

Spermwatch

Survey Instructions

Looking for signs of lugworm reproduction on UK shores

We want to find out when the lugworm, *Arenicola marina*, breeds in the UK.

Why is it important?



Lugworms are a valuable part of the marine ecosystem. They are a main food source for wader birds and fish, circulate nutrients in the sand and are used as bait by fishermen. However, impacts of climate change on our marine environment could affect the lugworm's ability to breed, endangering the population. This study will provide unique data into what environmental conditions trigger them to start spawning (release eggs and sperm to reproduce), something scientists have struggled to find out.

Why do we need your help?

Lugworms spend their life burrowed in the sediment. To reproduce, males release sperm puddles on the surface of the sand when the tide is out. When the tide comes back in, the sperm are washed into female burrows where their eggs are fertilised.

Very specific environmental conditions trigger a population to release its sperm and eggs at the same time. Understanding what these "triggers" are can be difficult, as it requires observations from many locations over extended time periods - this

is where citizen scientists can help. We need people across the UK to look for sperm puddles and tell us when they appear. Our aim is to find out the exact time when male lugworms release their sperm, and how that varies around the UK.

You've decided to survey! Prepare before you go

1. Print this instruction pack and the recording form to take with you

Read both thoroughly and make sure you understand them before going to the shore.

2. Choose your shore

Most sandy shores or mudflats have lugworms, but look for casts to check. The CoCoast team can suggest a shore if you are uncertain. Make sure the shore is easy to access and safe to walk on (e.g. no dangerous mud or quick sand).

3. Work out what day(s) to go

Surveys must be done within these dates:

30th September - 4th October

15th - 19th October

30th October - 3rd November

13th - 17th November.

4. Choose a time at low water

Visit the beach around the time of low water. Check tide tables for your shore or one close by at www.bbc.co.uk/weather/coast_and_sea/tide_tables.

The survey should take about 45 minutes and can be done between two hours before and two hours after the time of low



water.

Don't work at dusk or dark!

5. Find a buddy

The survey requires two people: one to search for and count lugworm casts, the other to search for and count sperm puddles.

6. Take with you:

- This instruction booklet
- Pencil and clipboard
- Tide times for the day
- Stopwatch
- Recording sheet (download from website)
- Camera (optional)
- Appropriate clothing (maybe wellies and waterproofs)



7. Contact CoCoast staff if you need any help or advice.

On the shore - how to conduct the survey

1. Have one recording sheet each. Fill in the top of your recording sheet with your names, the date, location, etc. and walk down to the waterline

2. Decide your start position. You will need to walk parallel to the waterline with your buddy for 10 minutes, searching a band 5 metres wide (Fig1). One of you will search for

'sperm puddles', which look like white/milky specks on the sand (Fig 2). The other person will search for lugworm casts

3. When ready to start, each of you set your stopwatch to 10 minutes and record the start time of your search

4. Walk along the waterline counting and recording how

many sperm puddles or lugworm casts you find

5. Each volunteer should continue their chosen search until (whichever comes first):
- You have found 100 casts/puddles, in which case stop your search and record your end time
OR - the 10 minute search time is up

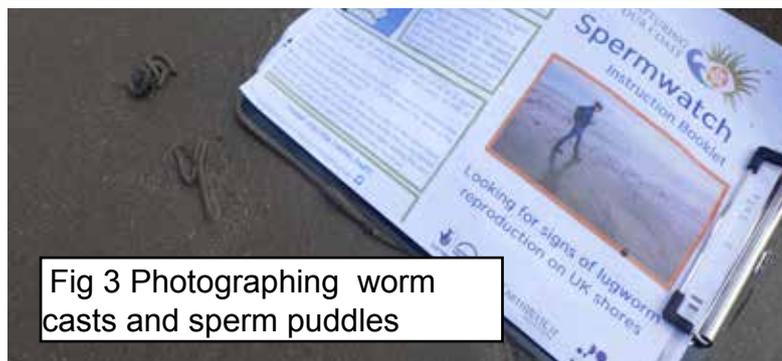
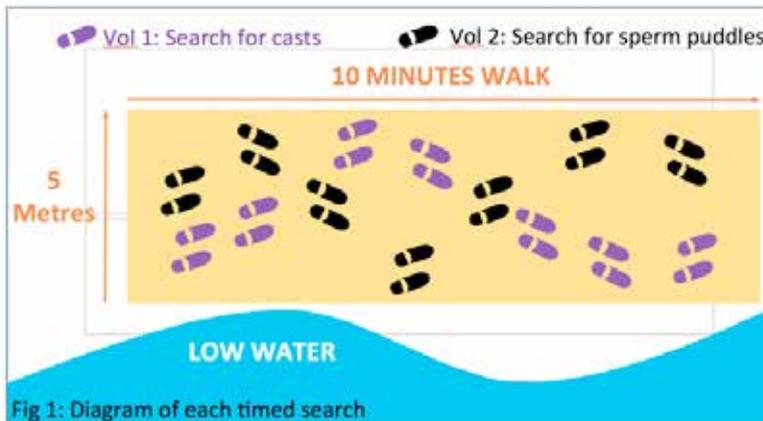
6. You may finish at a different time to your buddy. This is fine, just stay with them and don't distract them until they are finished

7. Take pictures that show the entire search area, and of up to 10 sperm puddles and/or casts. Include your recording sheet in each photo to help us reference it (Fig 3)

8. Repeat the search three times. Each time search a different area, either further along the waterline, or further down the beach if the waterline has dropped at least 5 metres

9. Once home, upload your data online at <https://www.surveymonkey.co.uk/r/spermwatchdataentry>

10. Do the survey as often as you like once a day within the given time periods. You can survey the same shore, or choose a different one. Survey every day within the survey period if you can. If you are able to, repeat the survey again during the next survey period, especially if no sperm puddles have been found yet



Questions you may have

Too many to count?

Make a finger-mark in each cast or squash them as you count. Take a photo too so we can verify your count.

Hard to keep count in your head?

Use tally marks to count as you go

You accidentally counted to over 100

It doesn't matter – record the exact number counted and exact end time when you reached that number. We can still use your data!

Can casts or sperm puddles be confused with anything else?

Sand mason worms make

tubes on the surface, but these have bits of shell and stone attached (Fig 4). Bird poo marks could be mistaken for sperm puddles, so look closely. If there are only one or two in your search area, it is probably bird poo. Sperm puddles will appear in higher numbers. For either of these possible confusions, take photos if you are not sure.

GET IN TOUCH!

cocoast@port.ac.uk or cocoast@earthwatch.org.uk

[@CapturingRCoast](https://www.instagram.com/CapturingRCoast)