finance 1 with the state of the state of the state of the state of the state of the sta		Sorrey Count 9	

- 3. Navigate to the .geojson/.kml file and click "Open."
- 4. A dialogue box will appear with the option to edit route details. Name the transect, provide a description (if you wish), select "Transect Route" from the Survey Type drop-down menu, and save.



- 5. The route can now be linked to your transect metadata in two ways:
  - a. List the transect name you just saved as the "Location Name" in the transect metadata upload. This will link the route you just saved to the route metadata. The names *must match exactly*. This will link the route you just saved to the route metadata. If metadata were uploaded before drawing the route, name the route (step 4) with the same name listed as the transect "Location Name," navigate to the "Bulk Upload Status" tab of the project homepage, and click "Reprocess" beside the upload that contains route metadata.

	А	В	С	D	E	F	G	н	1	J	к	L	м	
1	GRTS Cell ID	Location Name	Survey Start Time	Survey End Time	Detector	Detector S	Micropho	Micropho	Micropho	Broad Hab	Contact	Commen	t Transect (	GUn
2	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
з	16085	Test Route	2014-08-11-20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EN	43/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
4	16085	Test Route	2011-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EN	V3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
5	16085	Test Route 🛛 🚽	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EM	V3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
6	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EN	43/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
7	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
8	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EN	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
9	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics El	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
10	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics El	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
11	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EM	43/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
12	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EN	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
13	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
14	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EN	43/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov
15	16085	Test Route	2014-08-11T20:40:00-06:00	2014-08-11T21:15:00-06:00	Wildlife A	coustics EM	M3/EM3+	56789	Roof	agricultur	danesmit	h@contrac	tor.usgs.go	ov

b. Create a new mobile transect deployment in the user interface by navigating to the corresponding cell number on your project homepage, clicking the triangle beside the cell number to expand, clicking "Mobile Acoustic Transect Deployments," clicking :, selecting single entry, and using the "Survey Features" drop-down menu to select the route you created in steps 1-6 (Figure 4, Figure 5). Complete the rest of the required metadata and then click the green "Save" button in the bottom right. This method can also be used to add route information to transect metadata that has already been uploaded to NABat. In this case, users must select the existing route (following the guidance above), expand the route information, and click the green "Edit Deployment Details" button in the top right of the deployment screen (Figure 6). Users can then select the saved route using the "Survey Features" drop-down menu.

ST PROJECT					
tals () Members Files Species List	Acountic Data Bulk Upload				
Project Key:	82x85125-0a1a-47xb-8545-870a40f128e9				
Date Created:	September 4, 2019 at 1019:27 AM GMT-6				
Owning Organization:	USGS PORT 2150 Centre Ave. Biog C Fort Coltins. CC 40526 Conus (Continental US) 10/10km Grid				
Sample Frame:					
he Cirl Selection Tool or bulk upload process to add GRTS Cell ID: 2717	additional surveys locations. 👔				
• • GRTS Call ID: 2749					
Stationary Point Accu	tic Deployments 🖪 •	Mobile Acoustic Transact Deployments 🕒 -			
No Mobile Acoustic Transact Deployments. To Add, click on the TTT dispdown above.		Single Entry 😰 CSV Upload 🏛			

Figure 4.

Create a New Mobile	Transect Acousti	c Deploymer	nt			
Date Time Range 🗰						
Date Time Range for Deploym	ent					
Set Time based on GRTS Location	Start Time: 45 minutes ofter Sunset End Time: 1 hour 45 minutes after Suns Note: Please manually adjust for timea		rgions			
Choose an existing transect route Survey Features	within this cell. 1					
UnSelect All						
Test Tramsect						
				Maloney [83]	NET A	1

Figure 5.

5 / 4 KR 1854			
Stationary Point Acoustic Deployments 🛅 •	Mable Accusic franset Deployments 🗈 -	Colony Count Events 🗈 •	Emergence Count Events 🗈 -
UID - June 2018			
syment Details			
Mobile Transect Acoustic Deployment	June 2018		
Date Time Range			
6/13/2018, 908 PM - 6/13/2018, 1030 PM		,	
Set Time toold on GED Location for firm the own de love for firm the own de love for firm theory devices of firm firm result electric theory of	teach nay name uan allow		
Choose an existing transect route within this cell.			
Select Survey Features		Laction Name	Create New Location
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· Carles and	The second secon	Comments	
- The second second	the second state of the se		allocases determined
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WILDUPS ACOUSTICS BHO/DMD+	* 127		
Microphane Type	Microphene Serial Number	Microphane Pacenant	Manaphane Housing Type

Figure 6.