BAILIWICK BAT SURVEY
SURVEY PREPARATION – BEFORE YOU START

- We would like you to survey the same location in your chosen 500-m square on two occasions a year. A first early visit between <u>April and mid-July</u>, and a second late visit between <u>mid-July and end of October</u>.

To take part you ideally need:
- A **smart phone** or **tablet** which will communicate the GPS coordinates of where you have put the detector to the detector itself so it can label the recordings with the exact location. This is not essential, but strongly recommended. If you do not have one, you can label the detector location when uploading.
- A **desktop computer** or **laptop** on which a freely-downloadable app can be installed to manage the uploading of sound recordings. It needs to have free space (max. 32Gb) on its hard drive to store the recordings temporarily before upload.
- A free account with BTO which allows you to upload the sound files to the cloud for analysis (details below).
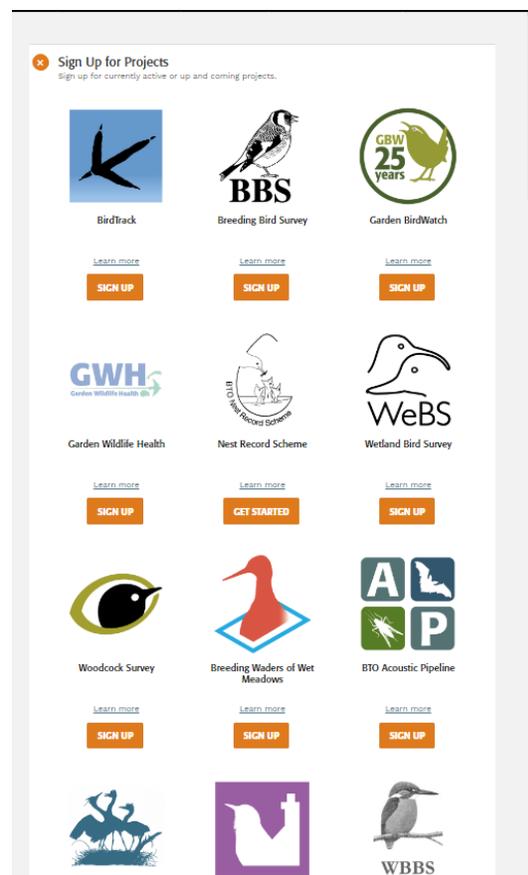
If you do not have a smart phone or desktop/laptop computer, you can still take part, but please contact batsurvey@biologicalrecordscentre.gov.gg to find out how we can help.

1. Register for BTO Account

- Before we can process your bat recordings, we need you to register for a BTO Account if you do not have one. Go to https://www.bto.org/my-bto
- Click on "REGISTER A NEW ACCOUNT".
- Please fill in your details and accept the terms and conditions.
- You should receive a message saying "*Registration Successful. You are now logged in*".
- You have now successfully registered at BTO, and now need to sign up to the Acoustic Pipeline which allows you to upload your recordings and view your results.
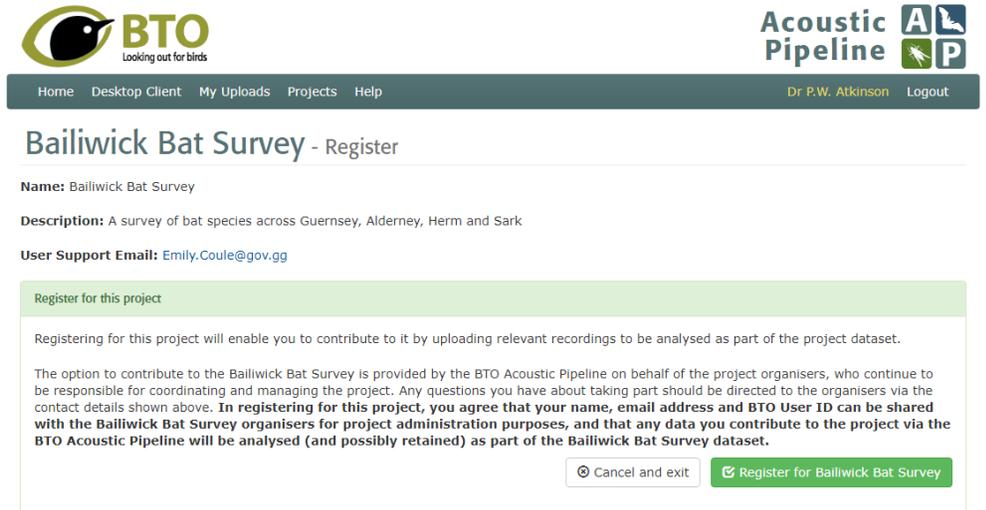
2. Sign up to the Acoustic Pipeline

- Go to https://www.bto.org/my-bto

- Scroll down where you will see a box titled "Sign up for available projects".

- Find **BTO Acoustic Pipeline** and click on <u>SIGN-UP.</u> On doing this a verification email is sent to the registered email address, with instructions to finish setting up your account.

3. Email your BTO username to the survey organiser

- After you have signed up to use the Acoustic Pipeline, please email your USERNAME to the batsurvey@ biologicalrecordscentre.gov.gg, who will invite you to upload recordings to the **Bailiwick Bat Survey.**

- There will be a link in the invitation email to register for the Bailiwick Bat Survey. Please click this and it will take you to this page (pictured right). Click on **Register for the Bailiwick Bat Survey.** This notifies the organisers you wish to join the survey.

4. Get the Desktop Upload Client to manage uploading of sound recordings

- A small piece of software called the 'Desktop Upload Client' manages the uploading of sound recordings (with information about the location and dates/times) for processing. It will download the sound files from the bat recorder to your computer and store them safely until your computer finishes uploading them to our servers for analysis.

What you will need
- Windows or Apple Mac desktop or laptop computer. Tablets such as iPads are not compatible.
- Space on hard drive for installing Desktop Upload Client (about 12 MB).
  Space (see below) on hard drive for temporary saving of the sound files during upload (upto 16Gb).

Getting the Desktop Upload Client
- To get and install a copy of our Desktop Upload Client, log into our Web Portal (https://app.bto.org/bat-pipeline/), and click on the '**Get the Desktop Upload Client**' web link.
- Install the correct version (for Windows or for Apple Mac) for your computer. Links are given for both.
- The Desktop Upload Client will make a folder on your hard drive where recordings will be stored temporarily during uploading. Once you open it and log in you are ready to upload recordings.

5. Install Song Meter Mini Configurator app on your mobile phone or tablet

- Our bat detectors are from a company called Wildlife Acoustics. The model is called the 'Song Meter Mini Bat'. The settings to record an hour before dusk and turn off an hour after dawn are already installed on the detector. When it 'hears' a bat, or a small mammal or bush-cricket, it starts recording and saves a sound file (wav file) on its memory card. These recordings are what we need to analyse to identify which species are present.
- However, to set it running and to **record the detector's exact GPS location,** we need a small mobile phone app called the **Song Meter Mini Configurator** app installed on your phone. This is available from the Apple App store or Google Play store. Please download and install it onto your mobile phone.
- The App adds the recording location (latitude and longitude) to the recordings, which is valuable for us, and will save you time later. We do this so that we know where the recordings are made.
- If you cannot do this, this is not a problem. When you upload the recordings to us, we will prompt you to choose the location you put the detector in, by clicking on the location on an online map.

That's it – you're done and you do not need to do this again!

Everything is now in place and you are ready to survey!

BAILIWICK BAT SURVEY
FIELD DEPLOYMENT OF BAT DETECTOR

Acoustic Pipeline

1. Inserting the Batteries and SD card into the detector

- The detector uses of 4 AA rechargeable batteries. In your box, you will find one set of colour-coded batteries (with a second set of batteries inside the detector), and at least one memory card.
- Remove the snap-on lid on the Song Meter Mini by grasping the long edges with your fingers and applying slight pressure with your thumbs to the center. The lid will pop off to expose the recorder's interior.
- Remove batteries from inside the bat detector. IMPORTANT – ensure that this set of batteries is put on charge for the next person as soon as you can.
- Insert 'new batteries' which would have been charged by the previous user. A single set of batteries can be used for **all nights of recording** at a location. They last a long time!
- Push SD card into SD card slot. You will feel/hear it click into place.
- Slide white power switch on the Song Meter Mini up to **ON** to power the detector on.

2. Detector placement

- Choose somewhere within your 500-m square to survey, ideally as close to the centre of the square as possible/practical.
- Detectors should be mounted horizontally on the pole with the microphone pointing to the side & deployed at least 5 feet (1.5m) in any direction from vegetation, flat surfaces, or other obstructions. This is critical - too close to vegetation, can result in sounds reaching the detector at different times, resulting in distortion & making it difficult to identify the species.
- The kit is invisibly security coded but, if in a public area & you are concerned about leaving the detector outside, please deploy and retrieve the bat detector at dusk/early in the morning. The laminated project information sheet should be attached to the pole to inform inquisitive folk!

3. Using the mobile device app to save the recording location

- Make sure Bluetooth is enabled on your mobile device and launch the Song Meter Mini Configurator application.
- The bat detector will be detected by the app and will appear on the screen in the app on your phone/tablet.
- While keeping the app open & lid of the bat detector off, press and hold the **Pair button** inside the detector for 3 seconds.
- The Bluetooth LED on the bat detector will blink green, indicating it is ready to pair.
- In the app on your phone/tablet, tap the **Pair button** when it appears in the screen. The detector's details will turn green, indicating success pairing. IMPORTANTLY, do this in the field where you are leaving the detector, and NOT before you go out!
- A pop-up on the detector's screen will ask if you want to set the recorder's location to your mobile device's location. Tap OK. All recordings will now carry the location (latitude and longitude) of the detector.
- Now tap the **Unpair button** on the screen. Keep the detector switch ON. The bat detector is now set and ready to deploy and will automatically wake up and sleep at the appropriate times (and on subsequent nights).
- Replace the lid of the bat detector.
- The detector is deployed by carefully pushing the pointed ground spike vertically into the soil – try to push it in about 20cm. Attach the detector somewhere close to the top of the pole (at least 7 foot up) using re-usable cable ties.
- Ideally keep the detector out for four nights in the same place. If this is not possible, you can move the detector to another location within the square, but IMPORTANTLY if you do, please update the location, by pairing the detector with your smart phone or tablet to save the new location.
- At the end, remove the snap-on-lid on the Song Meter Mini & slide the white power switch to **OFF** to power down the detector.

- Remove the SD card.
- If you have an internal SD card reader on your desktop computer, insert the SD card. If you don't, please insert the card into the provided SD card reader and plug the SD card reader into a USB port on your computer.

1. Uploading recordings for processing

- Click on the '**BTO Acoustic Pipeline**' icon on your desktop computer to open the '**Desktop Upload Client**' that you installed previously (see survey preparation above).
- When requested, enter your email address and password to login.
- Click on '**Start New Upload**' button.
- Next to '**Choose files for upload**', click on '**Select Files**' button.
- Now select the folder than contains the recordings that you want to process [you are not able to select individual wav files within a folder]. Note .wav files in the folder are not shown by the Windows version of the App. This is not a problem.
- Next to '**Add Survey Metadata**', click on '**Enter Data**' button.

Recording Survey Metadata (providing additional information associated with recording).
- This section allows the user to provide an (optional) **Upload Name** to be provided with the results (e.g., 'My Garden', "Reservoir" etc).
- Users are also asked to assign the recordings to a **Project**. IMPORTANTLY please select **Bailiwick Bat Survey** to ensure that your recordings are assigned to the correct project.
- It is also important to ensure that the **Latitude** and **Longitude** are provided and are correct. The selected Project and Latitude and Longitude must be correct to ensure that the correct analysis is applied to the recordings, and that identifications of species that are 'rare or unexpected' are flagged. If you paired the Song Meter Mini Bat with your phone in the field, the location will be embedded in the wav files produced by the bat detector, and this information is pulled out automatically, otherwise the latitude and longitude will need to be inputted (click on the three black dots right of the name of the first recording for options e.g. for copying location down). A map facility is provided to help users.
- Once you have completed the Survey Metadata, click on '**Save Data**'

Preparing recordings for upload
- Now click on '**Prepare Recordings**'. You are now given the option to '**Create personal copy of recordings (optional)**'.
- Now click on '**Start Upload**' to start the upload process.

Uploading recordings
- IMPORTANTLY – once the upload process has started (you don't need to wait until upload has completed). Please delete any files or folders on the SD card (for use by the next person), safely eject the SD card, and return the SD card to the bat equipment box to ensure that the SD card is returned.
- The Desktop Upload Client shows the progress of the upload. You can Pause and Resume the upload at any point, or if there is a break in internet connection.
- Note that the speed of upload can be very different depending on the speed of the user's broadband. Note: it may take several hours to upload four nights of recordings, and may best be left running overnight.
- Once recordings have uploaded, you can close the Desktop Upload Client. You do not need to do anything else. You will be emailed once the results are ready to view. Results are normally returned within 24 hours after uploading.

2. Accessing your results on the Web Portal

- Once processed, you will be emailed to let you know that processing has completed, and the results will be accessible then via the web portal https://app.bto.org/bat-pipeline/ on the '**My Uploads'** page.
- The Classifier results can be downloaded as a csv file by clicking on 'Download' under Classifier Results. The csv includes all results (one line for each wav file and species identified – so there may be more than one line for a wav file if multiple species are present in a recording), regardless of the confidence associated with the identification.
  IMPORTANT: the classifier is not perfect.Further manual verification of recordings and results will be carried out at the end of the season, before the data arw used.