Spring ARU Deployment Standard Operating Procedures

- AudioMoths -

Contact: David Tilson (david.tilson@uga.edu)

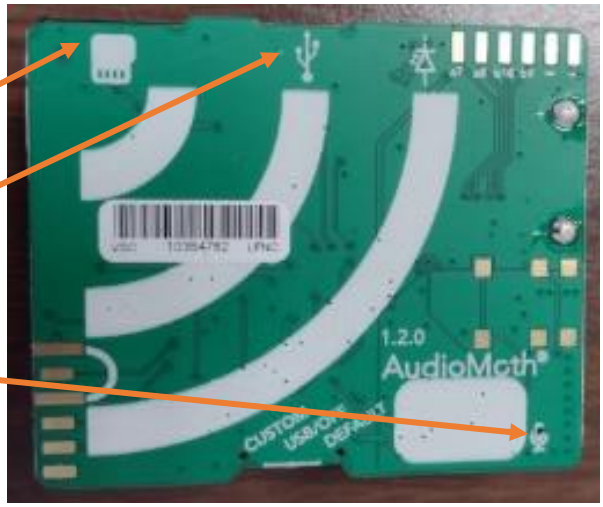
General

Only the Shrub Planting cluster will use AudioMoth ARUs. The Forest Management and Grassland clusters will use Song Meter Minis instead (see Song Meter SOP here). If you are unsure what cluster your state is in, check your state in the WLFW Monitoring Design PowerPoint (slide 5).

Use the following links to watch a video about setting up the audio moths:
AudioMoth Programming: https://www.youtube.com/watch?v=JhRj5Y6o2s8
[Note: recording start and end times used in the video are based on a slightly different survey window. Refer to steps 3.c-3.d in the "ARU Settings for AudioMoth" section below.]
AudioMoth Deployment: https://www.youtube.com/watch?v=g1pg9yT-IDY

Preparation

- Needs 3 AA batteries.
- Place SD micro card in the slot.
- For configuring the device, connect it to computer using the USB Micro B port.
- When you place it back in the box, make sure the microphone icon on the chip is in the corner with the microphone outlet.



You will need to download and install the following onto the computer where you will connect the ARU.

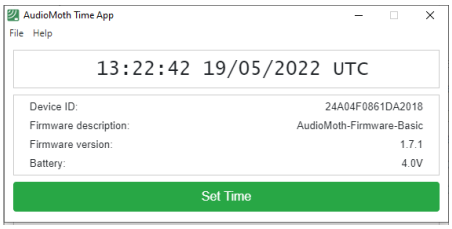
- AudioMoth Configuration App
- AudioMoth Time App

Both can be installed here: https://www.openacousticdevices.info/applications

ARU Settings for AudioMoth

1. Make sure the ARU is switched to “USB/Off” (orange circle). Once connected to your computer, you will see a green indicator light on the edge of the device (green circle).

2. Use the **AudioMoth Time app** to set the time on your device.
    a. Click “Set Time” on the AudioMoth Time app.
    b. You should see the change in time.
    [Note: time is displayed in UTC, not in your local time zone.]
    c. The clock will need to be reset anytime the batteries get removed from the ARU.



3. Open the **AudioMoth Configuration app**.
    a. First go to “file” in the upper lefthand corner and make sure local time is selected.
    b. Under the Recoding tab, use the following settings:

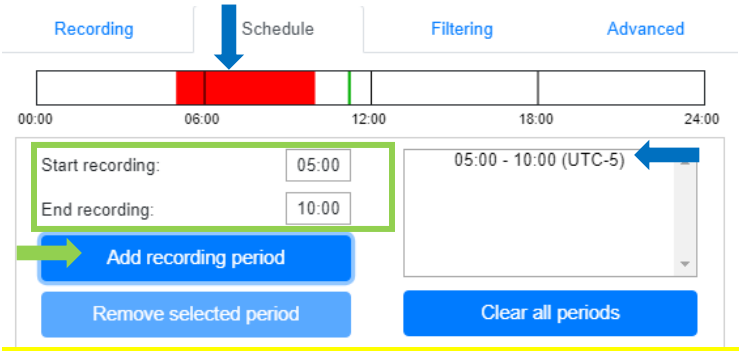
Sample rate: 48 Gain: High Enable sleep/record cyclic recording: unchecked Enable LED: checked Enable low-voltage cut-off: checked Enable battery level indication: checked

    c. Look up the local sunrise time of the first date the device is getting deployed.
        i. We would like to obtain audio data for 3 hours (30 minutes before sunrise until 2 hours and 30 minutes after sunrise). However, unlike the SM mini recorders, the AudioMoths are unable to sync to local sunrise time.

ii. Therefore, we need to add a longer recording period to account for the change in sunrise time throughout the season. To do this we have decided to add a 1-hour buffer to each side of the recording.

d. Under the "Schedule" tab, use the following settings:
   i. Start time should be 1 hour and 30 minutes before the first local sunrise time. End time should be set for 3 hours and 30 after the first local sunrise time.

      For example, if sunrise is at 6:30 AM, the "Start recording" time should be set for 5:00 AM, and the "End recording" time should be set to 10:00 AM.



[Note: times shown above are an example using a 6:30 AM local sunrise time. Please calculate start and end times based on the local sunrise time for the first date of deployment.]

   ii. After you enter the start and end times (green box above), click "Add recording period" (green arrow). You should then see the recording period listed in the box to the right and highlighted on the schedule bar (blue arrows).

e. Once the schedule is set, click the "Configure AudioMoth" button at the bottom of the app. You should see a flickering green indicator on the AudioMoth unit (you can find more details about these led indicators here).

f. Unplug your device. It is now ready for deployment (but don't forget to move the switch to "custom" before deployment).

In the field

At the survey point, one AudioMoth should be deployed as follows:

1. Drive a 5-foot metal t-post approximately 15-20 cm into the ground using a mallet.
2. Attach the unit to the post using 2-3 zip-ties (or more if needed to secure).
3. *IMPORTANT* Double check the following:
    a. The switch on the unit is turned to "custom".
    b. The microphone icon of the unit is in the corner with the microphone outlet (see figure above in the "Preparation" section on page 1).
4. The ARUs are waterproof if the lid is secured properly so they do not need to be placed in a bag/under cover.

Important Note

Unfortunately, AudioMoths do not include the unit ID or point ID in the filenames of the audio files. Therefore, you must manually rename the audio files upon download. [Note: never encrypt SD cards. Details in the Data Mgmt. Guidelines (pg. 2).] AudioMoths provide filenames in the following format: YYYYMMDD_HHMMSS.wav. However, we need files to be named according to these conventions:

ARUID-POINTID_YYYYMMDD_HHMMSS.wav ARU ID: always a 5-digit number Point ID: always a 4-digit number YYYYMMDD: audio start date (year, month, day) HHMMSS: audio start time (hour, minute, second)

Therefore, you must manually rename the audio files to include the ARU ID and Point ID. [Example: if we deploy ARU 54787 at point 1223 on 1/17/2024, the first file on the SD card should look something like: "20240118_050000.wav". The file should be renamed so that the new name is "54787-1223_20240118_050000.wav".]

Please download files and update the filenames as soon as possible after ARU retrieval. It is vital to add this metadata to the filenames while the information is still fresh in your mind. If you are retrieving multiple SD cards in the same day, it is recommended that you keep the cards in the units until you can download the data. If you must swap out SD cards that day for redeployment, you must keep careful track of each SD card to avoid mix ups.

In addition to the audio files, AudioMoths will produce a "CONFIG.TXT" document. You will not upload this document to BirdLocale; however, you should retain this document with all backup copies of your data.