



NABat

Preparing Acoustic Recordings for Upload

The following document provides guidance on preparing bat acoustic recordings for upload to the NABat database, including renaming files, embedding survey metadata, compressing files into an appropriate format, and using the NABat user interface to upload files to the appropriate NABat project.

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NABat File Naming Format

NABat no longer requires that filenames follow the NABat formatting guidelines **IF** files contain an embedded timestamp and timestamps for each recording are included in the metadata upload CSV. Most detectors embed these data in all recordings, and the timestamp will auto-populate for users who process data in Kaleidoscope or SonoBat using NABat metadata forms. However, before processing large datasets and skipping the renaming process, users are strongly advised to examine a sample call from each detector type employed to ensure these data are present. Furthermore, NABat still encourages users to follow the file naming format outlined below.

In order to properly identify acoustic files and match them to survey site metadata, NABat requires that .wav and .zc files (**which do not contain an embedded date/timestamp**) are named using the following format:

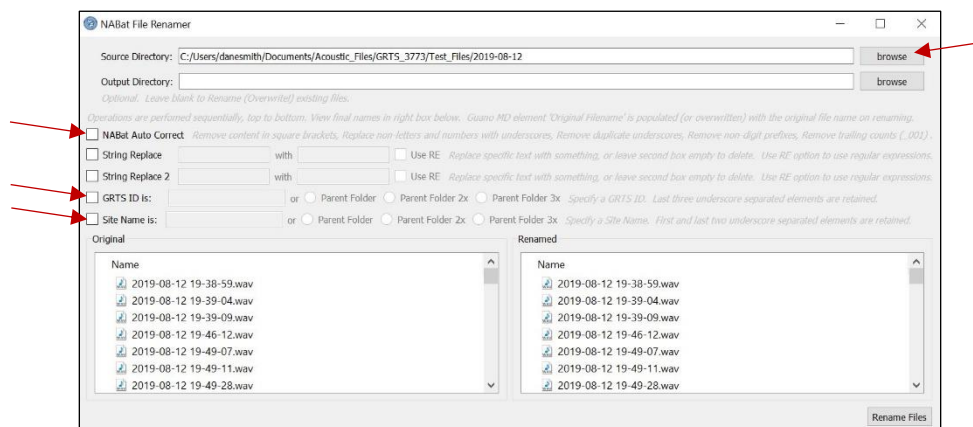
GRTS ID_LOCATION NAME_RECORDING DATE_TIMESTAMP.wav/zc *

- **GRTS ID:** GRTS Cell ID Number
- **SITE ID:** ≤ 6 Character Name for Survey Location
- **RECORDING DATE:** YYYYMMDD
- **TIMESTAMP:** HHMMSS
- **Example:** 3773_SW_20190813_221633
 - Call recorded in GRTS cell 3773 in the southwest quadrant on August 13 2019 at 10:16:33 pm.

- * Fields **MUST** be separated by an underscore and **MUST** end with the timestamp and file extension
- * Kaleidoscope and SonoBat commonly attach a numeric suffix or species code to the end of processed files. Therefore, users should check processed files (even if they were named correctly when analyzed by the software) prior to uploading to ensure no suffix has been added to the filename.
- * A tool for bulk editing acoustic recording filenames (**NABatFileRenamer.exe**) is available for download at <https://github.com/talbertc-usgs/GuanoMDEditor/releases/tag/0.0.1>.

Using the NABat File Renaming Tool

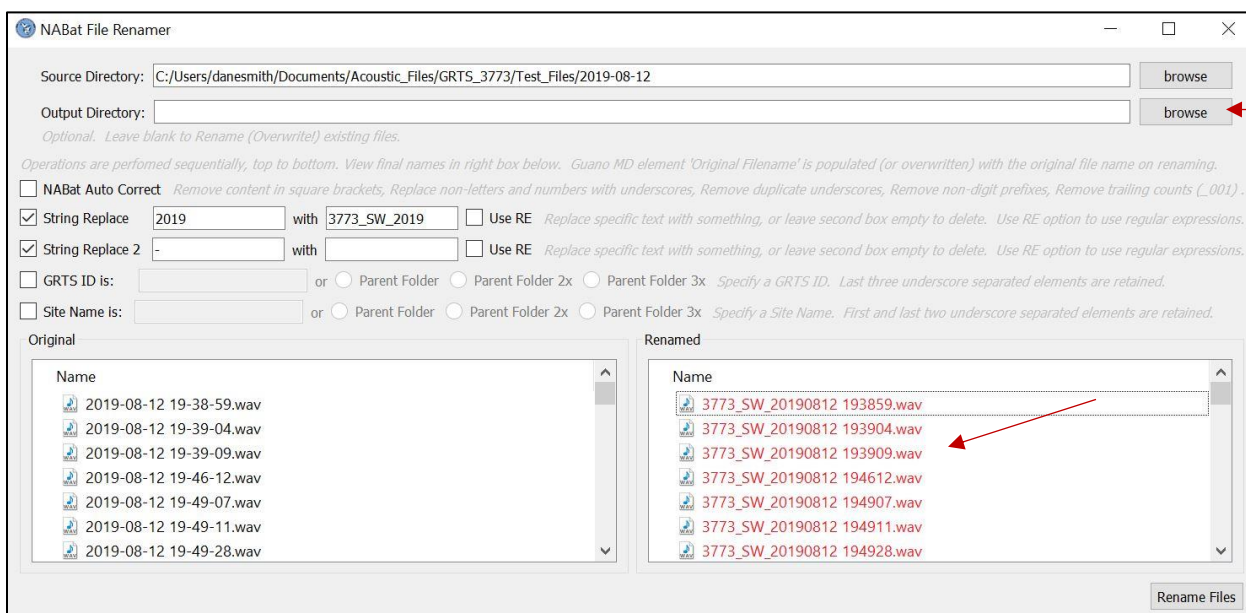
1. Click "browse" to the right of the "Source Directory" box and navigate to the folder containing the files you wish to rename. All files within the selected folder will appear in the white boxes beneath the renaming tools.



2. Click the NABat Auto Correct box to remove superfluous characters from the filename.
3. Click the "GRTS ID is" box and enter the GRTS ID for your survey.
4. Click the "Site Name is" box and enter the ≤ 6-character site name.
5. Use the "String Replace" fields to replace dashes or other symbols with underscores or to replace/correct any other text or symbols.

* The string replace can be used to delete, rather than replace, unnecessary symbols (like dashes) within the date or timestamp by entering the symbol to be removed in the left box and leaving the right box empty.

6. As you specify edits within the NABat File Renamer, a red preview of the new filenames will appear in the bottom right box. Review the new filenames to ensure you have correctly edited the original names (in the below example, the filenames are still missing an underscore between the date and timestamp).



7. Once you have properly formatted the filenames, click "Rename Files" in the lower right corner to save the changes. This will overwrite the original filenames, and the newly renamed files will be available in the original folder. **If you wish to retain the original filenames and create new files with edited names, choose a destination for the newly named files using the "browse" button to the right of the Output Directory field at the top of the file renamer.** The NABat Renaming Tool will create new files with the edited names in this folder and retain the original filenames in their original location.

Embedding NABat Metadata in Acoustic Recordings

NABat uses the GUANO (Grand Unified Acoustic Notation Ontology) metadata format. All files are required to include metadata values for **GRTS ID or Lat/Long, Site Name, Activation Start/End Time, Auto ID or Manual ID, Software Type, and Species List**. Users are also encouraged to include additional metadata if possible (Table 1).

Metadata can be added to files using automated ID software.

Instructions for adding **stationary point metadata in Kaleidoscope** are available at [Kaleidoscope \(Stationary\) | NABat \(nabatmonitoring.org\)](#)

Instructions for adding **mobile transect metadata in Kaleidoscope** are available at [Kaleidoscope \(Mobile\) | NABat \(nabatmonitoring.org\)](#)

Instructions for adding **stationary point metadata in SonoBat** are available at [SonoBat \(Stationary\) | NABat \(nabatmonitoring.org\)](#)

Instructions for adding **mobile transect metadata in SonoBat** are available at [SonoBat \(Mobile\) | NABat \(nabatmonitoring.org\)](#)

Compressing Acoustic Recordings for Upload to NABat

Due to restrictions on the federal network, compressed folders larger than 3 GB will not upload successfully. Therefore, users with .wav files are advised to apply the below guidance to individual nights of each deployment in order to avoid creating oversized folders.

Compressed filenames CANNOT contain spaces. Filenames containing spaces will not be unpacked by the NABat database, and files will not be matched to metadata. Users must remove spaces or replace them with underscores prior to uploading .tar.gz files to the NABat database.

NABat advises users to compress nightly call folders before uploading the data. This greatly reduces upload times and errors. Currently, NABat accepts compressed folders in the .tar.gz format. The NABat renaming tool includes an option to compress folders into the .tar.gz format by clicking "Create tarball" in the bottom right corner of the window.

Windows users can also compress folders into .tar.gz format using 7-zip:

1. Right click the folder you wish to compress → 7-Zip → Add to Archive
2. Select "tar" from the "Archive Format" drop-down menu
3. Click "OK"
4. Right click the newly created .tar file → 7-Zip → Add to Archive
5. Select "gzip" from the "Archive Format" drop-down menu
6. Click "OK"

A compressed .tar.gz file will be created in the same location as the original folder and is now ready for upload to the NABat site.

Table 1. NABat recognized GUANO metadata fields for stationary acoustic surveys, restrictions, and examples.

GUANO Field	Required	Units/Restrictions	Example formatting
NABat Grid Cell GRTS ID	YES*	—	3773
NABat Site Name	YES	≤ 6 characters	SW
NABat Activation start time	YES	YYYY-MM-DDTHH:MM:SS	2019-08-13T19:33:00
NABat Activation end time	YES	YYYY-MM-DDTHH:MM:SS	2019-08-19T06:20:00
NABat Latitude	YES*	decimal degrees	40.14310
NABat Longitude	YES*	decimal degrees	-105.94939
NABat Detector type	NO	—	TITLEY AnaBat Swift
NABat Detector Serial Number	NO	—	TAS05794
NABat Microphone type	NO	—	TITLEY AnaBat Swift
NABat Microphone Serial Number	NO	—	TASM6498
NABat Microphone orientation	NO	n s e w ne nw se sw	ne
NABat Microphone height	NO	meters	4
NABat Distance to clutter	NO	meters	30
NABat Type of clutter	NO	—	Vegetation
NABat Percent clutter	NO	0-100	15
NABat Distance to water	NO	meters	100
NABat Water type	NO	broad categories	lake
NABat Habitat type	NO	—	forest-conifer
NABat Land Unit Code	NO	≤ 6 characters	GRAN
NABat Contact information	NO	—	danesmith@contractor.usgs.gov
NABat Weatherproofing	NO	TRUE/FALSE	TRUE
NABat Unusual occurrences	NO	—	low battery
NABat Nightly Low Temperature	NO	degrees Celsius	13
NABat Nightly High Temperature	NO	degrees Celsius	17
NABat Nightly Low Relative Humidity	NO	percent (0-100)	40
NABat Nightly High Relative Humidity	NO	percent (0-100)	60
NABat Nightly Low Weather Event	NO	—	Light rain
NABat Nightly High Weather Event	NO	—	Thunderstorm
NABat Nightly Low Wind Speed	NO	km/h	2
NABat Nightly High Wind Speed	NO	km/h	7
NABat Nightly Low Cloud Cover	NO	percent (0-100)	5
NABat Nightly High Cloud Cover	NO	percent (0-100)	80
NABat Audio Recording Name	NO	GRTSID_SITE_DATE_TIME	3773_SW_20190823_200923
NABat Audio Recording Time	NO	mm/dd/yyyy hh:mm:ss	06/18/2020 23:00:00
NABat Software type	YES	—	Kaleidoscope 5.1.x
NABat Auto Id	NO	4 or 6 letter species code	MYSO/MYOSOD
NABat Manual Id	NO	4 or 6 letter species code	EPFU/EPTFUS
NABat Species List	YES	—	SonoBat US Northeast classifier

* Either Grid Cell GRTS ID **OR** Latitude and Longitude are required. If Latitude and Longitude are provided, NABat will automatically assign the appropriate GRTS Cell.