WildTrax

WildTrax Data Intake Instructions: Acoustic Data

Version 1.0, September 2019

A partnership between ABMI UNIVERSITY OF ALBERTA

Contents

WildTrax Data Intake Instructions: Acoustic Data

Acoustic data uploaded to WildTrax requires a certain level of organization in order to keep data standardized across the interface and between datasets. This organization will aid in opening up big data to researchers across the country and beyond. WildTrax has the ability to store, manage, process and share data as long as it meets these submission requirements. Data organization, proofing and pre-quality control tools are in ongoing development phases as WildTrax evolves, which will make it easier for a user or project manager to upload data. Please contact us at info@wildtrax.ca if you have questions or would like assistance organizing your data.

Minimum Metadata Requirements

The excel table “Site Metadata Template for ARUs” provides a template for recording your project metadata and outlines the minimum metadata required to upload acoustic data into WildTrax. The spreadsheet must be submitted along with raw audio recordings. An explanation of the different columns within the template is provided in Table 1. More WildTrax features become available to you with the more metadata you send! Metadata is a critical component of environmental sensor programs and can allow for more in-depth and meaningful data analyses in the future. Settings files (used to pre-program the ARU) can also be sent along with the raw audio to convey more information about the physical unit (see Table 2).

Table 1

Site metadata requirements for WildTrax acoustic data. Information that is highlighted in yellow is considered mandatory and is the minimum requirement in order for data to be compatible with the WildTrax data management system. Information shown in green is additional information that is needed in order for the WildTrax team to conduct QAQC on a dataset. Information in grey is optional and provides a higher standard of data accountability. A user may add additional information fields outside of this list if desired.

Field Name	Description	Type	Format
Project Name	Unique project name	Text	
Year	Year the ARU was deployed	Integer	YYYY
Site	Site Name. Site is a label used to categorize groupings or clusters of ARU stations. See Figure 1.	Text	
Station	Station Name. Station is a label to identify a unique spatial location of an ARU (eg. 1, 2, 3,…)	Text	
Deployment Date	Date that the ARU was set at the location	Date	YYYY/MM/DD
Retrieval Date	Date that the ARU was retrieved from the field	Date	YYYY/MM/DD
Latitude	Latitude of the ARU station in decimal degrees using datum WGS84	Numeric	DDD.ddddd
Longitude	Longitude of the ARU station in decimal degrees using datum WGS84	Numeric	DDD.ddddd
Make and Model	Make and model of the ARU unit	Text	

Field Name	Description	Type	Format
Deployment Time	Time when the ARU was deployed.	Time	HH:MM:SS, 25 hr
Deployment Comments	Any comments collected at the time of deployment	Text	
Retrieval Time	Time when the ARU was retrieved.	Time	HH:MM:SS, 24 hr
Test Recording	Identify whether or not a test recording was completed	Value	Y | N
Deployment Crew	Initials of the crew member(s) who deployed the ARU	Text	
Retrieval Crew	Initials of the crew member(s) who retrieved the ARU	Text	
Public Latitude	Buffered latitude of the deployment in decimal degrees using datum WGS84 for public release	Numeric	DDD.ddddd
Public Longitude	Buffered longitude of the deployment in decimal degrees using datum WGS84 for public release	Numeric	DDD.ddddd
Public Buffer	Buffer distance (km) from exact point	Numeric	0.25 | 0.5 | 1.0 | 2.5 | 5.0
ARU Height	Setup height of the ARU (in metres) from the ground to the microphones.	Numeric	Metres
ARU ID	Unique ARU identifier code defined by the organization/project	Text	
ARU Direction	Direction the ARU unit is facing.	Integer	0-359, Degrees
SD Card A	Unique ID number of the SD card (defined by the organization/project) in slot A of the ARU	Text	
SD Card B	Unique ID number of the SD card (defined by the organization/project) in slot B of the ARU	Text	
SD Card C	Unique ID number of the SD card (defined by the organization/project) in slot C of the ARU	Text	
SD Card D	Unique ID number of the SD card (defined by the organization/project) in slot D of the ARU	Text	
Estimated Distance Moved	The distance the ARU was moved from the original location.	Numeric	Metres

Field Name	Description	Type	Format
Estimated Direction Moved	The direction the ARU was moved from the original location	Text	0-359, Degrees
Reason Moved	The reason why the ARU was moved from the original location.	Text	
Left Mic	Unique ID number of the microphone used, defined by the organization/project	Text	
Right Mic	Unique ID number of the microphone used, defined by the organization/project	Text	
Battery Status	Status (in percent) of the battery remaining when ARU retrieved.	Integer	0-100%
Damage	The level of damage observed on the ARU when retrieved	Value	Excellent | Good | Poor
Photos	Have images of the ARU unit and surrounding area have been taken?	Value	Y | N
Paired with Camera	Was the ARU deployed with a remote camera?	Value	Y | N
Retrieval Comments	Any comments collected at the time of retrieval	Text	

Table 2

Settings file information. The following fields are recorded by Wildlife Acoustics models of units during the deployment of the ARU. Settings files can provide more in-depth information on the deployment of the ARU and subsequently better proofing standards.

Field	Description
Channels	Mono versus stereo.
Gain Left	Programmed gain on the left channel.
Gain Right	Programmed gain on the right channel.
Preamp Level	Basic preamplifier level of the recording unit.
Sample rate	Numbers of samples per second as measured in Hz.
Latitude	Provide for all sunrise and/or sunset tracking schedules.
Longitude	Provide for all sunrise and/or sunset tracking schedules.
Time Zone	Time zone in settings file, measured in difference from prime meridian.
Compression Rate	Include if files are compressed.

General Site Structure and Navigation

Standardized File Naming

ARUs produce large quantities of recordings and automatic processing is required to proof data. Standardized and consistent filename conventions can aid in this process. These filenames can be applied before data is collected or standardized afterwards. Clients can use the recommendations below for standardizing file names on their own or send the raw data and metadata so that it can be standardized for a fee. Contact info@wildtrax.ca for more information.

Tips for standardizing file naming:

- Be brief and informative
- Standardize names within the study
- Be consistent across years (e.g., the same name for a geographic location over time)
- Limitations of the model of ARU
  - E.g. Wildlife Acoustic models: 12 characters
- Consider your study design
- WildTrax currently supports a filenaming convention that involves a hierarchy of name labels to reflect how the ARUs were deployed in the field. If your filename conventions are different, or you would like to structure them differently, contact WildTrax for more information.
- Consider the length of your study program
  - Starting with a single digit for station might limit you if you increase your sampling size in the future

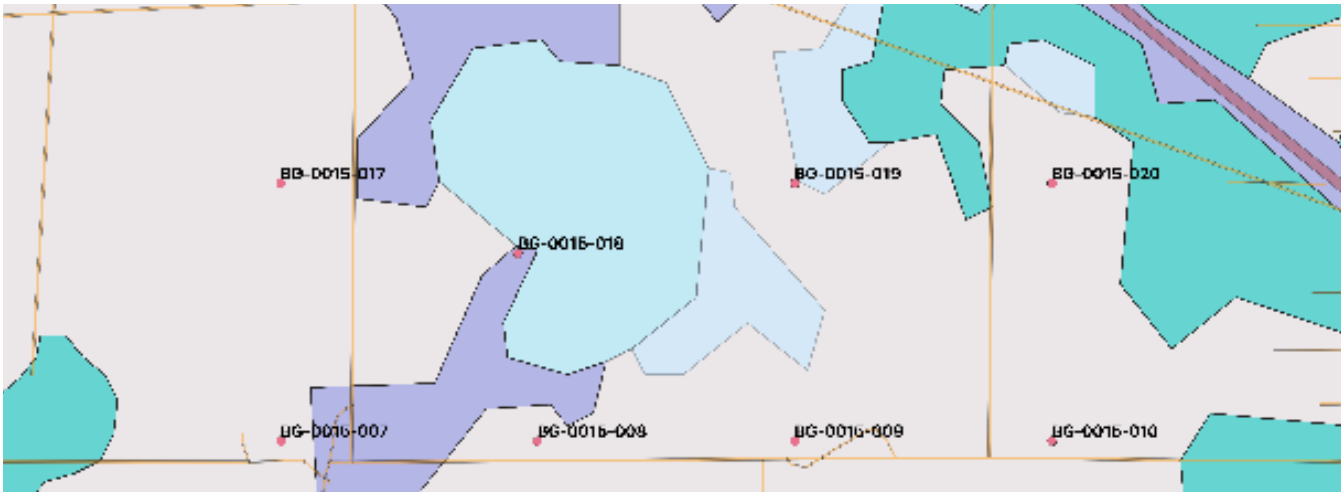

Figure 1a Examples of potential field program layouts and corresponding site-station naming structures

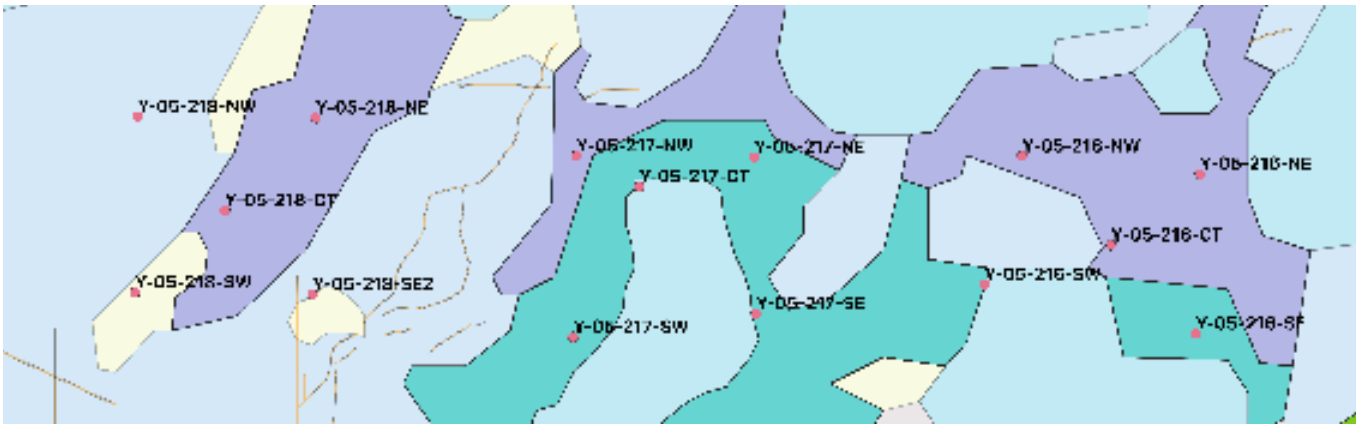

Figure 1b Examples of potential field program layouts and corresponding cluster-site-station naming structures

Data Shipment

Raw acoustic data can be uploaded one of two ways (as of September 2019; WildTrax will include additional front-end tools for acoustic data upload in the future).

1. Hard drive shipment

Data shipped via hard drive or SD cards can be sent to the address below.
Hard drives sent should contain the following information:

- Minimum metadata requirements (either following the WildTrax metadata template or as determined by contacting WildTrax)
- Directory structure containing files following study design hierarchy (unique directories are required for each spatial location)
    - Example (following ***Dataset - Site - Station*** design)
        - Folder 1 (Dataset)
            - Subfolder 1 (Site 1)
                - Subfolder (Station 1)
                    - file1.wav
                    - file2.wav, etc.
            - Subfolder 2 (Site 2)
                - Subfolder (Station 1)
                    - file1.wav
                    - file2.wav, etc.
            - ABC
                - ABC-01
                    - ABC-01-01
                    - ABC-01-02
                - ABC-02
                    - ABC-02-01

c/o Bioacoustic Unit
CW405 Biological Sciences Bldg., University of Alberta
11455 Saskatchewan Dr., Edmonton, AB, T6G2E9

2. Secure FTP Upload

Contact info@wildtrax.ca for more information.

WildTrax.ca

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