Environment and Rural Affairs Monitoring & Modelling Programme (ERAMMP)

ERAMMP Document-76
Field-Survey Handbook (Procedures)
Pollinators

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1.0	BTO	17/06/2023	Updates to text and online data entry to match current fieldwork plans
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Approved by

Abbreviations Used in this Report

BTO	British Trust for Ornithology
ERAMMP	Environment and Rural Affairs Monitoring & Modelling Programme
GMEP	Glastir Monitoring & Evaluation Programme
NRW	Natural Resources Wales
OS	Ordnance Survey
UKCEH	UK Centre for Ecology & Hydrology

In this handbook the term “landowner” is used to refer to the person who has given permission to access the land, this may be the owner of the land, a land manager, tenant or agent.

Abbreviations and some of the technical terms used in this report are expanded on in the programme glossaries: https://erammp.wales/en/glossary (English) and https://erammp.cymru/geirfa (Welsh)

Contents

1 Introduction

1.1 Overview of Pollinator Surveys for ERAMMP

You are a member of the field teams undertaking survey work for the Welsh Environment and Rural Affairs Monitoring & Modelling Programme (ERAMMP). Pollinator surveys are being handled by the British Trust for Ornithology (BTO). The project is an all-Wales structured survey based on an intensive assessment of land use and biodiversity in a set of 1-km squares across Wales.

Pollinator surveys will be carried out twice at each 1km square. The first survey should be carried out in July whilst the second should be carried out in August.

In the event that a long period of unsuitable weather prevents a full set of surveys being carried out in July, the first survey should be carried out as early in August as possible for those squares where it was not possible in July. There should be a minimum of 10 days in between the two surveys for any given 1km square.

1.2 Data Sensitivity and Handling

Data provided and collected under this project are to be handled in STRICT CONFIDENCE.

This means that you can share or discuss what you have seen with the landowner[1] only, not with their neighbours or members of the public. Treat the field maps and completed datasheets with care: do not leave them lying around or visible to others. If asked for a copy of any document or record, you cannot comply; instead refer them to the Survey Office.

Do not mention or reveal the locations of the survey squares to anyone except project staff at BTO and UK Centre for Ecology & Hydrology (UKCEH).

Personal data (such as names, addresses and contract numbers) are also confidential and must be handled similarly carefully.

Do not publish on social media, blog or BirdTrack anything from the survey squares (although you are welcome to BirdTrack sightings from your routes to and from survey squares, using common sense over the situations).

[1] In this handbook the term “landowner” is used to refer to the person who has given permission to access the land, this may be the owner of the land, a land manager, tenant or agent.

2 Permissions

Surveyors will be provided with lists of squares to cover but need to schedule specific visits themselves. The BTO Ecologist and UKCEH Data Analyst will provide surveyors with "square packs" containing maps of areas of land where permission has been granted for the survey (Figure 1). All other land is out of bounds. Square packs will also include a table of contact details linked to areas where survey permission has been granted.

Unless explicitly stated in the contact details sheets, surveyors should contact landowners whose land they will survey and express intent to visit their land 2-3 days (up to 7 days) before conducting a bird survey. Only contact details for landowners who granted permission are provided (green area on traffic light maps (Figure 1)). You can enter Natural Resources Wales (NRW) land (vertically hashed in green on traffic light maps). Land coloured red has had permission refused and you cannot enter it, additionally some land where contact wasn't able to have been made is also coloured in red but listed as "Unaccounted Land" should also be treated as permissions refused unless told directly by BTO/UKCEH.

Surveyors are to keep landowners informed of survey plans, and work around landowners if requested. **Please provide a weekly update to the BTO Ecologist of which survey squares have been completed and provide details to the UKCEH Field Survey Manager as well about access complications.**

For landowners who have asked to be contacted in Welsh, please do so on your first call and if you aren't confident in certain aspects of technical vocabulary, ask if they would be happy for you to explain this in English. If you don't have enough fluency in Welsh to explain the purpose of your visit, please let the BTO Ecologist know, and they will arrange for contact to be made in Welsh. Due to staffing, this needs to be arranged the week beforehand, ideally by the end of Wednesday, and then calls will be made on Thursday (Friday if no answer) and relayed back to you asap. We realise that plans can change with the weather so give a rough estimate of the day you expect to visit, and we'll ask the landowners for any days they don't want a surveyor on their land.

Landowners may ask to meet with the surveyors before a survey can be carried out. If a landowner wants to meet a surveyor please be aware that we have not budgeted for pre-survey 'meet and greet' visits to squares, so please minimise such trips and tie them into survey days at other squares nearby. Details of the current procedures will be provided ahead of survey start.

If a landowner cannot be reached via a call, surveyors are able to carry out the survey, but please ensure that you endeavour to get hold of them beforehand. If the surveyor leaves a message on an answering phone, please provide a phone number in case the landowner wants to call back.

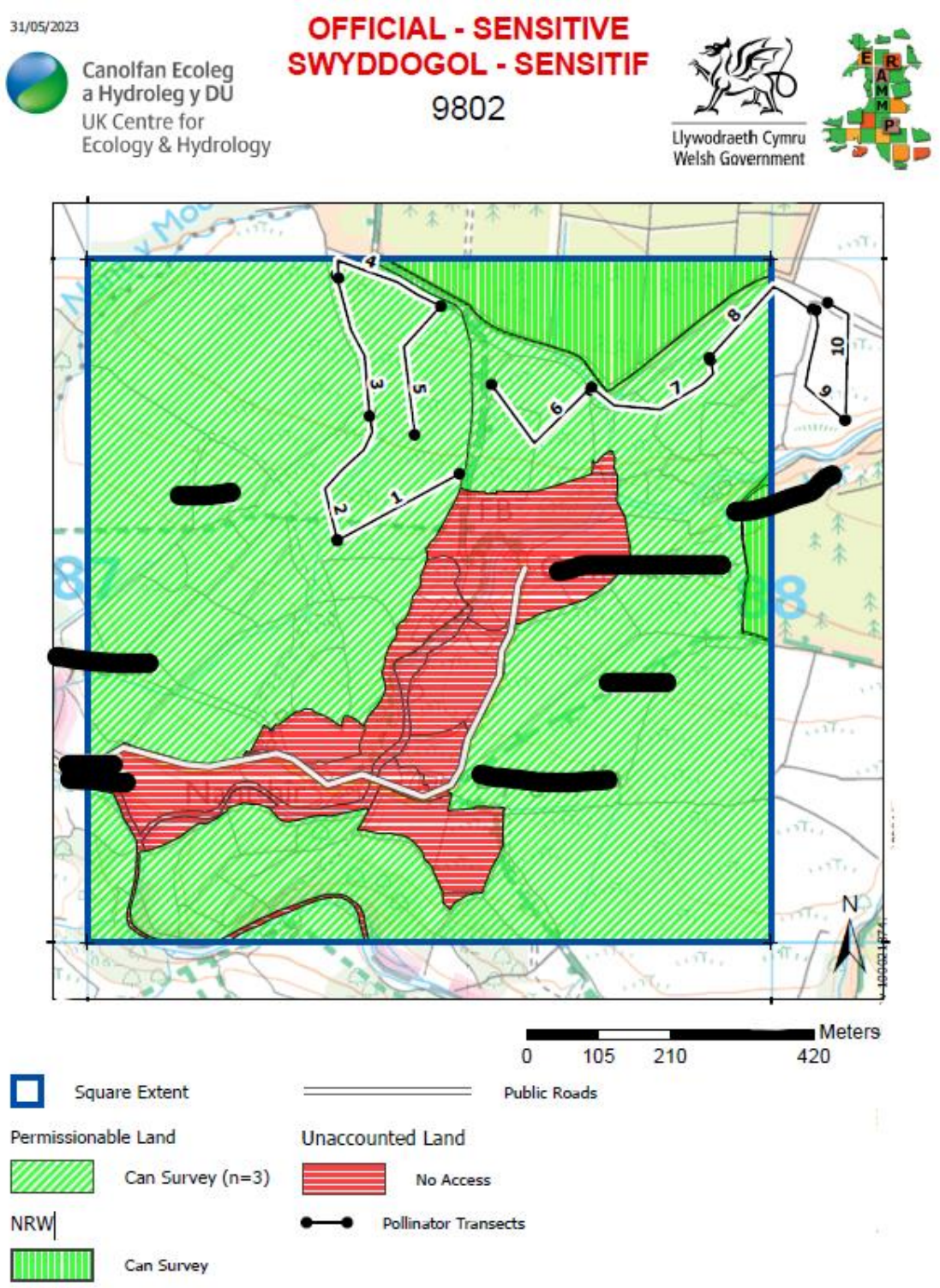


Figure 1 Examples of "traffic light" maps showing areas where permission is granted for survey (green). Areas in red are where permission has been refused and where it wasn't possible to get a full answer which should also be treated as for refused areas. NRW land can be accessed although not marked in green – identified by vertical green hashing. Location and landowner identifiers are blacked out in this example but are visible in the survey packs (sensitive/confidential information).

2.1 Contacting Landowners

- Phone landowners 2-3 days (up to 7 days) prior to the survey unless explicitly told otherwise.
- Explain that you are carrying out pollinator surveys on behalf of the British Trust for Ornithology and the UK Centre for Ecology & Hydrology, who have been contracted by the Welsh Government to survey farms in relation to the Glastir land management scheme, including farms not currently included in the scheme. Explain that they should have received a letter saying the survey was planned to take place.
- The landowner will also have been contacted by a company called “XSG Ltd”; the landowners may have granted permission over the phone. Alternatively, the landowners might have filled in an online questionnaire to grant permission.
- You may find that land has recently changed ownership, or that the contact supplied is not correct. When this is the case please get as much information as possible and pass this on to the UKCEH Field Survey Manager or BTO Ecologist so that they can update the records. Do not pursue new contacts without first informing the project team and assume that access has not been granted unless you hear otherwise.

To help plan surveys it is advised to check the weather forecast in advance as a preliminary guide, although we appreciate that there will still be a need for a degree of flexibility around this. The following meteorological applications are recommended, should you have a smart phone:

http://raintoday.co.uk/
https://www.theyr.com/app.asp
http://www.xcweather.co.uk/
https://www.ventusky.com/

3 Pollinator Survey

3.1 Aims

The pollinator surveys are intended to complete the ecosystem approach being led by UKCEH, which uses Countryside Survey (CS) methods to survey a randomly selected set of 1-km squares across Wales to monitor the wider environment. It is also intended to measure the effects of any Glastir management in the squares. In comparison with other ERAMMP survey data, they will permit evaluation of the relevant effects of Glastir on birds.

Pollinator surveys will focus on butterflies, bees and hoverflies. Butterflies will be recorded to species level whilst bees and hoverflies will be recorded under groups detailed in the training session, supported by additional ID material. Simple identification guides will be provided to surveyors. Flowering plant groups will also be recorded to help interpret data on pollinating insect groups.

3.2 Methods

The pollinator surveys will consist of two independent parts: a **standardised 2 km transect route** through each 1 km square followed by a **timed observation in a 150 m^2, flower-rich area within the squar**e. Two survey visits will be conducted between early July and late August, to record the presence of pollinators with respect to flowering plants in the area. These two methods are described in detail below and will broadly follow the methods used for the Wider Countryside Butterfly Survey.

For each 1 km square we will provide:

1) A map showing areas of land classified by access permission, with indication of land ownership.
2) An aerial photograph of the area showing the vegetation type and general land surface.
3) A black and white map of each 1 km square showing the previous 2 km transect route for that square. Transect routes are split into 10 x 200m sections (see details below for setting up transect routes). Surveyors may walk new transect sections during surveys, which they are expected to draw on this map.

Where available, details of parking places and entry points to the square will be provided with the maps. However, these may have changed by the time you survey and/or you may locate more suitable parking places/entry points during your survey. Similarly, you may find that access to parts of your route have been restricted by fences and/or other obstructions (including land management such as harvesting and ploughing) not registered on the maps. **Please pass any information regarding parking places, entry points and obstructions on to UKCEH/BTO at the end of your survey.**

3.2.1 Transect Routes

Surveyors will be provided maps of transect routes walked previously in each 1 km square. These routes are 2 km long (comprising two 1 km ‘transect lines’) divided into 200 m transect sections numbered 1-10. Previous surveys intended to make the 1 km transect lines run parallel in an N-S or E-W direction through the square. However, in practice, these transect

lines deviate from the 'ideal' because of problems with access, or barriers such as roads, rivers, canals and fences (Figure 2; surveyors should avoid climbing over fences unless absolutely necessary). Transects walked previously deviate greatly from the 'ideal', but on average they represent paths of low resistance to carry out pollinator counts, avoiding walking across fields of crops and where possible following linear features such hedgerows and footpaths which also facilitate relocation.

- Ideally, surveyors will walk exactly the same route as the one shown on the map provided, ensuring that counts and cover are recorded under the correct section number.
- In practice, some transect sections may no longer have permission granted, which will be clear from the maps provided, or may occur during the season (where the surveyor receives new information, they should contact BTO/UKCEH to let them know of the change so it can be documented).
- Established transect sections should be re-walked if possible, provided that either (1) access remains granted for >90% of that section OR (2) the section falls on a public right-of-way.
- Where transect sections are no longer accessible, surveyors will need to create new sections to replace those they can no longer walk. New sections should be set up following the guidance in Box 1 (Creating new transect sections).
- In some cases where access to land in the 1 km square has significantly changed over time, entire transect routes may need to be re-routed. Guidance in Box 1 should be followed, but in addition, as much as possible the new transect lines should aim to sample in the same habitat type as the previous ones.

For the second visit to each 1 km square, permissions should be the same. As such, we expect the same transect routes to be walked in the first and second visits. If surveyors do make changes to transect routes between their first and second visits, they should take note of this.

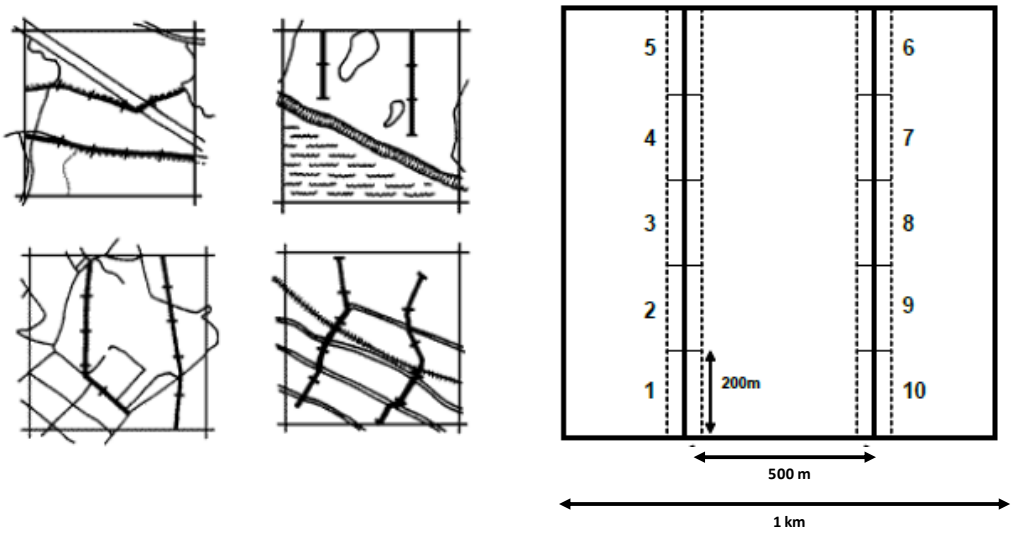


Figure 2. Example transect lines (left) where in reality obstacles, field margins and other land features cause the survey line to diverge from the ideal design (right).

Box 1: Creating new transect sections

When adding new transect sections, the following guidance applies:

- Ideally, transect lines should be around 500 m apart and 250 m from the edge of the square (Figure 2).
- In cases where transect lines deviate considerably from the 'ideal', at no point should the two lines be closer together than 100 m.
- The total length of each transect route should equal roughly 1 km. Where new transect sections are required they should be planned to be of a similar length to those they are replacing. For each of the two transect routes, only record 1-km even if it means not reaching the edge of the square (see examples below, Figure 2).
- Minor intrusions into adjacent squares are acceptable only where permission to survey is understood to be granted (for example where a transect section crosses the border of a 1 km square but remains in the same field).
- 1 km Survey lines should be contiguous, but in extreme circumstances such as restricted access to large areas of land, the transect line may be divided appropriately across the 1km square. Individual sections on the 1-km transect line should always be 200m.
- Survey lines should avoid urban habitats including roadside verges unless absolutely necessary.
- When new transect sections are established, it is important to (1) draw the new transect section(s) on the hard copy of the transect map and number them appropriately, and (2) draw any new sections as accurately as possible on the online data entry form.
- If changes to transect sections are due to permanent access restrictions (e.g. construction developments) rather than mapped permissions, surveyors should indicate that the changes they have made are permanent on the online data entry form.

3.3 Survey conditions

Before the transect is walked, the surveyor should fill in the start time, date etc. at the top of the recording form. **Percentage Sunshine (0-100%)**, **Wind speed (Beaufort 0-6)** and **Temperature (Celsius)**. To fill in the **average temperature** for the survey it is recommended that surveyors do this during the timed observation by placing a thermometer in a shaded position at the start and recording the temperature at the end of the timed observation.

3.4 Insect counts

The transect should be walked at an even pace and only the insects of the target groups which are observed within a 5 m box around the surveyor should be recorded (up to 5 m in front, 5 m above ground and 2.5 m either side; see Figure 3). **Do not** record anything which is flying further ahead or otherwise outside of this box.

Recording forms will be provided which will include a list of all the butterfly species likely to be encountered, with spaces for additional species. Also included on the recording form are the bee, hoverfly and plant groups to be recorded. For butterflies, bees and hoverflies the surveyor should record abundances of each species/group for each section using tallies in the relevant recording boxes. When abundances are high, surveyors should not spend too much time trying to count every individual; surveyors should be maintaining continuous movement rather than stopping to count. Using a technique such as counting to the nearest ten is suitable for high abundances and/or using mechanical counters or counter apps on mobile phones.

For those species that are difficult to tell apart in flight (e.g. Large, Small and Green-veined Whites), surveyors are encouraged to catch them for identification. Essex Skipper is uncommon in Wales but if surveying a square where this species is found please try to separate Small and Essex Skipper, adding the latter species to the recording form. As the two species can only be separated upon inspection of the underside of the last antennal segment, it is advised that the surveyor catches ten or more individuals along their transect to determine the approximate proportion of the two species whilst recording them as Small/Essex Skippers in the interim.

At the end of the transect these proportions can then be used to calculate the numbers of each species across the transect.

When capturing a butterfly for identification the surveyor should stop recording on the transect. Once the butterfly has been identified and released, the surveyor should return to the point in the transect that they stopped and continue recording from there. If an individual butterfly is encountered more than once and the surveyor is certain it is the same individual, then it should only be recorded once. If there is any doubt, then it should be recorded on each separate occasion it is observed.

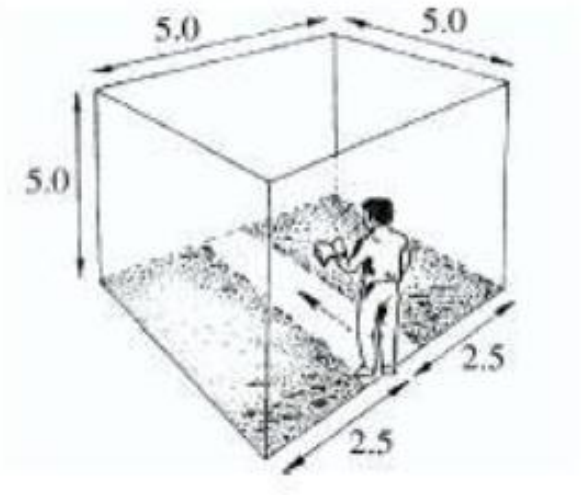


Figure 3. The 5 x 5 x 5m recording box for transects

Only plants in flower at the time of survey should be recorded, because we are interested in the resources available to the pollinators at the time of recording**. Surveyors are asked to record cover of flowers, *not* vegetation.** Therefore, DAFOR-X should be applied to only the area of the 200m section occupied by the flowers and not the vegetative cover. This means that the cover for each transect section is unlikely to sum to 100%.

3.5 Flower cover

For plant groups the surveyor should score each transect section, for each plant group using the DAFOR scale:

D (Dominant): >30%
A (Abundant): 11-30%
F (Frequent): 6-10%
O (Occasional): 2-5%
R (Rare): 0-1%
X (not seen on route)

On the recording form there is a list of plant groups considered to be most important for pollinating insects in July/August. Given temporal and spatial differences in species diversity and abundance, other plant groups may be important on some of your survey squares. If this is the case please note the group down and record the DAFOR-X on the transect etc., as normal procedure for other plant groups.

When entering this data online enter the DAFOR-X data any other plant groups you found to be important under 'Other Plant groups' and record which plant groups these were under the 'Notes' tab. Where you have recorded more than one extra plant group please enter an overall DAFOR-X score for all those groups combined.

3.5.1 Timed observation

Whilst walking the transect the surveyor should identify a **150 m^2** area (ideally rectangular or along a linear feature) with good coverage of flowering plants within the 1 km square that the transect route runs through. This can be located with its origin on the transect line if an appropriate area exists there, but where this is not the case it is equally acceptable to locate the 150 m2 area elsewhere as long as it is within the 1 km survey square. It is advised to try and choose an area that is relatively sheltered when possible.

Timed observations can be performed any time during the overall survey of the square after the first two sections of the transect have been walked - depending on when a suitable area is located. It is, however, advised that a greater length of the transect is walked before performing the timed observation as you may encounter more suitable flower-rich areas when having covered more of the 1km square.

If timed observations are conducted during a transect, surveyors must stop recording on their transects. Following the timed observation they should continue to walk and record on the transect from exactly the point where they stopped. The surveyor should spend **between 10 and 20 minutes** searching the timed observation area for butterflies, bees and hoverflies.

Where pollinator abundance is low and/or the 150m^2 area has a low density of flowering plants, surveyors should spend a minimum of 10 minutes searching the area. The timed observation should not exceed 20 minutes no matter how high the pollinator abundance is. Surveyors should record the duration of their timed observation by recording the start and end times of the search.

Timed observations should be conducted by continuously moving throughout the 150 m^2 area, although it is acceptable to stop to count individuals (unlike on transects). If within the 10 minutes the surveyor has already passed through the entire area they should pass back through it until a minimum of 10 minutes searching has been completed.

There is a separate recording form for the timed observation on the reverse side of the transect recording form. This is presented as a grid so that the surveyor can mark which plant groups (when this is the case) that each species has been recorded visiting (note: only record the insect at the plant group if it is observed visiting the flower). When not visiting a flower the insect should be recorded in the separate column titled 'Not at flower'.

As with the transect recording form, the surveyor should use a tally to record the number of each insect species or group at each plant group. There are a greater number of plant families on this recording form but surveyors may still find other plant families in their observation area. Surveyors should make a note of these extra plant families and record the number of pollinators visiting them.

When entering this data online please record these extra families under 'Other plants' and record which plant families were observed under the 'Notes' tab. Where more than one extra family is recorded the tally for each pollinator species/group visiting should be summed across all extra plant families. The grid reference of the chosen plot should be recorded along with the start time and other weather conditions as set out at the top of the recording form provided.

The 6-figure OS grid-reference should be recorded at the centre of the 150 m^2 area for each timed observation. Note that the 150 m^2 area for the timed observation is not fixed for the two visits in July and August as flowering patches are unlikely to remain in the same area throughout the year. The area should be chosen during each survey. Transect routes however, are fixed, and the same route should be walked in both the July and August visits for each 1 km square.

3.6 Photographs

Surveyors are required to take a single photograph of a specimen from each bee and hoverfly group (a total of seven photographs) and send these directly to Katharine (katharine.bowgen@bto.org).

These photographs can be of any species within a given group and can be taken at any time during a survey from anywhere within a survey square but must be taken from a survey square belonging to that surveyor. These photographs should then be submitted to the surveyor team for verification (details below). **Geotagging must be switched off** on the camera/phone you are using.

Surveyors may also wish to take photographs of any insects or plants where identification is uncertain. These can then be emailed to Mike Edwards (Ammophila@macace.net), butterfly ID queries to Marc Botham (math2@ceh.ac.uk), and the other surveyors on the project, for identification help. If interested, surveyors may choose to ask for and join a WhatsApp group, but geotagging must be switched off on the phone.

For all photograph submissions please try and reduce the file size, especially for those sent by email for identification. Online submission of large photographs will be considerably slower and large photographs sent by email are likely to fill recipient inboxes. File sizes can be greatly reduced without any significant loss of clarity, especially for these purposes, using various image software programs of which a number are free to download from the internet.

3.7 Conditions under which recording should be undertaken

Surveys (transects and timed observations) should ideally be completed **between 10:00am and 16:00pm** and the start and end times should be accurately recorded on the top of the recording forms.

It is also permissible, and advised whenever possible, to record from 09:30-10:00 and 16:00-16:30, if at these times the majority (>75%) of the survey area is unshaded and the standard weather criteria (described below) have been met.

Surveys should also be completed only under the following weather conditions:

- **Between 11 and 17˚C providing there is at least 60% sunshine**, unless in an upland area in which case the survey can be conducted when above 11˚C with less than 60% sunshine. Upland squares are classified as squares where more than 50% of the land along the survey lines is above 300 m (900 ft).
- **Above 17˚C regardless of sunshine**, unless it is raining.
- When **wind speed is less than 5** on the Beaufort scale detailed below.

Beaufort scale:

0	smoke rises vertically
1	slight smoke drift
2	wind felt on face, leaves rustle
3	leaves and twigs in slight motion
4	dust raised, small branches move
5	small trees in leaf begin to sway
6	large branches move, telephone wires whistle

Sunshine should be calculated as the percentage of the transect that was walked within which the surveyor cast a shadow. Temperature should be recorded in centigrade (˚C) to the nearest whole number, and under shade.

Surveyors may record any species they can confidently identify during their survey as long as it does not detract from the main survey and/or significantly increase the time taken to complete the survey. Additional species should be recorded on a separate piece of paper and recorded in the “comments” box in the online data form.

3.8 Paperwork & kit for pollinator surveys on ERAMMP squares

- ERAMMP notice for your vehicle.
- This project field instructions sheet.
- Copy of ERAMMP letter sent to landowners (for information only).
- Instructions for any biosecurity procedures.
- Disinfectant tablets and a spray bottle.
- Disinfectant instructions, information, MSDS sheets.

- Your list of squares, with grid references to help you find each one.
- For each square assigned to you:
  - ✓ A4 colour access permissions map (traffic light)
  - ✓ A4 colour aerial photograph (habitat reference)
  - ✓ A4 landowner map (coloured by landowner)
  - ✓ A4 landowner contact details
  - ✓ 2 x A4 OS boundaries maps (1 colour, 1 greyscale) - for recording changes to transects in the field and one spare in colour for planning.

3.9 Example Weekly and Daily Plan

1. Identify which squares you plan to survey in the following/coming week.
2. Contact all landowners to explain you will be coming to survey for ERAMMP and give an expected date. Take the opportunity to ask if there are any livestock issues that may arise (cattle, horse etc.) on their land so you can plan around these. You may also ask for parking options if needed.
3. Plan your routes across the land and make sure you have all the maps needed for each visit. Make sure you have disinfectant bottle ready for use.
4. Let the BTO Ecologist know which squares you plan to visit in the next week via email.
5. On the day of your visit, call PeopleSafe before you leave where you've parked detailing your location, square number and timings for the visit.
6. Spray your boots before you enter into the farmers land – ideally spray between different landowner's fields.
7. Carry out your survey.
8. Once back at the car, call into PeopleSafe again to cancel the visit, spray boots again and pack up! Clean and spray vehicle tires before leaving a farmyard (follow biosecurity instructions).
9. Once back enter in all data collected that day, if you are pushed for time you may do this another day, but always within a week to make sure any idiosyncrasies with your writing/square aren't forgotten.
10. At the end of the week let the BTO Ecologist know again what you've completed and what you plan to do the following week.

3.10 Personal Safety

On the day, use PeopleSafe standard call safety arrangements.

Record the **UKCEH square number** on your PeopleSafe message alongside the time you made this and the time you expect to finish. If you are in an area without signal leave enough

time to get back to signal but also feel free to set up a text messaging service with the BTO Ecologist to confirm when you leave and arrive as texts can be sent with much weaker phone signals than a phone call.

Read the fieldworker handbook before starting any work to help remind you of tips and suggestions.

3.11 Biosecurity

You have been given a bottle of concentrated disinfectant (with instructions) and a spray bottle. Read the safety sheets and instructions for general disinfection (dilution is one tablet to 500 ml of water). Carry only the diluted disinfectant with you – the additional tablets can be left at home and replaced when necessary.

1. Check whether the landowner has their own biosecurity measures and comply with these.
2. Make sure vehicles are clean especially if they are being taken onto farm premises.
3. Whilst we ask that you don't park in farmyards/near farm buildings, if this is unavoidable, clean and disinfect car wheels on entering the farm (if parking in farmyard) and also disinfect on the edge of the premises when leaving (e.g. at the bottom of the farm drive just before going onto the public road).
4. Clean and disinfect footwear on entering the farm and also before leaving (it's very important farmers see this is being done even if at times it appears unnecessary e.g. if you've disinfected boots on leaving one farm and you then have to disinfect on arriving at the next).
5. When your survey route crosses farm boundaries, please spray your footwear at the boundary.
6. Disinfectant should only be applied after dirt has been washed/brushed off and make sure your boot surfaces are wetted with disinfectant.
7. Use only the supplied disinfectant (you should have plenty and it keeps well) and if you need more tablets let the BTO Ecologist know.

4 Online Data Entry

Data entry must be carried out on devices provided and administered by BTO. You will be given a BTO laptop to use for the duration of the project, this should be kept in a secure location at home and only used to carry out ERAMMP-related activities, principally data entry.

The pollinator data will be entered into online spreadsheets, one for each square with tabs for each visit. Changes to transects will be entered into an online mapping website (the same as was used for bird surveys – ArcGIS Field Maps).

The instructions below should be understandable but if you have any questions or are worried that you might have made a mistake you can't correct, please email the **BTO Survey Manager** directly.

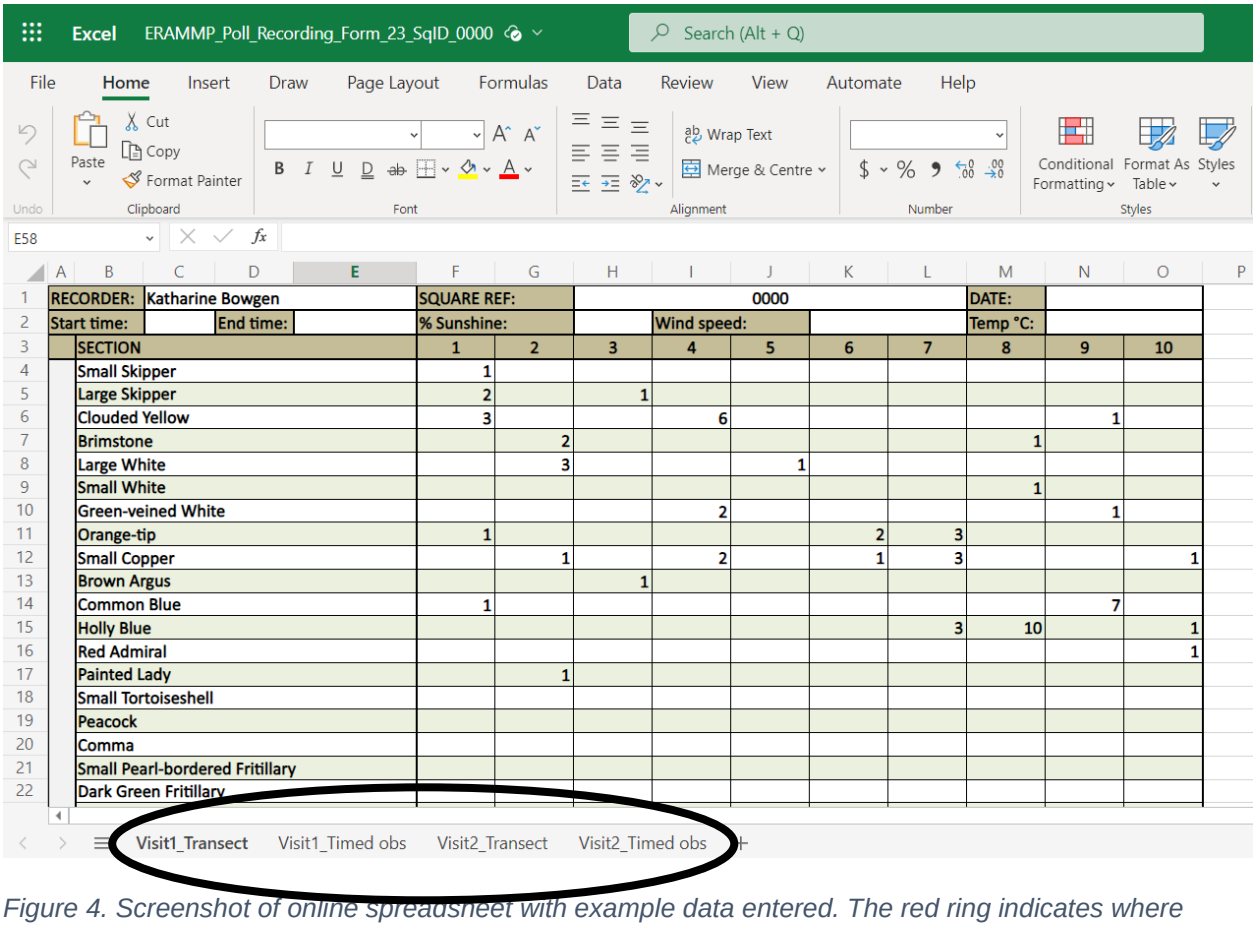
NB: Though data entry will be retained by the online sheets and webpages, hard copies of data, on paper forms, should be retained and returned to Katharine Bowgen (BTO) at the end of the survey year.

4.1 Online Spreadsheets

Unique links to the online spreadsheet links can be found once you are logged into the ArcGIS Field Maps systems (see Section 2).

Each linked spreadsheet will be set up exactly like the data entry recording form that you have been physically recording your pollinator sighting onto. There are tabs at the bottom for the transect and timed observation sheets for Visits 1 and 2. Please fill each online form to match, making sure to fill in both the tab for "Transect" and "Timed obs" (Timed observation). See Figure 4 for a screenshot of an example online datasheet.

These sheets are editable on each opening occurrence so corrections can be made easily and are automatically updated so you will never need to press "save". Once you have completed several please let Katharine Bowgen know so she can check these through before you do more.



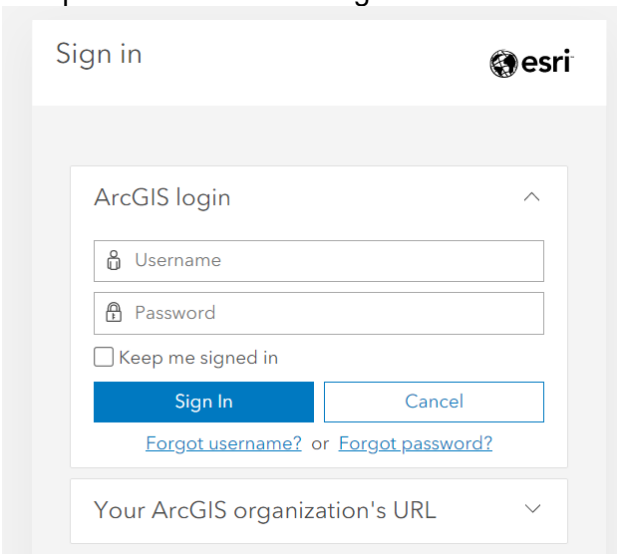
RECORDER:	Katharine Bowgen			SQUARE REF:		0000					DATE:		
Start time:		End time:		% Sunshine:			Wind speed:				Temp °C:		
SECTION				1	2	3	4	5	6	7	8	9	10
Small Skipper				1									
Large Skipper				2		1							
Clouded Yellow				3			6					1	
Brimstone					2						1		
Large White					3			1					
Small White											1		
Green-veined White							2					1	
Orange-tip				1					2	3			
Small Copper					1		2		1	3			1
Brown Argus						1							
Common Blue				1								7	
Holly Blue										3	10		1
Red Admiral													1
Painted Lady					1								
Small Tortoiseshell													
Peacock													
Comma													
Small Pearl-bordered Fritillary													
Dark Green Fritillary													

Figure 4. Screenshot of online spreadsheet with example data entered. The red ring indicates where you can change from Transect to Timed Observations

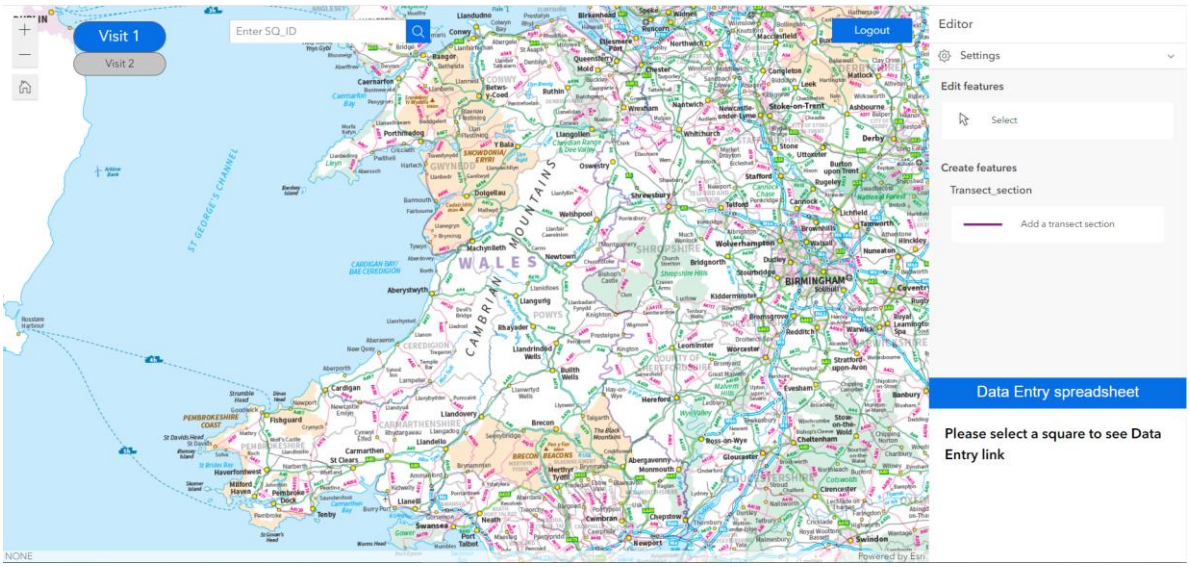
4.2 Transect changes: ArcGIS Field Maps Instructions

The link to access the form is: https://arcg.is/1fK01b0

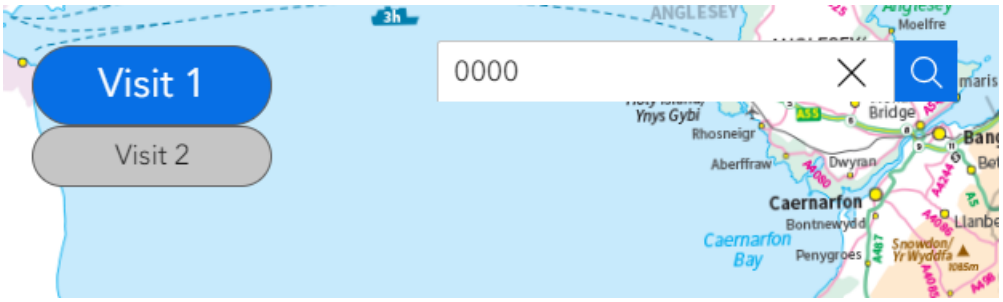
1. This new forms requires a unique log-in which will be provided to you directly. Enter your username and password and click “Sign In” to access the data entry maps.



2. Once Signed in, you will see the data entry map with an OS basemap, buttons to select Visit 1 or 2, a search box for your Square ID, a log out button and an editing bar to the right hand side. You can zoom in and out on the map using either the buttons on the top left (+ and -) or the scroll button on mouse.



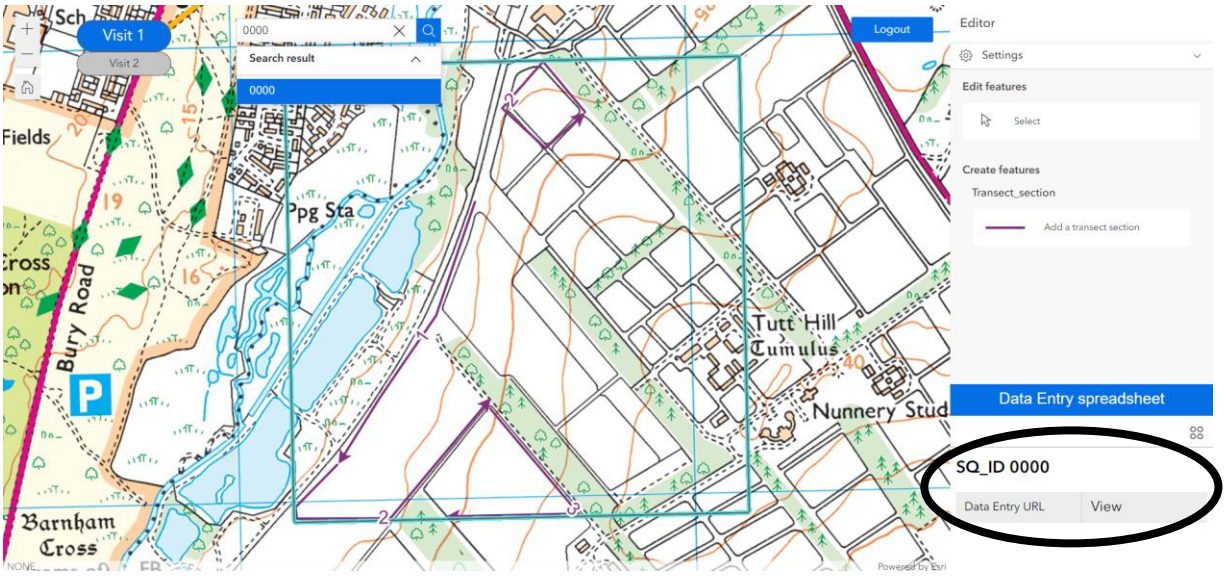
3. Select Visit 1 or 2 depending on which data you are working on and enter your square ID from the top of your sheet into the search bar – then either press the enter key on your keyboard or click the blue search button (a circle with a line, a magnifying glass) to the right.

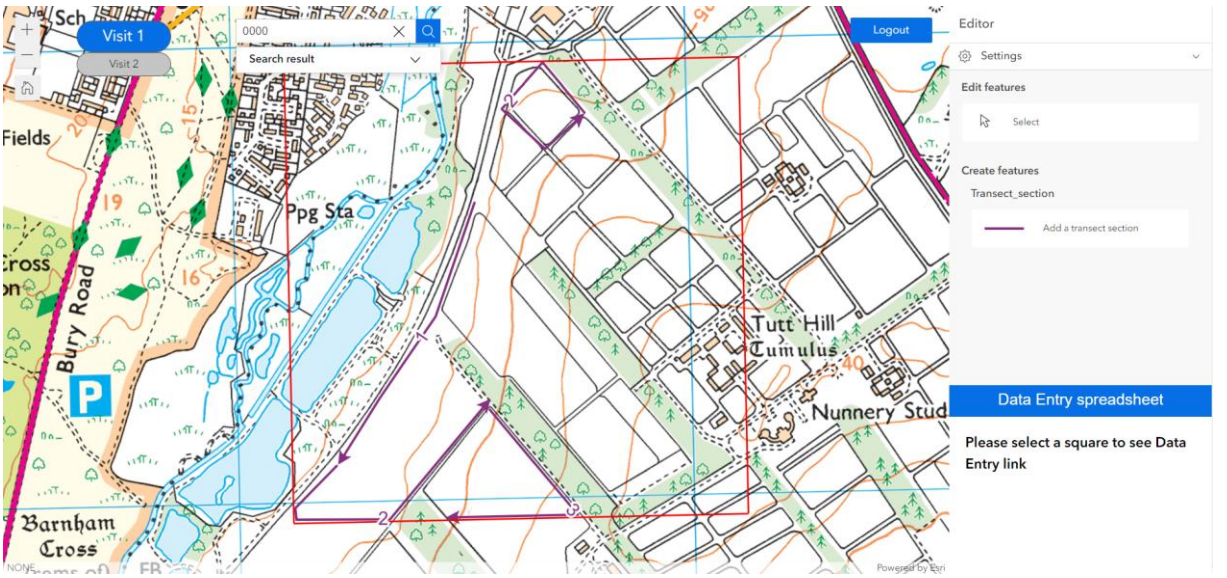


4. You will now find yourself at your square selection and there should be a grey panel to your right which will above allow you to create the transect section updates and below provides a link to the online Excel sheet for entering data (see section 4.1 above). The data entry spreadsheet link will only show if the square is highlighted in blue, if it is red there will be a message saying “Please select a square to see Data Entry Link”. Click on this red outline to get the entry link back again.

   Click on “View” in the data entry box to get to the spreadsheet. This will open a new tab in the web browser and once you are finished you can close this as the data is automatically saved.

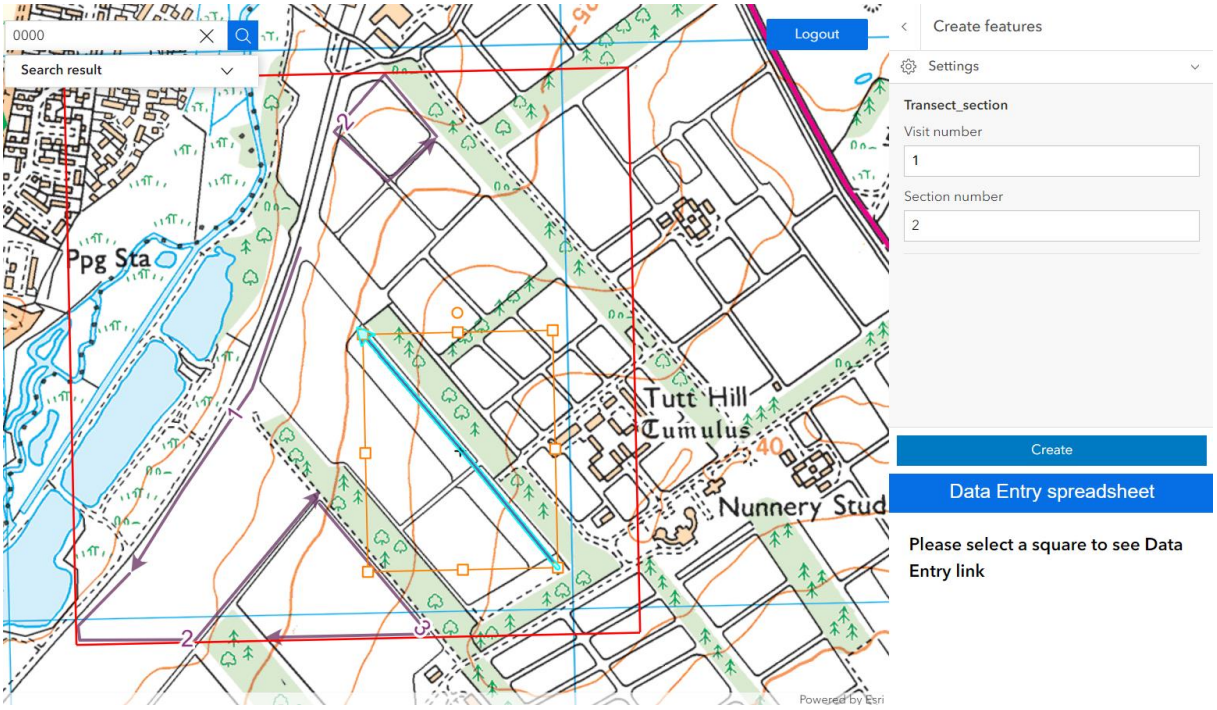
   You can choose to add a new rerouted transect line first or enter data first – it is up to you.



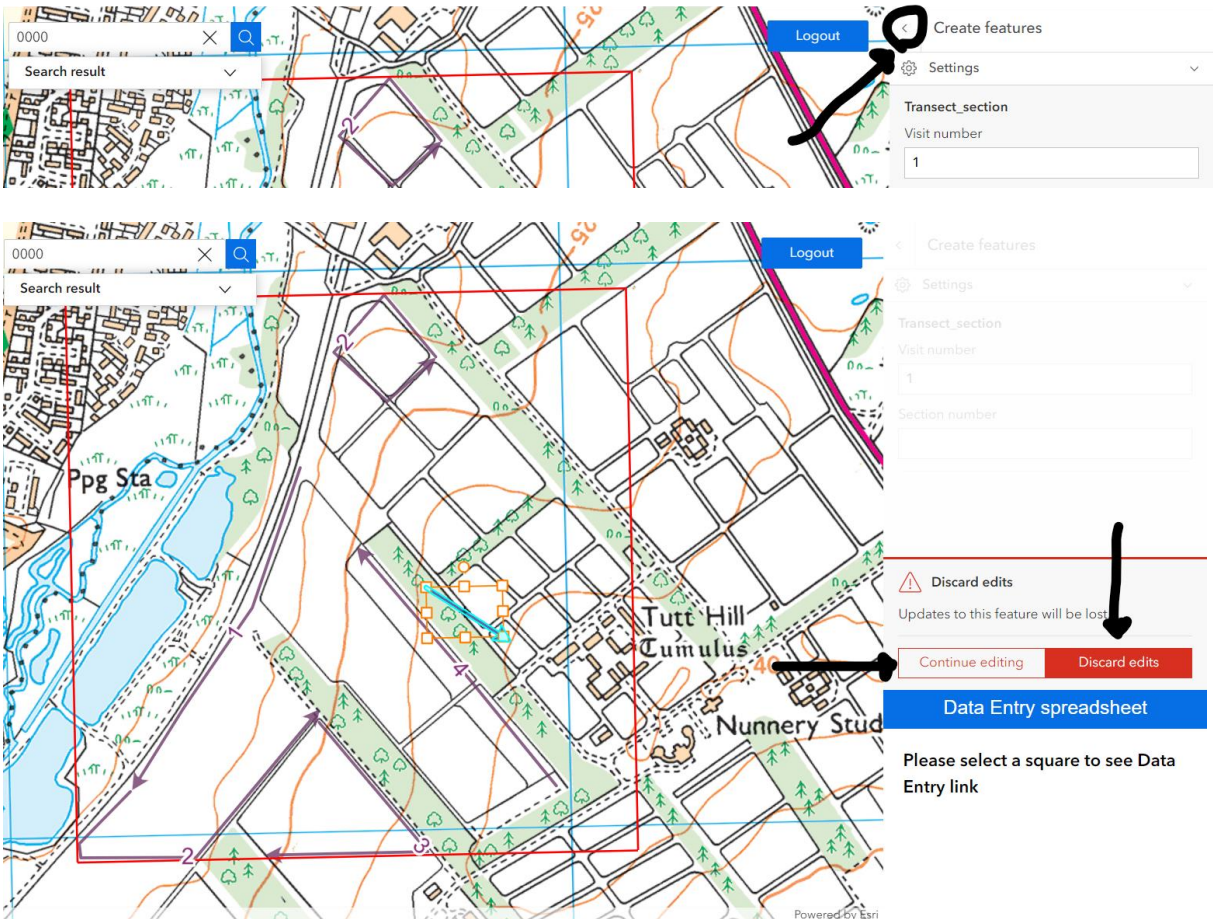


5. To edit a transect, start by adding the transect that you walked. Click on the “Add a transect section” in the Editing bar to the right. Then, starting with where the transect begins, click and let go to make the first point then move away to see a dashed “black and white” line connecting you to this. Click on to the next point on your transect in a straight line and for each bend or curve you’ve taken click again and create your route. When you have finished your route, double click to finalise this route, type in the name of the section number in the grey panel on the right under “Section number” then press “Create” in blue to compete this transect. How to correct any mistakes will be explained further on.

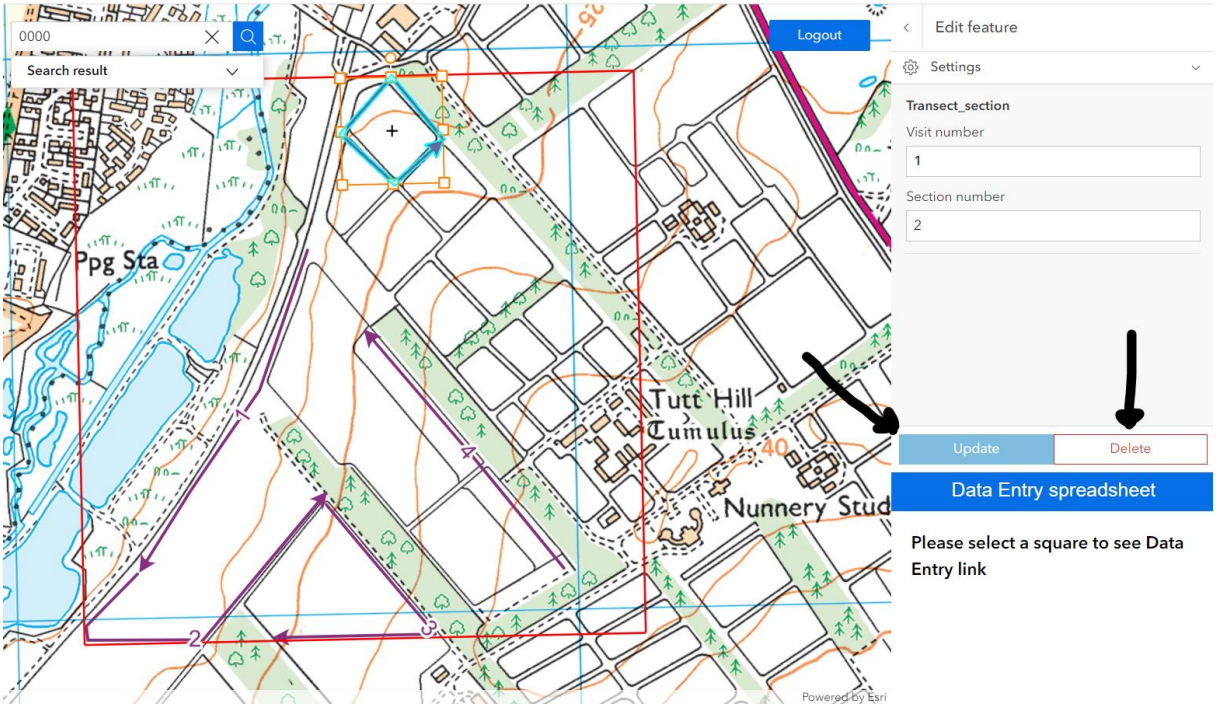
   To create a second rerouting transect, follow the same procedures but make sure the number it correctly so there aren’t duplicates.



6. If you have made a mistake but you haven't pressed create yet, select the back arrow at the top of the right-hand editor and this will ask you if you want to "Continue editing" or "Discard edits". Select discard if you want to get rid of this and start again.



7. If you notice a mistake after you have pressed “Create”, choose the top option of the grey panel called “Select”. This will allow you to then click and select the transect you want to edit and provide the option to “Update” or “Delete” in the grey panel. If you wish to remove this record entirely, press “Delete” again. If you are updating the position of the transect, correcting the section number or need to edit a point on a transect press “Update” and then either change the information as needed or hover over the transect, click, and move it to a new location. Once this is done the “Update” button will become a darker blue and you can press on it to update the record.



8. Once you are finished, either adding new rerouted transects or just for your data entry that day, make sure your last edits have been “Created” and press “**Logout**”.

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