



## ***PMRA*** Scientific Methods Series (*Part I*)

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Call-Playback Survey Methods for Coastal Western  
Screech-Owl (*Megascops kennicottii kennicottii*)

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## Introduction

The Pacific Megascops Research Alliance (PMRA) was established in February of 2021 to fulfil several directives related to Coastal Western Screech-Owls (WESOke; *Megascops kennicottii kennicottii*). The mission of the PMRA is to *encourage and foster collaboration between future, present, and past coastal BC nocturnal wildlife researchers, and to provide outreach and engagement to the public, using Western Screech-Owls as our umbrella organism*. To do this, the organization set several goals, the first of which was to *develop scientifically defensible Western Screech-Owl survey protocols for a) call-playback and b) bioacoustics surveys, and to make sure that these are easily accessible to the public and free through the PMRA website*.

Over the last fifty years, WESOke research has been conducted in BC using an array of different survey methodologies. The BC Nocturnal Owl Survey Protocol, developed and run by Birds Canada, and the Resource Information Standards Committee (RISC) protocol, developed for the BC Ministry of Environment, are the two standard protocols used for most of the surveys completed in BC since the early 2000's. This protocol is compatible with both of these methodologies.

## Survey Equipment and Other Needs

### ***Call-playback requirements:***

- This protocol!
- Knowledge of common WESO, BADO, GHOW, NOPO, NSWOW calls
- Speaker with calibrated volume (details below)
- Region-specific playback recording (available from [pacificmegascops@gmail.com](mailto:pacificmegascops@gmail.com))
- Thermometer
- GPS with station coordinates and/or Device with GPS capability and NatureCounts app
- Hardcopy datasheets **or** NatureCounts app with active, registered ID
- *Datasheet Definitions* document
- Hardcopy of *Incidental Owl Detection* datasheet
- Cell phone and safety check-in contact to confirm safe completion of work

### ***Optional:***

- Decibel X (requires second device) or other device/app to confirm speaker volume
- Bat surveys concurrent with owl surveys (Echo Meter Touch) or prior to (NABat transect)
- InReach or Spot device if working in an area without cell reception

### ***Personal equipment:***

- Warm clothing, water, snacks
- High-visibility clothing to keep safe from passing road traffic

## **Appropriate Survey Conditions**

To maximize and limit variation in detection probability for owls, surveys should not be conducted under consistent moderate or heavy rain or temperatures consistently below -1 °C. Trace or light rain which does not mask sound is okay.

## **Training**

Review the call-playback training videos on the PMRA website. There are a number of vocalizations that each owl species can make. Please familiarize yourself with the more common adult vocalizations from each of the species listed on the *Datasheet Definitions* sheet before completing a survey. Familiarize yourself with this protocol document and the datasheet (either hardcopy or app-based) and datasheet definitions.

Ideally, we would like surveyors to participate as an assistant surveyor prior to leading a survey, but this is not required.

Contact us at [pacificmegascops@gmail.com](mailto:pacificmegascops@gmail.com) with any questions.

## **Methods**

### ***Transects and Stations***

Each survey is composed of a linear transect (i.e., survey route), usually along a road or path. Along a transect, there are between 10 and 15 call-playback (hereafter, referred to more simply as playback) stations. Stations are spaced 800 metres (m) from one another, using a straight-line measurement. This distance is considered sufficient to prevent an owl from hearing playback broadcasts from more than one station and should prevent birds from be presented playback prior to the survey at any given station.

### ***Seasonal Survey Timing and Frequency***

To provide estimates of detection probability specific to each transect in each year, at least 10 stations in each transect must be visited 3 times per breeding season, but ideally 4 to 5 times. Repeated surveys generate detection histories for each station which inform the likelihood of detecting an owl when present. Each visit to a transect must be conducted on a separate night. Surveys should target the territory establishment and breeding period, between February 1 and April 31 and, when possible, between February 15 and April 15. This period is targeted as it's a time of heightened vocal activity, but also because detection during this period provides an indication of whether a breeding territory is occupied, either by a single bird or a breeding pair. Measures of occupancy during this time of year are more useful in determining trends in occupancy and densities of owls, which can inform population trends, than data collected during other times of year when owls move more freely across the landscape (e.g., during dispersal).

Station order, within the transect, should be mixed up as much as possible. Completing the surveys in different directions on different visits (e.g., from station 1 to 10 during visit 1, and from

station 10 to 1 during visit 2) is the easiest way to do this. This way, stations are visited at different times relative to peak vocal activity.

### **Nightly Timing**

Playback can be completed starting **a half hour after sunset** until an hour before sunrise. Because WESO vocal activity tends to peak soon after sunset (1 to 2 hours), ideally the survey should start a half hour after sunset or shortly thereafter. We also encourage volunteers to start as close to this time as possible to limit fatigue when driving late at night. Finding accommodation close to your survey transect is also recommended.

### **Call-Playback**

The only recording being presented during these surveys should be your region-specific audio recording. You can access a Vancouver Island recording from Duncan BC (courtesy of Tania Tripp) in the playback methods section of PMRA website. We will be uploading calls from other locations as well. If your surveys are located a region for which no calls are available online, please email [pacificmegascops@gmail.com](mailto:pacificmegascops@gmail.com). If your project requires that you locate nests using other playback when you detect an owl, we request that you return after completing the survey or at another date to do this. Playback should be presented at a volume of 70 to 75 decibels (dB) at 1 m distance. See the instructional section of the PMRA website for more details on how to test the volume of your playback device: <https://www.pacificmegascops.org/methods>

If your audio device is directional, then make sure to present a full vocalization in each cardinal direction (N, E, S, W) during each minute-long playback.

The playback recordings found on the website are timed to present playback for a complete survey. This playback is divided into 7 timeframes including and surrounding the 3 playback sessions specified in RISC standards. Each of these time frames and the method for that time frame (*silent* or *playback*) is listed on the datasheet to allow surveyors to specify each time frame in which each individual owl was observed. The 17-minute survey is composed of the following:

- a) 2-minute silent listening period (split into 1<sup>st</sup> and 2<sup>nd</sup> minute of silent listening on form)
- b) 1-minute playback
- c) 4-minute silent listening period
- d) 1-minute playback
- e) 4-minute silent listening period
- f) 1-minute playback
- g) 4-minute silent listening period

The 2-minute silent listening period is included to align this protocol with Nocturnal Owl Survey protocol. You can start your 2-minute silent listening period as soon as all car doors are finished closing, lights are turned off and everyone present is silent and has begun listening. In cases where you may be concerned about wildlife approaching you in the dark, you may keep a low light or red light headlamp beam on. If you are on the side of a road with traffic, make sure you have reflective gear so that passing cars are aware of your presence.

**Body and Vehicle Positioning**

When broadcasting the playback, make sure that it is not being masked by yourself, other observers, or your vehicle. Along the same thread, make sure your hearing is not masked by these same obstacles. Moving away from the car (by 3 to 5 m) to reduce sound masking is a good idea. At the very least, ***the vehicle should be turned off prior to the start of the survey and you should be outside of the vehicle for the duration of the survey.***

**Post-survey Scanning**

Once the survey is completed, use a flashlight or headlamp to slowly turn in a circle and scan the surrounding trees for any owls that may have silently approached. If you detect an owl this way, that you have not detected during the survey, there should be no *time of first detection*, but please make a note in the *observation notes* section that this was seen while scanning and record the Vocal Activity/Breeding Evidence as “Seen only”. Please also record this owl on the *Incidental Owl Detection* datasheet. ***Lights should not be used during the survey except at very low level to help with writing down observations.***

**After Detecting an Owl**

***When you detect an owl of any species, we request that you continue to complete the survey in its entirety.*** This includes all remaining playbacks and listening periods. If you are not comfortable doing so, please note when the playback stopped:

- No stop – all completed
- Prior to 1<sup>st</sup> playback
- During 1<sup>st</sup> playback
- Prior to 2<sup>nd</sup> playback (1<sup>st</sup> playback completed, but no 2<sup>nd</sup> or 3<sup>rd</sup> playback)
- During 2<sup>nd</sup> playback
- Prior to 3<sup>rd</sup> playback (1<sup>st</sup> and 2<sup>nd</sup> playback completed, but no 3<sup>rd</sup> playback)
- During 3<sup>rd</sup> playback

If you do stop playback, we request that you continue listening until the end of the 17-minute survey. Either way, please note the reason for stopping playback and how long silent listening continued.


**Data Collection**

Both hardcopy datasheets and digital (NatureCounts app) forms are available

**Hardcopy, pen and paper datasheet**

Below is an example of the hardcopy datasheet:

**Western Screech-Owl Surveys**


 Pacific Megascops Research Alliance

Region ID (SC, VI): \_\_\_\_\_ Transect ID: \_\_\_\_\_ Year & Start Date: \_\_\_\_\_ Visit #: \_\_\_\_\_  
 Protocol: \_\_\_\_\_ Surveyor Institution Code: \_\_\_\_\_ Bat Data Collected: \_\_\_\_\_

Station ID	Date Start <small>(DD-MMM-YY)</small>	Time Start <small>(HH:MM - 24hr)</small>	Temp <small>(°C)</small>	Wind <small>(beaufort)</small>	Precip <small>(0-5)</small>	Cloud Cover <small>(%)</small>	Moon Vis <small>(circle)</small>	Light Level <small>(0-5)</small>	Noise <small>(1-4)</small>	Traffic Count <small>(#)</small>	Time End <small>(HH:MM - 24hr)</small>	Observers <small>(3 letter codes)</small>
							Yes / No					

Station Notes (e.g., visual scan completed, noise source):

Species	Sex	First detection		Distance Bin (1-5) for Each Time Frame							Visual Detect <small>(Yes/No)</small>	Detect. Type & Breeding Evidence <small>(Heard, Seen only, Courtship)</small>	Observation Notes
		Direction <small>(NNW,SE)</small>	Survey Time <small>(MM:SS)</small>	0-1 min <small>Silent</small>	1-2 min <small>Silent</small>	2-3 min <small>Playback</small>	3-7 min <small>Silent</small>	7-8 min <small>Playback</small>	8-12 min <small>Silent</small>	12-13 min <small>Playback</small>			

If using hardcopy datasheets, all sheets should be photographed after every transect visit well enough to read the information on them. Datasheets can be shared either physically or electronically, but there should always be an electronic backup of the data (e.g., photographs).

There’s also a hardcopy *Incidental Owl Detection* datasheet on which surveyors can record owls observed along the transect, but NOT during the 17-minute surveys at each station. There’s currently no option to record incidental detections through the NatureCounts app, so we request that all surveyors use this hardcopy form.

**App-based data entry using Birds Canada’s free and publicly available NatureCounts app**



To use app-based data entry, you’ll need to download the NatureCounts app to your device and register an account with NatureCounts. Within the NatureCounts app, select CREATE in the bottom left corner, select the BC-YUKON NOCTURNAL OWL SURVEY DATA ENTRY CHECKLIST, then select the *Western Screech-Owl Surveys* protocol. See page 11-16 for details.

The following sections provide instructions for hardcopy data entry followed by app-based data entry with the NatureCounts app. Note that surveyors are encouraged to use the app as it removes the need for manual data entry and feeds directly into the NatureCounts database.


### Hardcopy Data Entry Instructions

Hardcopy datasheets are available for download at <https://www.pacificmegascops.org/methods>

#### Transect & Visit Data

In the hardcopy datasheets, Transect and Visit data are recorded in the section shown below:

Western Screech-Owl Surveys

Region ID: SC / VI / BI / CI Transect ID: \_\_\_\_\_ Year & Start Date: \_\_\_\_\_ Visit #: 1 / 2 / 3 / 4   
 Protocol: \_\_\_\_\_ Surveyor Institution: \_\_\_\_\_ Bat Data Collected: EMT / NABat / None

Transect and visit data should be written down at the top of all sheets used on that transect on that night. While this may seem redundant, it will help resolve confusion if datasheets from separate nights get mixed up for whatever reason.

**Region ID** (circle one) should refer to the South Coast (SC), Vancouver Island (VI); Cortes Island (CI), or any other region where the survey is conducted. **Transect ID** should be provided by the survey coordinator (contact [pacificmegascops@gmail.com](mailto:pacificmegascops@gmail.com)). **Year & Start Date** for the transect and visit should include day, month (in letters) and year. Please do not start surveys after midnight, for safety's sake. The date of the survey is assumed to be the date of sunset for the survey night. Any unique survey night should be classified as the next visit, even if it's just completing stations missed during a prior visit because conditions (e.g., temperature, wind) and, thus, detection probability for owls and bats may be unique. **Visit #** (circle one) is the visit number from that year. If that is the first visit of the year to that transect you should write 1, if it is the second visit you should write 2. **Protocol** should be PMRA or clearly and briefly reference changes to standard PMRA protocol being used and name the project. **Surveyor Institution** will typically be PMRA volunteer, Birds Canada, Ausenco, or another group or institution that's organizing the survey. **Bat Data Collected** refers to whether an optional NABat Transect and/or Echo Meter Touch survey was completed (circle all that apply). These bat surveys require specific equipment.

### Station Data

In the hardcopy datasheets, Station data will be recorded in the section shown below:

Station ID	Date Start (DD-MM-YY)	Time Start (HH:MM - 24hr)	Temp (°C)	Wind (beaufort)	Precip (0-5)	Cloud Cover (%)	Moon Vis (circle)	Light Level (0-5)	Noise (1-4)	Traffic Count (#)	Time End (HH:MM - 24hr)	Observers (3 letter codes)
							Yes / No					

**Station ID** refers to the station being visited within the transect. **Date Start** is the date that the station survey starts, which may be different from the Transect Start Date, if after midnight. **Time Start** is the time (HH:MM to the nearest minute on the 24-hour clock) when the 2 min silent listening period starts at the beginning of the survey. Codes for all weather metrics and traffic count are provided in the *Western Screech-Owl Survey Datasheet Definitions* document. **Time End** is the time (HH:MM to the nearest minute on the 24 hour clock) when the surveyor stops listening for owls, which should be 17 minutes after the start. If the survey end time is more or less than 17 minutes, please specify within **Station Notes** when survey stopped using the categories described on the previous page, as well as rationale for unique survey time. All **Observers** should be named on the first sheet (full name) and 3-letter codes for all observers present for the station should be listed in the Observers field. Making sure that these codes are complete and distinct is important, because they will be used to count the number of observers at each station. **Station Notes** can also include, but are not limited to, sources of noise, observations during visual scan of area surrounding the station following the survey, and if the survey was conducted somewhere other than a roadside (surveys are assumed to be roadside unless otherwise noted).



### Owl Observation Survey Data

On the hardcopy datasheets, owl observation data will be recorded in the following section for each station, with separate observation data recorded for each station along a transect:

Species	Sex	First detection		Distance Bin (1-5) for Each Time Frame								Visual Detect (Yes/No)	Vocal Act./ Breeding Evidence (Heard, Seen only, Courtship)	Observation Notes
		Direction (NNW,SE)	Survey Time (MM:SS)	0-1 min Silent	1-2 min Silent	2-3 min Playback	3-7 min Silent	7-8 min Playback	8-12 min Silent	12-13 min Playback	13-17 min Silent			

Record one line per individual owl detected. For example, if you detect 3 Western Screech-Owls and 1 Barred Owl, data should be recorded in a total of 4 rows, each describing the owl detections for one individual owl through the survey.

*If you are unsure of species, sex, or vocalization types, write unknown or U and take an audio recording for review at a later date.* **Species** should be the 4-letter code for the species as per the *Datasheet Definitions* sheet. **Sex** should be coded as *M* for Male, *F* for Female, *U* for Unknown, *J* for Juvenile. **Survey Time at first detection** is the time at which you first detected an individual on a survey. This field is entered in MM:SS format with minute (MM) starting from 00 at the start of the survey and ending at 16 at the end and second (SS) ranging from 00 to 59. If you detect an owl 10 seconds into the survey, time of first detection should read *0:10*. If you detect an owl at 1 minute and 30 seconds into the survey, it should read *1:30*. **Direction of first detection** is the direction (e.g., *N, NNW, W, SW, S, ESE*) in which the individual was first detected.

The **Distance Bin** estimates will be recorded on a scale from 1 to 5, representing distance bins specified below (**Table 1**) and in the *Datasheet Definitions* document. If you can't remember the distance bin codes, write down estimated distance to the owl and translate it to a bin code later.

**Table 1. Distance Bins**

Bin Code	1	2	3	4	5
Distance (m)	0-50	50-100	100-200	200-400	400+

The datasheets provide options to estimate distance to owls in each of 8 time frames for the survey. Each time frame is labeled with time within the survey and playback activity (*silent* or *playback*). For example, the first two minutes in the survey apply a silent listening method and are therefore labeled 0-1 and 1-2 min *Silent*. For each time frame in which an owl is detected, record the first distance at which the owl is detected relative to where you are standing/the station location. For example, if you detect an owl during playback at 7 minutes and 30 seconds into the survey, and you think that it's 100–130 m away, record 3 (distance bin for 100-200 m) in the 7-8 min *Playback* section of your sheet. If this is the first time you detected this individual, you should not have recorded anything in the previous frames. If you continue to detect this individual, you should write how far away it is when you detect it in the subsequent frames. For example, if you detect it again 12 minutes and 20 seconds into the survey and it has moved to

within 20-30 m of the station, you should write 1 in the 12-13 min *Playback* section of the sheet for that individual. If it moves closer within that frame, don't change the distance estimation for that time frame. The distance is an estimate of how far away it is *when you first detect it* within a time frame. If you are unclear about this, please see our *how to* videos on the volunteer survey page of the PMRA website.

**Vocal Activity & Breeding Evidence** is represented by a one letter code to distinguish between vocal and visual detections and to distinguish vocal activity from one individual or a potential breeding pair (e.g., Courtship display) (**Table 2**). Note that these codes have implications for breeding evidence in the following order and, if multiple activities are observed, the behavior most indicative of breeding should be recorded: Courtship > Heard > Seen.

**Table 2. Vocal Activity & Breeding Evidence Codes**

Evidence Code	Definition
Courtship	Courtship display (counter singing between male and female or copulation display vocalizations)
Heard	Heard vocalizing at any point in the survey
Seen	Seen only, silent

The **Visual Detect** provides a field to clarify if a bird or birds that were heard were also seen during the survey.

Finally, the **Observation Notes** field can be used to record the type of vocal activity (bouncing ball, alarm call, tddow) or any interaction with other owl observations, where the bird was seen, if seen, or any other notable behaviour or vocalizations not captured within other fields.

#### Incidental Owl Detection Data

For any owl observed along the transect route (including within 400 m of the last station at either end of the transect), but outside of the 17-minute surveys during which owls should be recorded within survey forms, enter one row of data including **Date** and **Time** of detection along with **Species** and **Sex**.

Next, because incidental owl observations are not associated with station data, we ask that surveyors record their location (**Latitude & Longitude** – preferred format: decimal degrees) and the nearest station at the time of detection along with the **Distance** (using the same bins applied during surveys) and **Direction** relative to the observer (e.g., *N, NNW, W, SW, S, ESE*) towards the location of *first* detection.

Please also record **Vocal Activity & Breeding Evidence** as described above along with any notes for the individual. An additional notes section is provided given the small size of the notes cell for each row. If using the larger notes section, please specify the row of data/owl associated with those notes.

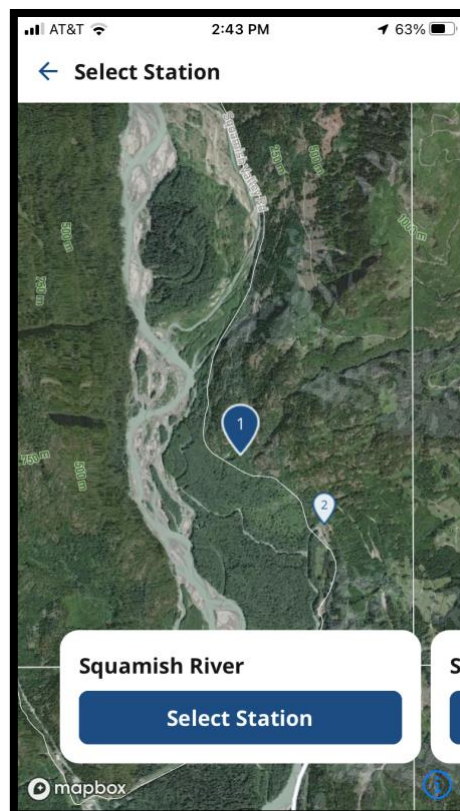
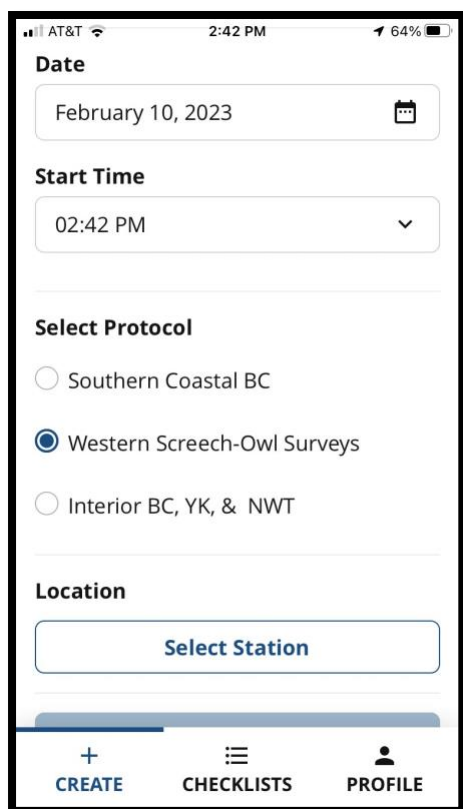


## NatureCounts App Instructions

### Data Entry Protocol Selection and Station Selection

The NatureCounts app includes a number of digital data entry protocols including multiple owl survey protocols/digital forms. You can use the instructions and photos provided below to ensure you're using the right one.

In the NatureCounts app, access data entry for PMRA's WESO playback surveys by tapping CREATE in the bottom left corner, selecting the BC-YUKON NOCTURNAL OWL SURVEY DATA ENTRY CHECKLIST, then selecting the *Western Screech-Owl Surveys* protocol (see image below). Start date and time will be automatically recorded during this step.



Next, you will select the station being surveyed. Navigate to the station you will be surveying. The app should bring you to your current location which should be close to the station already. Tap the desired station icon (Station 1 on the Squamish River transect in the example above), then tap "Select Station".



## NatureCounts App Instructions

### Pre-Survey Data Entry

The app will then present you the following “Pre-Survey Questions” fields. **Visit Number** records which of the repeated visits to a transect you are completing for any given year. This should be specified by your survey coordinator. If it’s the first visit of the year to that transect, select 1. If it’s the second visit, select 2. **Bat Survey Done?** is currently a yes/no field for NABat surveys, but may be updated to a menu of bat survey options. Potential bat surveys include NABat transect or EMT surveys. Both are optional and require specialized equipment. *If presented with the yes/no field, please comment at the end of the survey form if an EMT survey is completed for bats.* In the **Affiliation** field, please enter the institution/organization you’re working with. In most cases this will be “PMRA volunteer”. The **Region ID** and **Transect ID** fields on hardcopy datasheets, are not required for digital data entry as they’re entered automatically by the app.

ROGERS 4:39 PM 27%

Pre-Survey Questions

Visit Number *optional*

Select

NABat Survey Done? *optional*

Select

Affiliation *optional*

Start Checklist

ROGERS 4:40 PM 27%

Pre-Survey Questions

Visit Number *optional*

1

NABat Survey Done? *optional*

No

Affiliation *optional*

PMRA Volunteer

Start Checklist

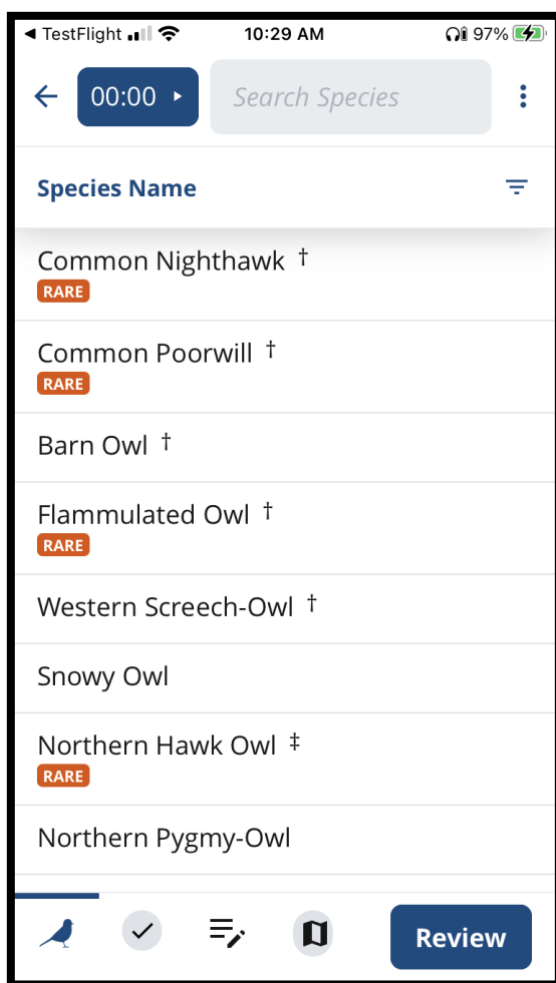
The screenshot on the left shows the screen you are presented with after selecting your survey station. The screenshot on the right shows an example for the first visit to a station by a PMRA volunteer, for a survey during which no NABat survey is completed. Once this information is entered, select “Start Checklist”.



## NatureCounts App Instructions

### Survey Timer & Owl Species Selection

Owl Observation Data are recorded within the species selection screen of the app-based data entry form accessed automatically after selecting “Start Checklist” or by tapping the bird icon in the lower left corner of the form. You have the option to start a timer upon opening this screen (select “Start Timer” in upper left corner of the form) if you have not already started a clock to track your survey timing.



If you hear or see an owl or other nocturnal bird during the survey, select the species from the list. If the species isn't in the list, look it up in the *Search Species* field at the top of the form.



## NatureCounts App Instructions

### Individual Owl Data

Once a species is selected, the following screen will appear in which you will provide details for an individual owl observed. Complete separate forms for each owl observed. A blank form is shown on the left. On the right, is an example of a WESO of unknown sex first detected 30 seconds into the survey NE from the station at a distance of 100-200 m. Then the same WESO individual is detected again during the second minute at a distance of 200-400 m, and again during minutes 13-16 at a distance of 100-200 m.

- **Direction** – direction of *first detection*, select a direction from the drop-down list.
- Record the **Minute** and **Second** (0:00-16:59) of *first detection* under the “Minute” (drop down list between 1 and 16) and “Second” (manual entry between 0 and 59) fields. Press and hold the “Second” field to enter a high value (59 or less). *NOTE:* The app does not support a “0” minute option, so if an owl is observed during the first minute, leave the minute field blank, fill in the second field, and note this within “**Details**” field below (see lower left of right screenshot, above).
- **Time Frames** (0-1Min, 1-2Min...) - During each time frame in which the owl is observed, record the first distance (in bins) at which the owl is observed. If the owl is not heard or seen during that time frame, do not record a distance estimate.
- **Sex** - Record the sex of the owl, if known, otherwise label as unknown.
- **Vocal Activity** - Record if the owl was vocalizing with another owl (courtship, counter-singing), vocalizing on its own (heard singing or calling), or silent (seen without being heard). The *S* and *H* codes that appear in the NatureCounts app after selecting the vocal activity described above refer bird behaviors (*singing, habitat*) rather than detection type (*seen, heard*). These will appear mismatched relative to the description but correctly translate the data to NatureCounts’ format.

Once complete, tap the arrow to the right of the species name to collapse the owl observation data and add other individuals of this or another species (**+ Add Individual Row**), if other individuals were observed. **Details** of owl detections can be recorded in the field below and are required to confirm WESO records. The **B.E.** (breeding evidence) field is optional. Select “Review” when finished.



## NatureCounts App Instructions

### Station Level Data

Station level data is recorded within the **Post-Station Questions** section following completion of the individual owl data section. **Playback Stopped Early** is recorded by selecting an option from the drop-down menu. Please complete the entire survey if possible and note why the survey was stopped early within the station level comments section on the following screen of the data form (details on next page). **Cloud Cover** is presented on a scale from 0 to 10, where 10 = 100%, 2 = 20% etc. **Precipitation Start** records the type of precipitation, as per the drop-down menu. All other weather fields are coded or categorized as per the *Datasheet Definitions* document. Stations are typically located along the roadside (Yes/No field).

AT&T 2:49 PM 62%

← Post-Station Questions

**Playback Stopped Early?** *optional*  
Select

**Precipitation Level** *optional*  
Select

**Moon Vis** *optional*  
Select

**Light Level** *optional*  
Select

**Precipitation Start** *optional*  
Select

**Cloud Cover Start** *optional*  
Select

AT&T 2:50 PM 62%

← Post-Station Questions

**Cloud Cover Start** *optional*  
Select

**Temperature Start (°C)** *optional*  
[Text Input]

**Wind Speed Start** *optional*  
Select

**Noise Level** *optional*  
Select

**Was the station completed along the roadside** *optional*  
Select

**Traffic Count** *optional*  
[Text Input]

The **Station ID**, **Date Start**, **Time Start** and **Time End** fields on the hardcopy datasheets are not required as they are entered automatically by the app.

Select “Next” after completing all fields on the **Post-Station Questions** screen.

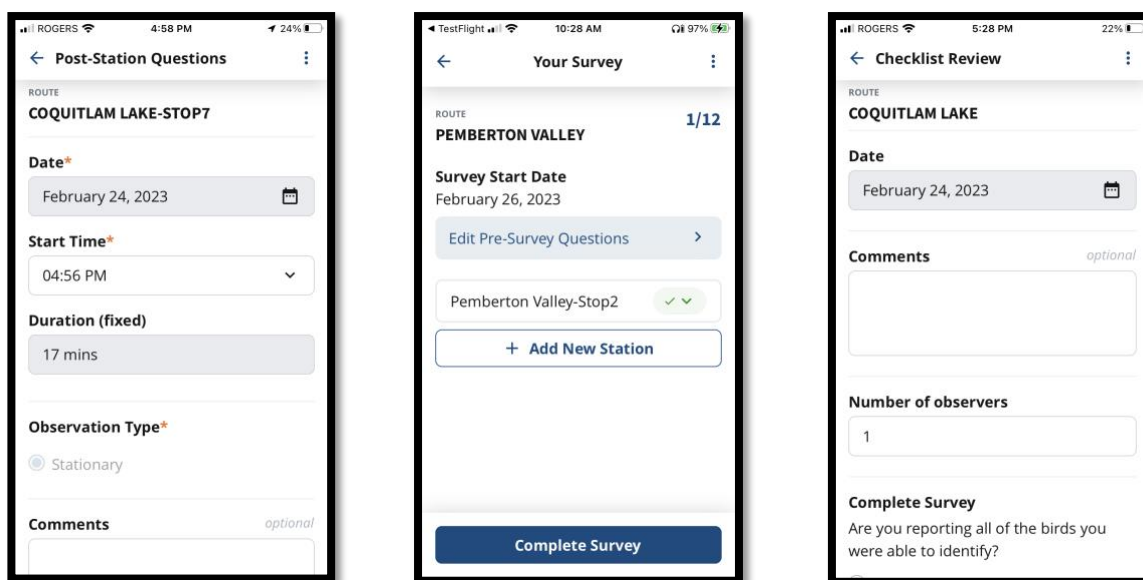


## NatureCounts App Instructions

### Station Level Comments, Add New Station, Checklist Review

The next screen in the app displays auto-filled **Date**, **Start Time**, and survey **Duration** (default 17-minutes as per the survey protocol) fields as well as a **Comments** field for noting station level comments (screenshot on the left, below). Comments could include type of noise, sources of anthropogenic light, presence of fog, rationale for stopping playback early, *Echo Meter Touch survey for bats completed* or any other station level information not otherwise captured in the provided fields. Comments for individual birds should go in the **Details** field. Following completion of the Comments field, tap “Save”.

Next, on the **Your Survey** screen (center screenshot below), you can add the next station on your transect route. Following completion of all stations, select “Complete Survey”.



The **Checklist Review** (screenshot on the right, above) includes a field for transect route level **Comments** as well as the total **Number of Observers** (2 is recommended). *Please include the names of all surveyors in these transect route level comments.* Finally, to inform data compatibility with other programs and datasets, the digital form asks to specify if you have reported all bird species identified (Yes/No). This information has potential benefits for other studies where data sharing is appropriate and agreed to by the contributing organizations.

***That's it!! Thank you!!!***