

This guide will tell you all the necessary steps to complete a survey of your designated salt marsh using the Saltmarsh app and some basic survey equipment.

Before you go

1. Please read the *information sheet* and *risk assessment* included in the survey pack
2. You may need permission to access your designated marsh (see *information sheet*). If so, please identify the landowner of the marsh (we can help you do this) and ask for their consent to carry out a survey
3. Download the Saltmarsh app onto your smartphone
4. Register an account with the Saltmarsh app by selecting 'Log in' and 'Register now'
5. Make sure that GPS location is enabled on your smartphone as follows:

For iPhone,

- Go to 'Settings' > 'Privacy' > 'Location Services'
- Make sure the 'Location Services' slider is 'On' (green)
- Scroll down until you see 'Camera'
- Tab on the 'Camera' icon and select 'While Using the App'

For Android,

- Go to 'Settings' > 'Location'
- Move the slider to 'On'
- Select 'Mode'
- Select 'High accuracy'

Depending on your device, you may also need to enable 'geo tags' as follows:

- Open the Camera app and select 'Settings'
- Scroll down and search for 'geo tags' or similar
- Turn 'geo tags' on

6. Make a note of the high and low tide times at your marsh on the day of the survey (see *information sheet*). Aim to visit the marsh 1 hour after high tide to give yourself enough time to complete a survey before the next flood. Check the weather forecast
7. Pack the *CarbonQuest* survey kit, warm- and cold-weather clothing, sturdy footwear, suncream and hat, food and water, and a fully-charged mobile phone
8. Tell a friend or family member where you've gone and when you expect to be back

On the marsh

1. Check again that GPS location is enabled on your smartphone (see above)
2. Log into the Saltmarsh app and select 'Submit plant and soil data'
3. Follow steps 1, 2 and 3, then select 'Submit survey results'
4. Look across the marsh and visualise a line going from the land to the sea (a line that's roughly perpendicular to the coast):



This will be the line along which you'll gather your samples. The line doesn't have to be perfectly straight, so you can avoid having to cross large creeks

5. Try to gather 5 samples along the line you've visualised at equally-spaced intervals:



The distance between sample points doesn't have to be precise. And if you don't feel confident in being able to get to certain points of the marsh – stop and send us whichever samples you are able to gather. You can start at any point along the marsh

6. When you arrive at your first point, pick any coloured syringe and pull out the plunger
7. Move the plant canopy out of the way and push the syringe barrel all the way into the ground (beyond the coloured tape wrapped around the top-half)
 - If you're finding it tricky to push the syringe into the ground with your fingers, try twisting the syringe back-and-forth as you push. Or you can gently press the syringe into the ground with the heel of your foot
8. Put the plunger with the matching coloured head back into the syringe chamber. This provides some suction to stop the soil falling out the bottom as you pull up the core
9. Using your smartphone or camera, take a birds-eye photo of the syringe and plunger in the ground. Try and take a photo that covers the surrounding vegetation like this:



10. Check the photo to make sure the image isn't blurry, and that you can make out the colour of the plunger. It's important that we can see the colour, since we need to be able to match the soil core with the right photo back in the lab (the photo is used to identify the plants and to provide us with latitude and longitude data held in the image's metadata)

11. Carefully pull the syringe out of the ground

- It might be tricky to get your fingers around the flanges of the syringe chamber to pull up the core. You can use the string loop provided to help you do this – loop it around the syringe flanges and carefully pull it out of the ground
- You'll probably find the chamber isn't completely full, despite having pushed the syringe all the way into the ground. This is because the soil gets compacted as the syringe goes in. Don't worry if you haven't been able to fill the syringe chamber

12. Take the plunger out again, and place the filled syringe chamber into any Ziplock bag

13. Move to the next point and repeat steps 6 to 13 until all five sample points are done


14. Take a landscape photo of your marsh from any vantage point

Done! You can now enjoy the sights and sounds of the marsh. The Saltmarsh app has a nice ID guide if you want to learn more about the salt marsh and its inhabitants.

When you're back

1. Place all the Ziplock bags with the filled syringe chambers back into the padded envelope. You're welcome to send us the plungers back as well
2. Stick the return address label with stamp on top of the original address
3. Post the package in any post box. The package *should* fit. If it doesn't, we'd be really grateful if you could drop it off at your local post office next time you visit
4. Email all the photos you collected from the marsh to cside@bangor.ac.uk. This can be done directly from your smartphone:

iPhone using the **Photos** app

1. Open the 'Photos' app and select the upload icon () at the bottom-left of the screen
2. Select all the photos you want to send
3. Select the app you use to send emails
4. Select 'Actual size' if prompted
5. If all the photos won't fit into one email, please send them one at a time

Android using the **Gallery** or **Photos** app

1. Open the 'Gallery' or 'Photos' app
 2. Press and hold the first picture you want to send. This will allow you to select multiple pictures
 - If you can't select multiple pictures, you may have to tap the 'Share' button first
 3. Select all the photos you want to send
 4. Select the 'Share' button after selecting the photos
 5. Select the app you use to send emails
 6. Select 'Actual size' if prompted
5. If you would like to share any additional information about your salt marsh (see *information sheet*), please email cside@bangor.ac.uk

Thank you for completing a *CarbonQuest* survey!

We'll keep you updated on progress and look forward to sharing the results with you