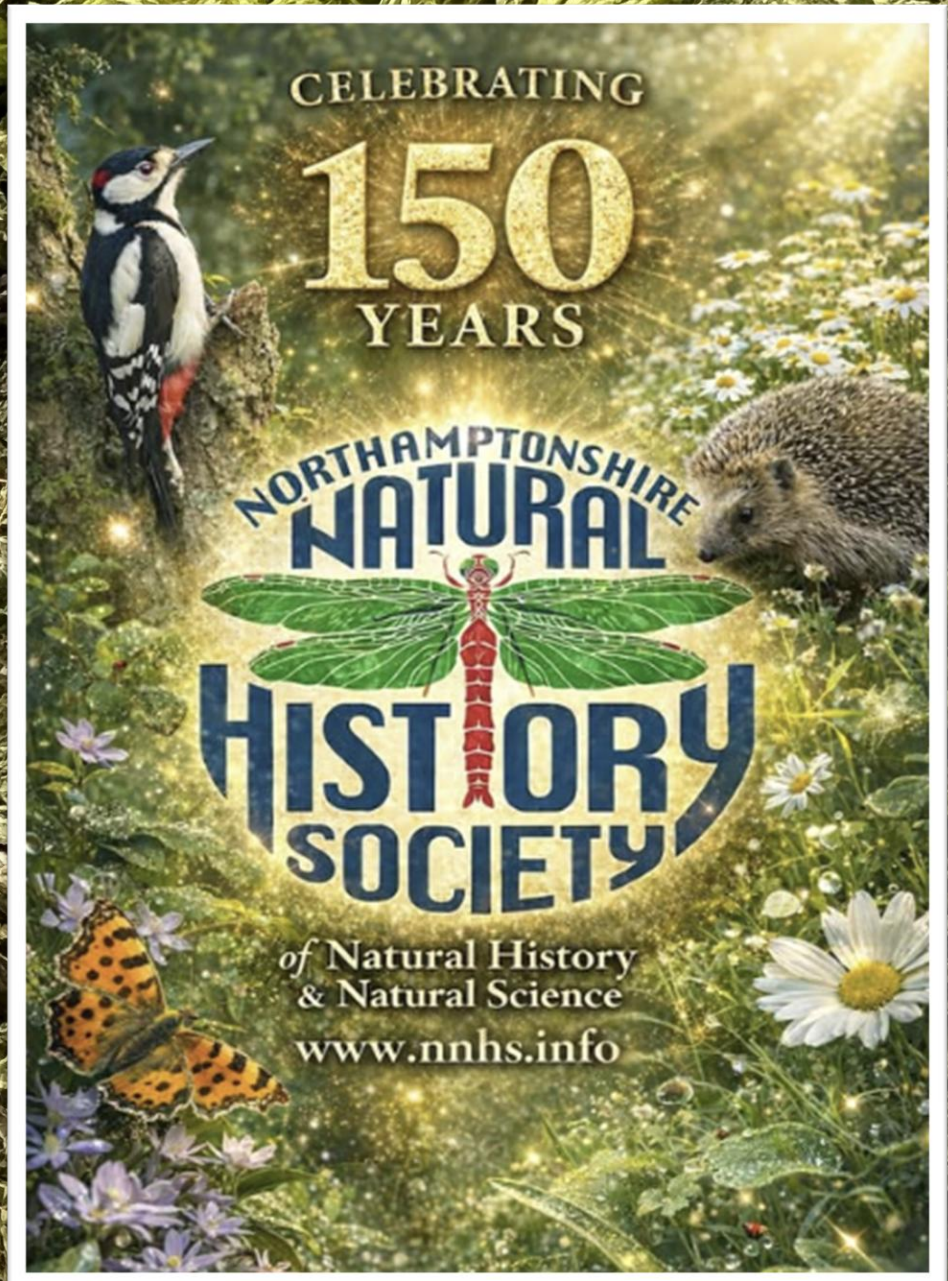




Tue 14 Apr 2026 7:00-8:00

Dr. Andy Chandler-Grevatt

University of Brighton  
[www.mosssafari.com](http://www.mosssafari.com)



# Introduction

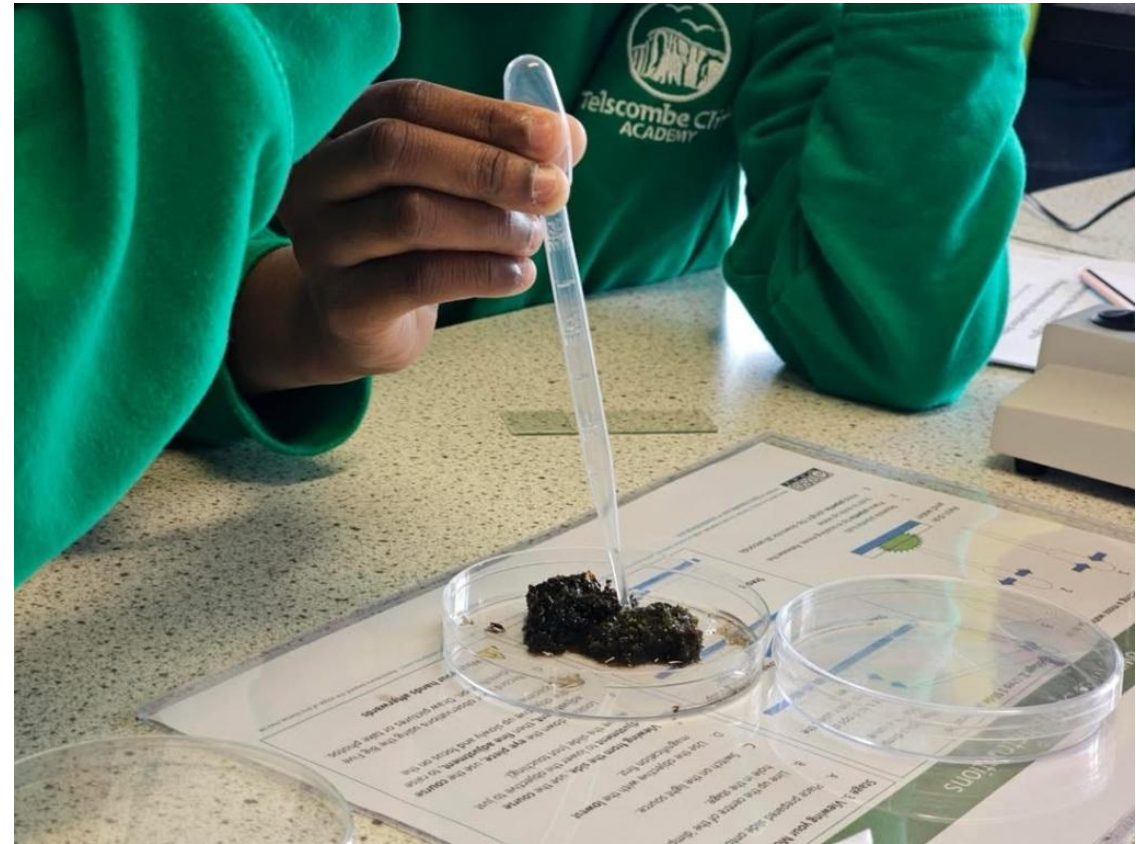
## Dr Andy Chandler-Grevatt

- Teacher (CSciTeach), Author, Researcher
- BSc (Hons) & MSc in Biological Sciences
- Doctorate in Science Education
- Teacher: Secondary School Science teacher (10 years), University Lecturer in Science Education and Teacher Training (2006-).
- Author: 96+ textbook / resource publications (Oxford University Press)
- Founder, Moss Safari
- Microscope and moss life enthusiast



# Moss Safari: the activity

- Very simple
- No staining
- No specialised skills
- No specialised techniques
- Just - suck, squeeze, observe





# Techniques: Sampling

## Moss squeeze: Pipette



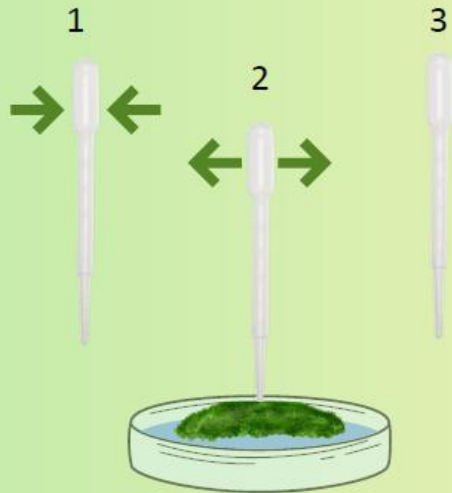
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Promote microscopy  
Inspire STEM



### Stage 1: Collect

If the moss is not wet, soak it in mineral water for at least 24 hours.

1. Squeeze the pipette bulb.
2. Place pipette tip into the wet moss. Release the bulb, so it sucks up some water.
3. Raise the pipette and sample. Hold it vertical for 30 seconds.

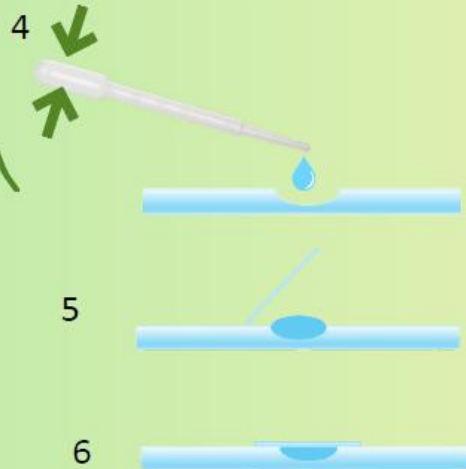




  Wash your hands after handling moss

### Stage 2: Prepare

Lay a glass 'dimple' microscope slide on a flat surface. Have a clean coverslip ready.

4. Squeeze 3-4 drops of sample into the dimple on the glass slide.
5. Take a cover slip and place an edge next to the sample.
6. Carefully lower the coverslip onto the sample.

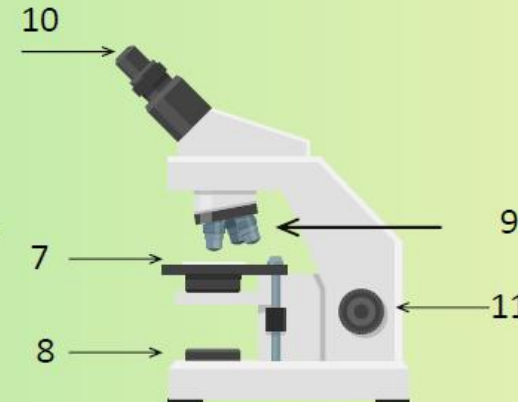



  Clear up and dispose of broken glass carefully and responsibly

### Stage 3: Observe

Observe at magnifications  $\times 40$  to search and  $\times 100$  for more detailed view.

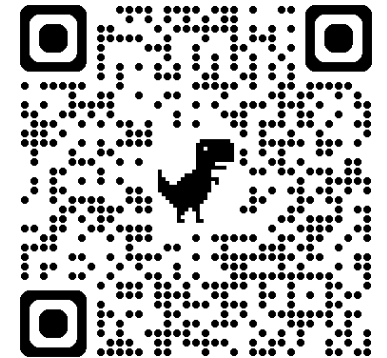
7. Place the prepared slide on the stage, with the dimple over the hole.
8. Switch on the light source.
9. Set the objective to the lowest magnification.
10. Look through the eye piece.
11. Use the focus knob to lower the stage and get the sample into focus.



 While looking through the eye piece, always lower the stage to focus.



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# Moss Safari Aims



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British Science Week 2024 – Live Lesson: Watch now

BBC Teach - Live Lessons



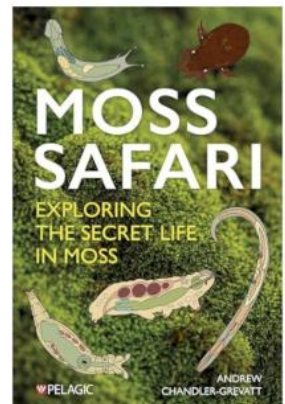
**CHANDLER-GREVATT**  
Inspiring Young Explorers  
Through Moss Safari

Dr. Andrew Chandler-Grevatt created Moss Safari, a unique project that inspires young minds to explore the microscopic wonders of moss. In this interview, he shares the inspiration behind the idea, the importance of fostering scientific curiosity in children, and the current state of microscopy popularisation.

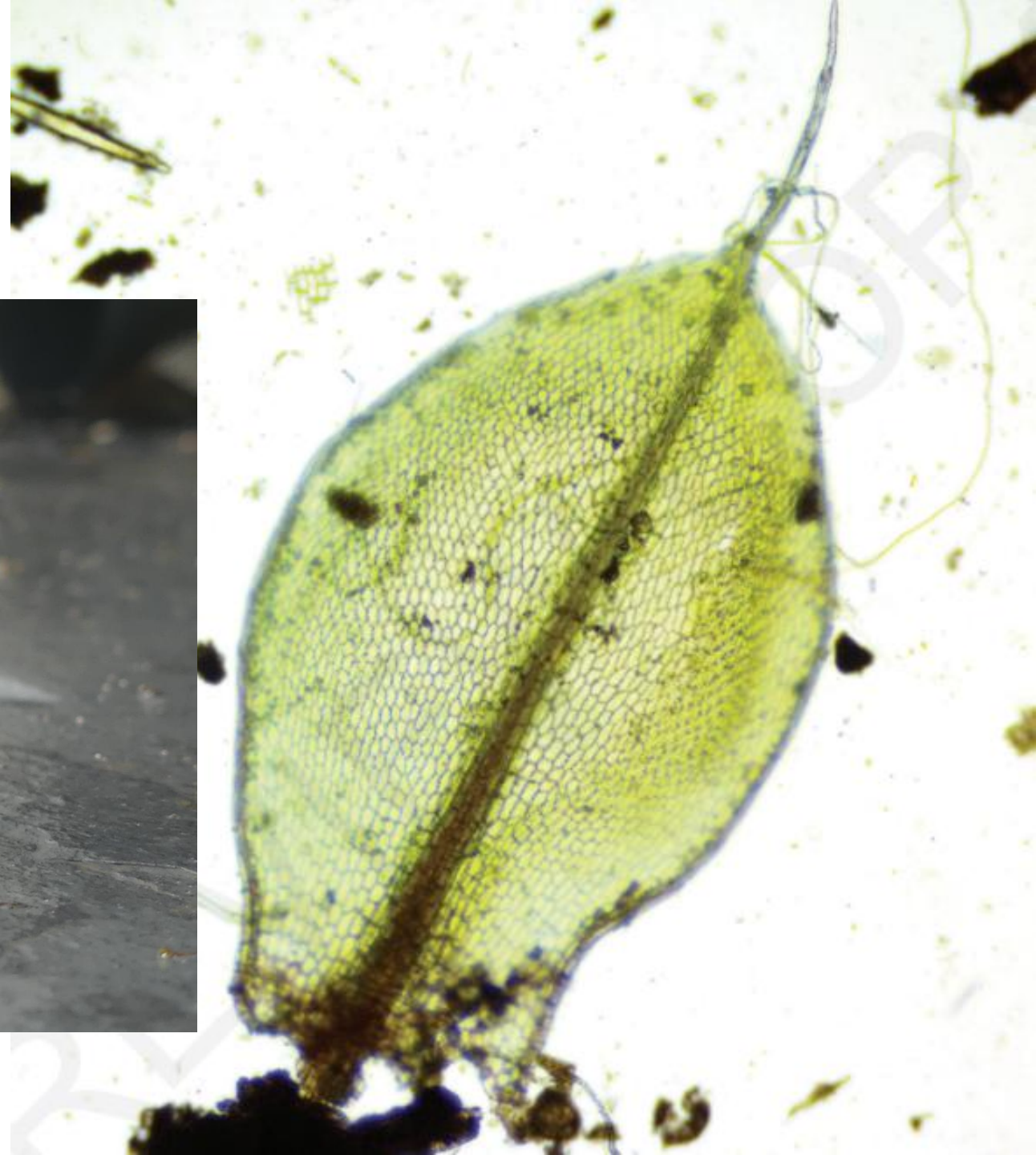
Interviewed by  
Dr. Stefan Lukatski

124 | November/December

Interviews

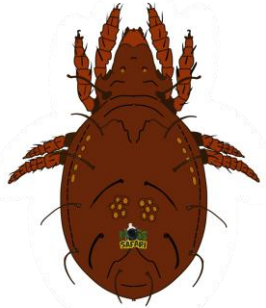


# Moss: the terrain

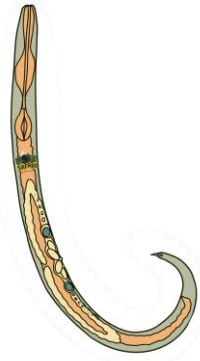


# The microscopic Big Five

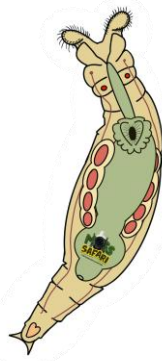
Oribatid mite



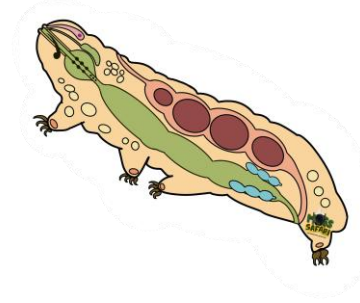
Nematode



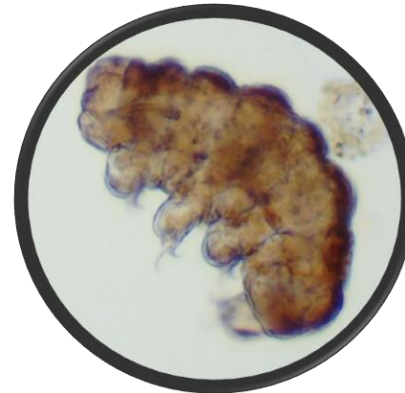
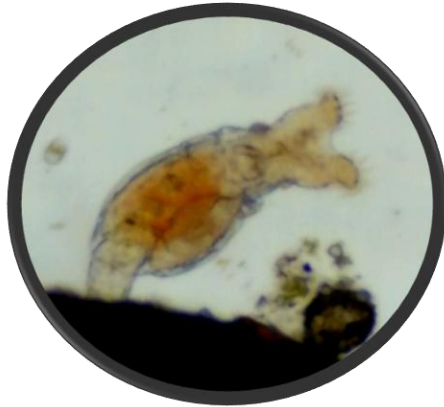
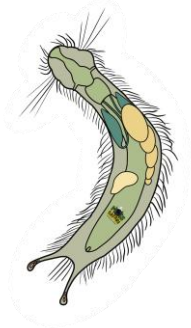
Rotifer



Tardigrade



Gastrotrich













# Microscopic Big Five Identification

**Doing your Moss Safari: Identification (Beginner)**

## The microscopic Big Five at 40x

Look through your microscope at magnification 40x. Read the descriptions carefully and look at the pictures to identify the animal you have found.

		<p><b>Mites</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A dark pear shaped body</li> <li>8 legs with hooks on the end</li> <li>Long hairs on the body and legs</li> </ul>	SEEN
		<p><b>Nematodes (thread worms)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A long worm</li> <li>Pointed head end</li> <li>A see through body with darker patches</li> </ul>	SEEN
		<p><b>Rotifers (wheel animals)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A crawling worm-shaped</li> <li>Sometimes two open 'wheel organs'</li> <li>Two toes at the end of the body</li> </ul>	SEEN
		<p><b>Tardigrades (water bears)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A sausage-shaped body</li> <li>8 short legs with claws</li> <li>A pointed 'snout' shaped mouth</li> </ul>	SEEN
		<p><b>Gastrotrichs (hairy bellies)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A hairy flat worm</li> <li>A forked tail</li> <li>Fast and graceful swimming</li> </ul>	SEEN

Find out more at [www.mosssafari.com](http://www.mosssafari.com)











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**Doing your Moss Safari: Identification (Intermediate)**

## The microscopic Big Five at 40x

These five multicellular organisms are commonly found in moss. Read the descriptions carefully and look at the pictures to identify the animal you have found. Images are not to scale.

		<p><b>Mites</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A dark pear-shaped body</li> <li>8 legs with hooks on the end</li> <li>Long hairs on the body and legs</li> <li>Legs can be moving or tucked away</li> </ul>	SEEN	Length range 0.4-1.0 mm
		<p><b>Nematodes (thread worms)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A long worm</li> <li>Pointed head end</li> <li>See-through body with a darker gut</li> <li>Eggs may be seen in the body as ovals</li> </ul>	SEEN	Length range 0.4-1.0 mm
		<p><b>Rotifers (wheel animals)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A crawling worm-shaped</li> <li>Sometimes two 'wheel organs' open</li> <li>Two toes at the end of the body</li> <li>Egg may be seen in body as a dark oval</li> </ul>	SEEN	Length range 0.2-0.6 mm
		<p><b>Tardigrades (water bears)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A sausage-shaped body</li> <li>8 stubby legs with claws</li> <li>A pointed snout-shaped mouth</li> <li>Maybe two red or black eye spots</li> </ul>	SEEN	Length range 0.4-0.8 mm
		<p><b>Gastrotrichs (hairy bellies)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A hairy flat worm</li> <li>A forked tail</li> <li>Long 'whiskers' from head</li> <li>Fast and darting when swimming</li> </ul>	SEEN	Length range 0.2-0.4 mm

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**Doing your Moss Safari: Identification (Advanced)**

## The microscopic Big Five at 40x

These five multicellular organisms are commonly found in moss. Images are not to scale. This is a starting point. For genus and species, specialised keys are required.

		<p><b>Oribatid Mites (Phylum: Arthropoda)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A dark pear-shaped body and head</li> <li>8 legs with hooks on the end</li> <li>Long and short hairs arranged on the body and legs</li> <li>Exoskeleton is brown, orange or red in colour</li> </ul>	Length range: 400 µm - 1.0 mm
		<p><b>Nematodes (Phylum: Nematoda)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A long worm</li> <li>Pointed head end, tapered tail</li> <li>Mouth, pharynx, digestive system can be visible within the body</li> <li>Darker oval eggs may be seen in adults</li> </ul>	Length range: 400 µm - 1.0 mm
		<p><b>Rotifers (Phylum: Rotifera)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A crawling worm-shape, sometimes contracted into a ball</li> <li>Sometimes two ciliated 'wheel organs' open</li> <li>Body is in pseudo-segments, with two toes at the end</li> <li>Body often has a pink or red colouration</li> </ul>	Length range: 400 µm - 600 µm
		<p><b>Tardigrades (Phylum: Tardigrada)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A soft, four segmented body</li> <li>4 pairs of short legs with claws</li> <li>A pointed mouth, buccal pharyngeal apparatus visible inside</li> <li>Some types are red and ornamented</li> </ul>	Length range: 400 µm - 800 µm
		<p><b>Gastrotrichs (Phylum: Gastrotricha)</b></p> <p>Look for:</p> <ul style="list-style-type: none"> <li>A flat worm covered in cilia</li> <li>A distinctive forked tail</li> <li>Fast and darting when swimming</li> <li>Cilia are longer around mouth and head</li> </ul>	Length range: 200 µm - 400 µm

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Images from: A. Chandler-Grevatt (2023) Moss Safari. Exploring the secret life in moss. Pelagic Publishing

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# Equipment for Moss Safari

## Microscope

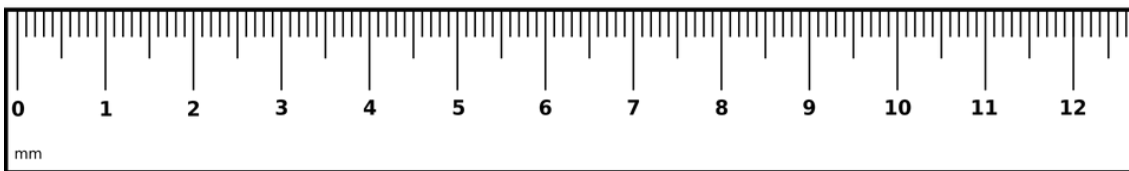
Magnifies objects too small to see with the naked eye.

### Magnification x 40 and x 100

Everything we see will be less than 1 mm

x 40 field of view on screen < 1 mm

1000 micrometres in 1 millimetre



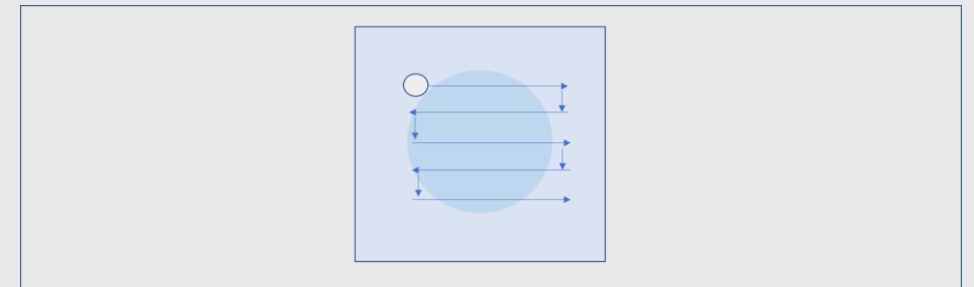
# Moss Safari: The expedition and route

## Expedition information:

- We will stop at interesting animals or plants.
- We do not chase the wildlife!
- Magnification x 40 (sometimes x 100).
- Focussing takes time.
- No guarantee we will see any of the Big Five, but we will see interesting things.
- I'm always learning...

**(Wash your hands afterwards if you do this yourself)**

2-3 drops of water from moss




Zig zag spotlight across a 15 mm well













Let's go on a  
Moss Safari



# Reflections and Questions

- Which of the Big Five did we see?
- What did we learn about their lives, our lives and life itself?
- What did you learn about moss?
- Has your view of the natural world changed? How?




**Moss Safari** | Doing your Moss Safari: Identification (Intermediate) | **The microscopic Big Five at 40x** 

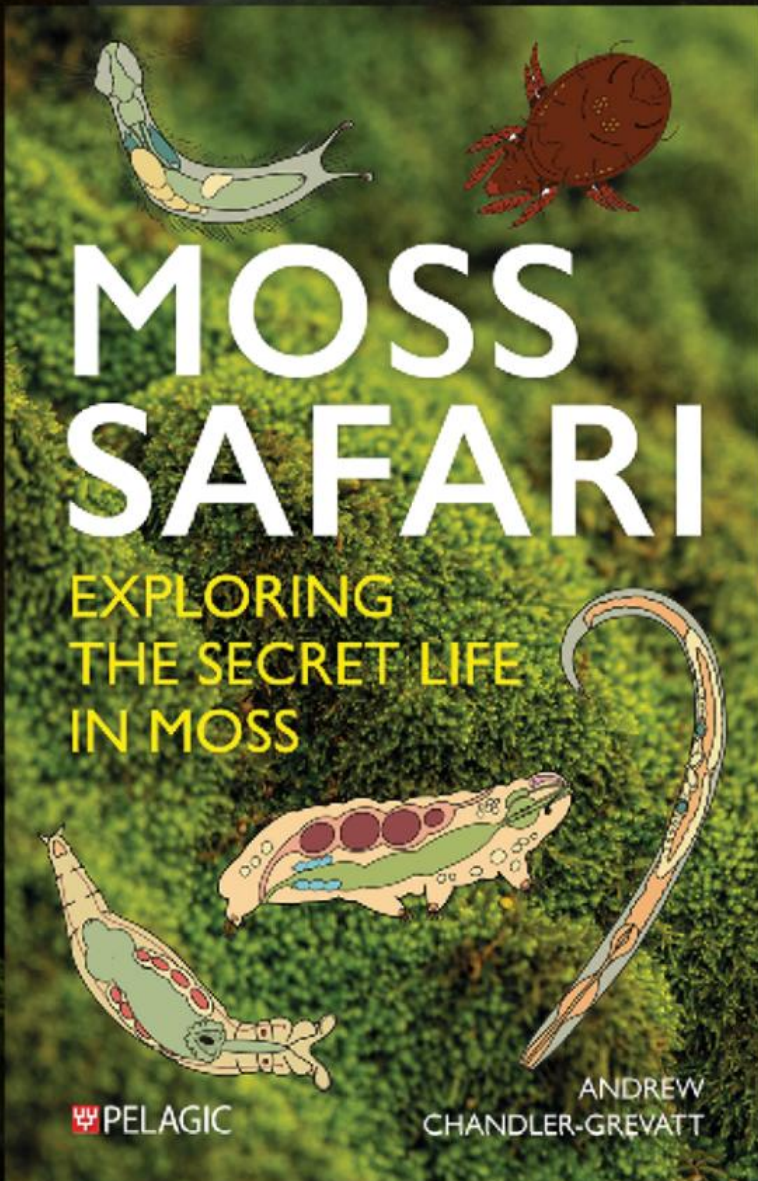
These five multicellular organisms are commonly found in moss. Read the descriptions carefully and look at the pictures to identify the animal you have found. Images are not to scale.

		<p><b>Mites</b> Look for:</p> <ul style="list-style-type: none"><li>• A dark pear-shaped body</li><li>• 8 legs with hooks on the end</li><li>• Long hairs on the body and legs</li><li>• Legs can be moving or tucked away</li></ul>	<input checked="" type="checkbox"/> SEEN Length range 0.4-1.0 mm
		<p><b>Nematodes (thread worms)</b> Look for:</p> <ul style="list-style-type: none"><li>• A long worm</li><li>• Pointed head end</li><li>• See-through body with a darker gut</li><li>• Eggs may be seen in the body as ovals</li></ul>	<input checked="" type="checkbox"/> SEEN Length range 0.4-1.0 mm
		<p><b>Rotifers (wheel animals)</b> Look for:</p> <ul style="list-style-type: none"><li>• A crawling worm-shaped</li><li>• Sometimes two 'wheel organs' open</li><li>• Two toes at the end of the body</li><li>• Egg may be seen in body as a dark oval</li></ul>	<input checked="" type="checkbox"/> SEEN Length range 0.2-0.6 mm
		<p><b>Tardigrades (water bears)</b> Look for:</p> <ul style="list-style-type: none"><li>• A sausage-shaped body</li><li>• 8 stubby legs with claws</li><li>• A pointed snout-shaped mouth</li><li>• Maybe two red or black eye spots</li></ul>	<input checked="" type="checkbox"/> SEEN Length range 0.4-0.8 mm
		<p><b>Gastrotrichs (hairy bellies)</b> Look for:</p> <ul style="list-style-type: none"><li>• A hairy flat worm</li><li>• A forked tail</li><li>• Long 'whiskers' from head</li><li>• Fast and darting when swimming</li></ul>	<input checked="" type="checkbox"/> SEEN Length range 0.2-0.4 mm

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# Thank you



Dr. Andy Chandler-Grevatt

University of Brighton

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# Moss Safari: What Next?

## Share the secret

### Word of mouth

'Have you seen this?'

### Subscribe free

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### Social media

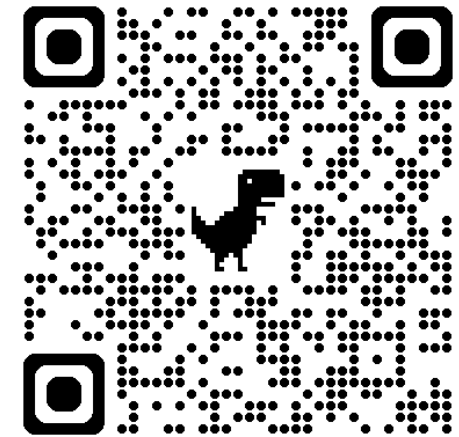
Shares, comments, likes,  
pictures

**Recommend to schools,  
clubs, team building**

## Get the book!



## Contact me



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**Dr Andy Chandler-Grevatt**

[a.chandlergrevatt@brighton.ac.uk](mailto:a.chandlergrevatt@brighton.ac.uk)



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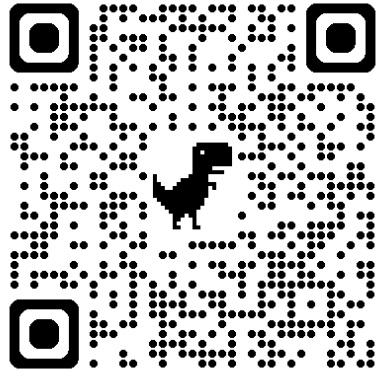


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# Support the work of Moss Safari



Moss Safari Tardigrade Pins

£5 each

Buy all 4 and get 20% off with code 20LIN  
(£16 for all four plus P&P)

<https://ko-fi.com/mosssafari/link/20LIN>

Moss Safari stickers and badge



**Get your Moss Safari Merchandise**

Moss Safari Waterbear vinyl sticker sheet (A5)  
Moss Safari Big Five vinyl sticker sheet (A5)  
Moss Safari Button Badge (25 mm)

**Moss Safari Merch Bundle – all 3 – value pack**

