BRITISH SOCIETY OF SOIL SCIENCE

soilmatters

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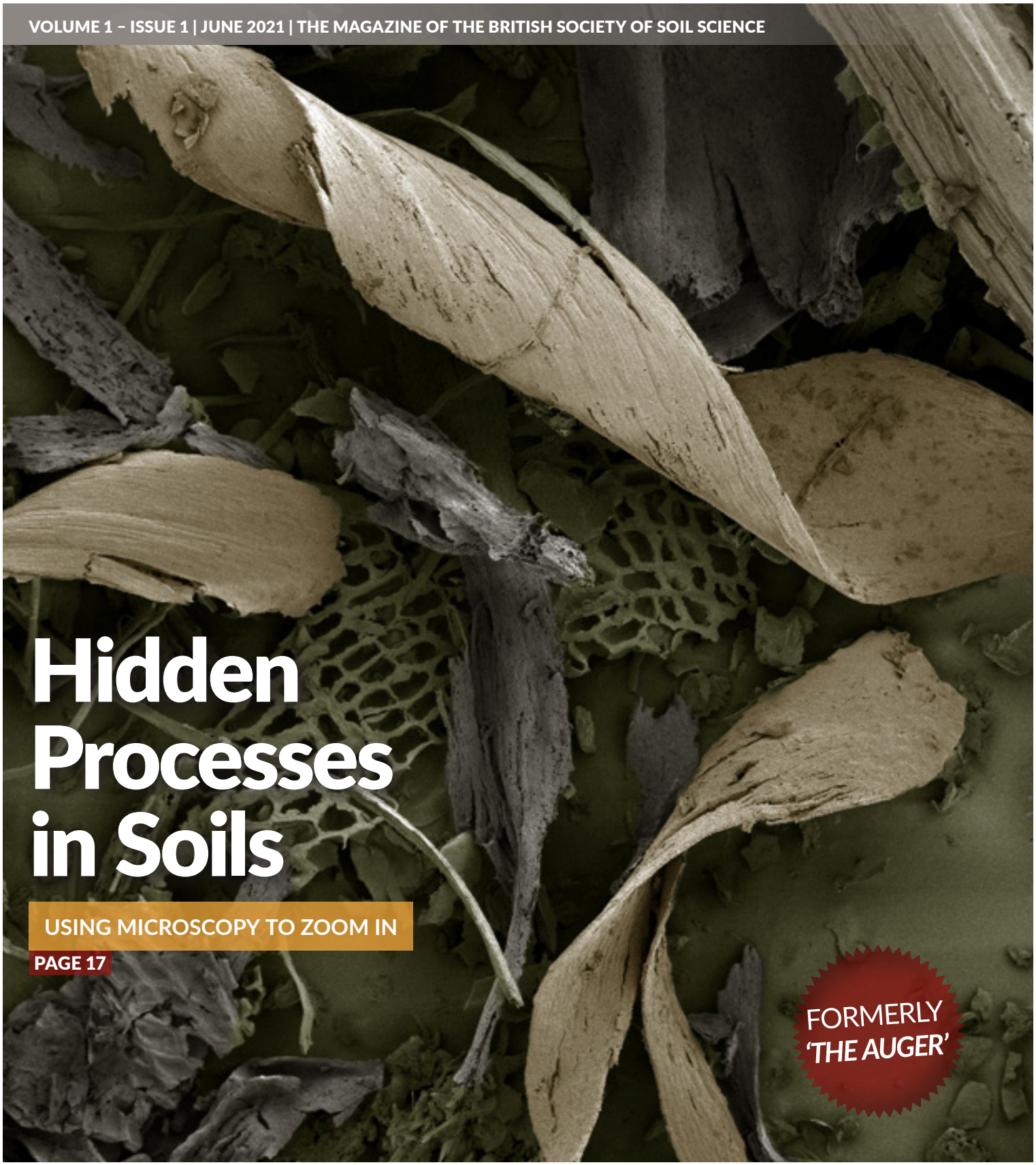

Hidden Processes in Soils

USING MICROSCOPY TO ZOOM IN

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FORMERLY 'THE AUGER'

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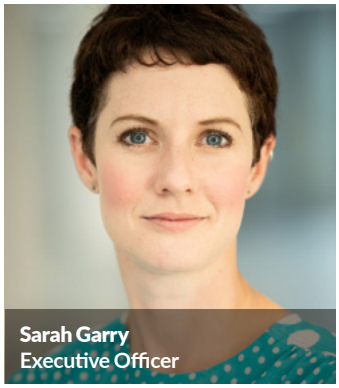
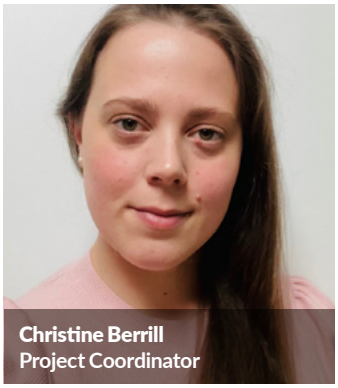


Sarah Garry
Executive Officer

Natalie Coles
Senior Administrative Assistant



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Cover: Image created by **Dr Carsten Muller** (published by Prater *et al.* 2020 in Biogeoscience).

Executive Officer welcome

Over the last year, you will have noticed a number of changes to the way we communicate with our members and stakeholders and I hope you agree that the Society now has a more consistent look and feel. With that in mind, I am delighted to welcome you to our new look members' magazine, *Soil Matters*.

Although we are now starting to take our first tentative steps out of lockdown, our Board has agreed that the Society's events will continue to be virtual during 2021. Having agreed an Environmental Policy in late 2020, continued online operations have had a positive impact on both our carbon footprint and finances, and committee members are seeing the benefits of continuing to operate in this way over the long term.

Our members and stakeholders continue to express enthusiasm for our virtual events too, with feedback from our Zoom into Soil webinars remaining high. For the first time, we are now tracking the impact our training and events are having on those who attend, so we can report the difference we are making. 65% of people at our last Zoom into Soil session stated that they would use the knowledge gained from attending the webinar in their future academic or professional practice.

To complement our monthly Zoom sessions, we will also be delivering the Annual Conference & AGM, Early Careers Conference and Agricultural Land Classification course, virtually in the autumn. A full list of all the dates and events we have coming up is set out on page 31.

In 2022, our focus will be on the World Congress of Soil Science which will take place in Glasgow from 31 July to 5 August. We anticipate that there will still be challenges linked to Covid in 2022, particularly relating to international travel and vaccination, and as a result our working group is developing a hybrid congress. There will continue to be a face-to-face congress, arts and tours programme in Glasgow with parallel events specifically for Society members. We will also provide an opportunity for international delegates to present their posters online, to visit sponsors virtually and listen to the plenary speakers in real time. This provides us with an opportunity to reach a new audience, those who may not have considered attending an international congress in the past, whilst continuing to provide an outstanding event for those who enjoy being able to meet their international colleagues face-to-face. Taking this approach will also provide us with a wealth of recorded resources which can be developed into content for even wider reach, post-event.

As our work on the Congress ramps up, so too does our work in raising our profile with governments and stakeholders. As you will see from page 7, we will be introducing Science Notes over the coming months, to provide stakeholders and members of the public with the information they need to understand the principles of a particular area of soil science. This combined with ongoing promotion of our superb journals and communications targeted to stakeholders and allied societies, will raise our profile and help ensure we are the go-to organisation for soil-related expertise.

Despite the Society's operations continuing to be largely virtual, I hope you will continue to see an increase in your membership benefits and those which we are able to provide to the public at large as part of our charitable aims. I'm delighted to say that this is also shown in our membership figures: during Q1 2021, we accepted four times as many members into the Society than in the same period of 2020.

I would like to finish by welcoming Christine to our team. Christine joins us specifically to provide project support on the delivery of the World Congress. She joins Natalie who continues to deliver outstanding member, events and communications support to the Society.

As always, I hope you enjoy reading this issue and would welcome any feedback you may have on the new look or content for future editions.

With best wishes,

Sarah Garry
Executive Officer

"Our members and stakeholders continue to express enthusiasm for our virtual events too, with feedback from our Zoom into Soil webinars remaining high."

President's welcome

"With the current level of activity around soils we are also having to be agile to respond to additional requests and developments."

Dear Members, I hope you are all well and are able to do more now that some of the lockdown restrictions have been lifted. After the prolonged wet spell in early May it is also fantastic to see a bit more of the sun and feel some warmth. Not having bothered to visit the allotment over the last few weeks during the wet weather really brought it home to me just how much growth there had already been when I finally got there this weekend – a lot of work to get it all back on track!

I noted in my welcome as Incoming President in the December issue that it is an exciting time to be a soil scientist, and this is something that our Past President Sacha has been saying over the last two years. It really is, which translates into a huge amount of activity across the Society. Sarah has already covered much of the detail of this in her welcome, and it continues to be really encouraging to see the level of engagement and the positive feedback on our activities.

This is driven by our **Strategic Plan 2020-2025** which is available on our website. Over this period, we have set out to deliver seven strategic priorities:

1. Seeking to publicise the key issues for the soil science community
2. Promoting change through knowledge exchange across all aspects of soil science
3. Hosting conferences and meetings focused on soils
4. Supporting and encouraging the education of soil science
5. Inspiring the future generations of soil scientists
6. Ensuring high standards of professional practice for those working with soils
7. Leading on the social and environmental responsibilities of a contemporary society.

I hope you will see how the activities Sarah has highlighted align with these and that their delivery will support the achievement of our strategy. Each of these priorities is being led by a group of Council members, with a detailed action plan developed to track progress.

With the current level of activity around soils we are also having to be agile to respond to additional requests and developments. It is therefore fantastic to welcome Christine to join Sarah and Natalie in the office and spread the workload. But it is likely we will need to continue to adjust our task list and action-specific timelines to meet the changing demands month-on-month. If you are able to support any of our activities please let Sarah know; we need to ensure we continue to capitalise on the current momentum around soils and remain open to new discussions and collaborations.

Our strategic plan provides a clear structure for the Society to work to and track progress against. Whilst we are just in the second year of the plan, I will be working with the Board later this year to review it to ensure it remains relevant to the changing landscape around us. If you have any thoughts or comments on our strategy, please get in touch.

A key activity which is being regularly reviewed and discussed by Council and the Board is the World Congress of Soil Science. The Working Group and the World Congress of Soil Science Board of Directors (myself, Sarah and David Manning) continue to move the planning forward for next year as Sarah has highlighted on pages 18 and 19, working ever more closely with our Professional Conference Organiser, Speakeasy. We are also continuously monitoring the situation around the world with regards to the pandemic and liaising with the International Union of Soil Sciences (IUSS), who we are hosting the Congress on behalf of, to inform and support our decision-making and to minimise any risks to the Society. It will be a fantastic event and I hope that as many or you as possible will be able to attend and enjoy everything we are planning, not least the social interaction.

Thank you for your continuing support and engagement.

Bruce Lascelles
President

ALC, SLQ and SiC Guidance Notes

The Society has launched three Guidance Notes; *Assessing Agricultural Land Classification, Soil and Land Quality* and *Soil in Construction*.

Assessing Agricultural Land Classification is primarily aimed at development and planning control professionals to help them evaluate ALC reports submitted in support of planning applications or spatial plans in England and Wales.

Soil and Land Quality will support agricultural and environmental consultants on how they can best obtain and make use of information on soils and agricultural land quality.

Benefitting from Soil Management and Development in Construction is written for development planning and control professionals, site owners and developers to help promote the protection of soils and the important functions they support within the planning system and the development of individual sites.

View the Society's Guidance Notes at **www.soils.org.uk/education/working-with-soils**.

CSCS Guidance Note

The Society has launched a Guidance Note to support members applying for or renewing a Construction Skills Certification Skills (CSCS) card.

CSCS cards provide proof that individuals working on construction sites have the training and qualifications for the job they do. By ensuring the workforce is appropriately qualified, the card plays its part in improving standards and safety on UK construction sites. Holding a CSCS card is not a legislative requirement and it is the responsibility of the principal contractor or client to outline whether workers are required to hold a card before being allowed on site.

To find out if you need a CSCS card and which one to apply for, download the Guidance Note at **www.soils.org.uk/news/guidance-note-applying-for-a-cscs-card.**

City & Guilds Advisory Board

The Society joined the first meeting of the new City & Guilds Employer Industry Board (EIB) for Land Based Qualifications in May.

The introductory meeting brought together those from a number of disciplines within the Countryside and Environment category. The initial conversation focused on the Agricultural Land Management T-Level due to be introduced in September 2023 and if City & Guilds' bid is successful, they will consult with their EIBs to ensure the needs of both employer and employee are met. The next meeting will be held in September when we will find out whether City & Guilds have been successful in their bid.

OCR Blog:

Appreciating the nature around us

Sarah Garry, Executive Officer, shared her views on how the pandemic provided the opportunity to capitalise on a slower way of life by introducing a GCSE in Natural History. She explained the significance of up-to-date teaching on soils and why educating our young people to understand its importance is a priority in the fight against climate change. Read Sarah's blog in full at **www.soils.org.uk/news/ocr-appreciating-the-nature-around-us**.

Outcome of competition to rename *The Auger*

Earlier in the year, we launched a competition to rename *The Auger*. Congratulations to Iorwerth (Yog) Watkins and Graham Colborne who won the competition and a £25 gift card each with their separate submissions of *Soil Matters*.

We hope you enjoy the redesigned magazine!

Annual Report

Our 2020 Annual Report is available to download, setting out our significant achievements made over the past year. Despite Covid-19, we achieved major impact with our Zoom into Soil webinars allowing us to promote soil's importance to a new audience and our #Grounded video featured famous names including BBC TV presenter Lizzie Daly and Riverford Organics, demonstrating the importance of caring for our soil.

Download the Annual Report at www.soils.org.uk/news/annual-report-2020.

Opinion Piece:

Soils and ELMS by Yog Watkins

Yog Watkins, Senior Land Officer from Westcountry Rivers Trust, shares his view on soils and ELMS:

Soils are (finally) at the top of many peoples' agenda and it is a pivotal moment where their importance can be incorporated into the new Environmental Land Management Schemes (ELMS).

Unfortunately, soils are just too complex to simplify and quantify in a way that satisfies all soil scientists. Never has the adage 'the more I learn, the more I realise how little I know' been more apt than when referring to soils.

Working on a DEFRA ELMS Test and Trial through my work with Westcountry Rivers Trust, I have incorporated the importance of soils into the developing of Land Management Plans. A minimum level of soil health must be achieved before becoming eligible for any payments, but the farming and non-farming stakeholders involved all come back to the same question; how are we going to measure baseline soil health now, and then evaluate improvement/decline over time?

Yog Watkins

Credit © Bruno Vincent

I believe as a soil community we need to draw a line in the sand (or dare I say soil) and have a consensus on what metrics to use to facilitate the delivery of improved soils at a national scale. There are many measures already developed, but they often come with restrictions on applicability based upon numerous factors such as cost, complexity of sampling, complexity of analysis, or timings. If we can agree on a pragmatic measure that can be used universally with all soils measured from the same baseline, we would be better placed to truly monitor the state of British soils. Is this not possible?

Market forces are likely to push us towards metrics such as Carbon and Soil Organic Matter, all of which will play their part, but we need to encourage soil scientists to agree on a more holistic measure. One that delivers for ELMS and allows farmers to uniformly benchmark their soils.

Yog conducts a soil check

Westcountry Rivers Trust set up its Devon and Cornwall Soil Alliance in 2019 to build capacity and capability in soils advice across the two counties. Visit **www.wrt.org.uk/project/dcsa** for more details and to watch the charity's Soils Matter film where I explain more about the project and soil health.

Introduction of Science Notes

Over the past year, our members have been telling us how important it is for the Society to share its scientific knowledge with a wider audience. As a result, our Council has set up a task group which will be responsible for developing our first Science Note on Carbon. The note will provide scientific content in an accessible format, alongside the Society's current position and any future policy asks. It is hoped that the first Science Note will be available in the autumn.

If you would like to suggest future Science Note topics to be considered or would like to nominate yourself to sit on future groups developing the notes, please contact exec@soils.org.uk.

SocEnv
Society for the Environment

Soils and Stones Report

We were delighted to support the launch of the Society for the Environment's (SocEnv) Soils and Stones Report. Incoming Chair of our Professional Practice Committee, Eleanor Reed who had input into the report, highlighted the need for clear guidance and in some cases, regulation, to support sustainable soil management.

Eleanor said, *"There is the ever-increasing understanding that soils are essential for the delivery of our terrestrial ecosystem services, and that sustainable development and management delivered through professional, competent practitioners is a critical component to protecting this finite resource. This scientific understanding, communication, engagement and professional competence are key aspects to our strategy.*

"The topics of the recently published BSSS guidance notes highlights that it is not just soil scientists who work with soil, but also ecologists, landscape architects, forest managers, planners, construction workers; environmental generalists, all of whom need a good understanding of soils and how they influence the wider environment.

This launch event is the perfect example of the wide range of professions, who all understand that we need to protect our soils. We need to cut across all the interdisciplinary areas across the various organisations and bring them together to help unify the data, establish best practice, communicate those key messages and provide a new coherent way of thinking of soils. And that is why we are all here today, communicating, engaging and celebrating this new collaborative report."

Eleanor presented at the event on 26 April alongside Society Fellow Bridget Emmett (representing uksoils), Soils and Stones Task Group Chair Martin Ballard (Willmott Dixon) and the Institute of Environmental Sciences. Read the full report at **www.soils.org.uk/news/bsss-supports-socenv-report**.

Agricultural Land Classification Course

Agricultural Land Classification (ALC) has a formal role in the planning system in England and Wales and is designed to prevent the loss of our best and most versatile land in line with the principles of sustainable development.

The training course, designed and presented by agricultural land classification (ALC) experts from Natural England and the Welsh Government, offers a unique opportunity to learn about the background and technical basis of the current ALC guidelines.

By the end of the course, you will learn:

- about how the ALC system has developed over time, its underlying principles and its role within the planning system - the WHAT, WHY and WHEN of ALC
- all the details of how land is graded - the HOW of ALC
- what a report should contain to be verified by the Natural England and Welsh Government statutory consultees on planning applications involving soils and agriculture.

The course will include the opportunity to work within a group to undertake an ALC grading desk exercise to apply what you have learned.

This course is designed for:

- soil scientists who wish to extend their experience to (or refresh an existing awareness of) Agricultural Land Classification
- those commissioning ALC surveys from specialists, and
- planners reviewing ALC reports.

The virtual course will consist of three consecutive half-day morning sessions (**Tuesday 23 to Thursday 25 November**) and a further question and answer session two weeks later (**Tuesday 7 December**).

Prices start from £199 for Early Career members, £299 for Full, Fellow or Technical members and registration is now open!

Book online via: **www.britishsocietyofsoilscience.wildapricot.org/event-4302230**.

AGM Notice

The Society Annual General Meeting will take place online on **Tuesday 7 September at 12:15pm**, immediately following the Annual Conference. The AGM will include the election of new Committee Chairs and Trustees, presentation of the Society's 2020 accounts and voting on proposed amendments to the Society's Bye-Laws.

All members are welcome to attend the AGM and please register via **www.britishsocietyofsoilscience.wildapricot.org/event-4230294**.

If you are unable to attend but would still like your proxy to be considered, please complete the form available at **www.soils.org.uk/news/annual-conference-and-agm-soil-health** and return to **exec@soils.org.uk**.

Member benefits

Burleigh Dodds Science Publishing

Burleigh Dodds Science Publishing have collaborated with BSSS member, Emeritus Professor Peter Gregory, alongside international experts to publish a new volume of research on plant roots, *Understanding and improving crop root function*. To receive a **20% discount** on this book or any related to Crops, members can use the discount code **BSSS20** at **www.bdspublishing.com**.

Wiley

Members are entitled to a **25% discount** on all Wiley publications on their website using the code **SL25**, **www.wiley.com/en-gb**.

Royal Society of Biology

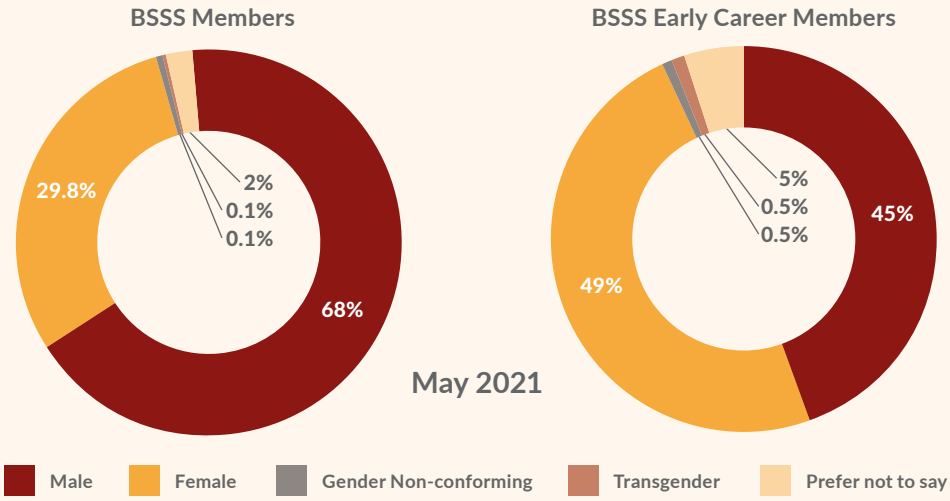
The British Society of Soil Science's organisational membership of the **Royal Society of Biology** (RSB) provides members with a **discount of 50%** for their first two years of individual RSB membership.

The RSB is a single unified voice for biology: advising Government and influencing policy; advancing education and professional development; supporting members and engaging and encouraging public interest in the life sciences. The RSB represents a diverse membership of individuals, learned societies and other organisations. RSB members who work, study, or have an interest in the life sciences, proactively support the future of biology in the UK, and receive a range of benefits including a subscription to *The Biologist* magazine.

Please email **membership@rsb.org.uk** to take advantage of the offer.

Gender Split

As a result of our Equality, Diversity and Inclusion Policy, we have been monitoring the diversity of our membership to help us identify strategies to encourage diverse groups to join the Society.



Lorna Dawson et al recently published a study in the European Journal of Soil Science, providing a basic baseline for the equity status of soil science in 44 countries around the world in 2020, as well as looking at the current gender status of some of our field's leading journals and the keynote speaking situation at select conferences featuring soil science. They concluded that whilst there is still gender inequity in soil science and that gender equity is critical to advancing the discipline, equity includes many issues beyond just equality in numbers. Read the article in full at **www.onlinelibrary.wiley.com/doi/10.1111/ejss.13118.**

Support Your Society!

As a registered Charity, we rely on our members and the public for support to help make a difference to the future of soil science and your generosity will make a positive difference in the sustainable management and long-term security of soils.

There are a number of ways in which you can donate to the Society:

- **Donate online** – Support a specific grant and help the next generation of soil scientists or give to our general funds: **www.soils.org.uk/support-us/donations**
- **Donate your old soil maps or books** – Save them from landfill by giving them to the Society with any proceeds from sales going to BSSS. Contact us at: **admin@soils.org.uk**
- **Become a Volunteer** – Volunteers are essential to the Society's success and we wouldn't be able to deliver our goals without the dedication and passion of our team. Join us, make new friends and contribute to a great cause!
- **Amazon Smile** – By visiting **smile.amazon.co.uk** on your web browser or activating the Amazon Shopping App for iOS and Android phones, a portion of an item's price will be donated to the Society when you purchase: you don't have to lift a finger! To find out more and sign up, visit the Amazon website and search for the British Society of Soil Science when prompted.

Career Break Policy

The Professional Practice Committee has introduced a Career Break Policy for BSSS members, providing the opportunity to take a break in employment to study or travel without it affecting your membership. Members with a minimum of five years' full membership can request a career break of between one and five years, with a maximum of five years in total available for each member. Members whose career break is granted, will not be expected to pay for their membership during that time and will not have access to Society benefits during that period.

A request for a break in membership due to shared parental or adoption/surrogacy leave can be made at any time.

Update your profile!

BSSS is committed to encouraging equality, diversity and inclusion among our members. We aim to foster inclusivity that reflects the disciplinary, human, and geographic diversity of the soil community and of the breadth of society soils research supports. We recognise that many groups are under-represented in soil science, including women, diverse ethnic backgrounds, and socially disadvantaged populations, and we are committed to increasing diversity and inclusion.

For us to fully understand the diversity of our membership and the genders, nationalities and ethnicities that we represent, we would be grateful if you could update your membership account via www.soils.org.uk with this information. Your data is collected in line with our Privacy Policy and will allow the BSSS Council to assess the strategies it needs to implement to support its diverse membership.

Education Committee Call

The Education Committee are appealing for soil data from members which they can use to produce engaging content for secondary school teachers to use in class. They are looking for simple excel sheet datasets that demonstrate a clear soil function, for example water retention, carbon sequestration, or biodiversity, that can be utilised to tell a soil story. If you have any data you are willing to share, please get in touch via **christineberrill@soils.org.uk**.

Member Survey

BSSS want to hear from you! Keep an eye out on your inbox in mid-July for the distribution of our Members' Survey. It is an opportunity to provide the Society with confidential answers to some key areas including membership, training, journals and insurance to help guide our future strategy. All survey respondents will also be entered into a prize draw!

Annual Conference 2020

On Friday 4 December 2020, we hosted our first virtual Annual Conference in support of World Soil Day, promoting knowledge exchange and providing insight into the use and management of soil across professional and academic practice. ***Soil In Action: Use Across Professions*** *welcomed presentations from Lorna Dawson on soil use in forensic science, Martin Ballard, Group Environment Manager of Willmott Dixon, with a view from the construction sector, Alexandre M.J.-C Wadoux on sampling strategies for soil mapping and John Boardman discussing off- site impacts of soil erosion and runoff.*

Natural Justice: the role of soil in the provision of intelligence and evidence

Professor Lorna Dawson (pictured right), Head of Forensic Soil Science at The James Hutton Institute in Aberdeen, opened the Annual Conference as the President's invited speaker with her presentation *Natural Justice: the role of soil in the provision of intelligence and evidence*. Lorna shared with delegates how forensic soil science has become an increasingly important discipline, involving soils, minerals, dusts, plants and rock fragments to determine provenance i.e. to provide a chronology of their ownership, custody or geographic location.

Soil materials (and pollen and plant fragments within the soil) are extremely useful in a forensic context, because of their environmental specificity; their high levels of transferability; their ability to persist on items such as clothing, footwear, tools and vehicles; and their high levels of preservation after long periods of time. This resilience makes soil trace materials, frequently present at crime scenes and forensic exhibits, highly valuable forms of intelligence and evidence that can aid crime investigations and crime reconstructions and help deliver justice.

Significant advances in forensic soil science over the past decade, in the development of analytical approaches, miniaturisation and also in understanding the behaviour, transfer, persistence and preservation of sediments, soils and plant material has widened their applicability. Evidence samples can be analysed using a broad range of complementary methods that address their physical, chemical and biological components with greater precision, speed and accuracy than ever before. This now permits samples of less than 10 milligrams to be accurately characterised, and permits forensic soil science to also contribute to cold case investigations, both in providing intelligence and also evidence in court.

Lorna highlighted the vital importance of communicating forensic science to the general public, particularly within the adversarial systems of justice where the juries in court are the triers of fact. Lorna explained her work with TV, crime authors and through print media to demonstrate the correct methodology, where methods can be used, as well as understanding and explaining the potential limitations of methods. She shared a clip from Silent Witness showing forensic science in a fictional crime capacity.

Lorna's fascinating talk covered examples from real case work and from fiction and gave delegates an insight into natural justice.

Soils and Stones: A View from the Construction Sector

Invited panellist, Martin Ballard, works for a major construction company and is Chair of the Society for the Environment's Soils and Stones Task Group. In his presentation, he set out some of the challenges which organisations face when working with soils and stone in the built environment and the common issues found between sectors. The need for efficient soils and stone use in construction and related sectors presents risk to soil health and material quality whilst mitigating risk from carbon release and waste crime. Martin discussed the impacts which current regulations have and provided perspective from the Soils and Stones Task Group's work which resulted in the Society for the Environment's (SocEnv) Soils and Stones Report (see page 7).

Efficient sampling for geostatistical surveys

Our second invited panellist, Dr Alexandre Wadoux, is a research associate in soil science and pedometrics at the University of Sydney. He has made contributions to soil science through the development of quantitative methods for soil sampling, mapping and assessment using geostatistics, statistical learning algorithms and spectroscopy. Alexandre's presentation was based on an article that he co-authored for the European Journal of Soil Science titled *How to compare sampling designs for mapping?*

A geostatistical survey for soil requires rational choices regarding the sampling strategy. Alexandre discussed simple sampling strategies for soil mapping: spatial coverage of the sampling locations with or without close-pairs points, and how they compare to an optimized sampling strategy. The number of observations required for reliable geostatistical soil mapping was briefly discussed.

www.onlinelibrary.wiley.com/doi/full/10.1111/ejss.12962

Off-site impacts of soil erosion and runoff: Why connectivity is more important than erosion rates

Our final panellist, John Boardman, is a geomorphologist who retired from ECI in September 2008 and from his positions as Deputy Director of the ECI, Director of the MSc in Environmental Change and Management. He is now an Emeritus Fellow at the ECI, Research Fellow at Green-Templeton College, Oxford and at the Department of Geography, University of the Free State, Bloemfontein, South Africa.

Based on the article that John co-authored for Soil Use and Management, *Off-site impacts of soil erosion and runoff: Why connectivity is more important than erosion rates*, his presentation highlighted that off-site impacts of soil erosion are of greater social and economic concern in Western Europe than on-site impacts. He set out the two related categories these impacts fall into: muddy flooding

#Grounded

Delegates at the conference were given a sneak preview of the Society's campaign, **#Grounded**, which was launched on World Soil Day. The video aims to raise public awareness of soil health and offers an important message to share as we lead up to the World Congress of Soil Science in 2022. **www.soils.org.uk/grounded**

of properties and ecological impacts on watercourses because of excessive sedimentation and associated pollutants. John argued that well-connected systems causing off-site damage are not necessarily related to areas of high erosion rates and that emphasis should be on the way in which connections occur. He suggested that field mapping and observation, aided by remote sensing, are necessary for understanding the impacts.

www.onlinelibrary.wiley.com/doi/10.1111/sum.12496

John Boardman

Martin Ballard

Save the Date: Annual Conference 2021

We are delighted to confirm that this year's Annual Conference will be held virtually on Tuesday 7 September from 9am – 1pm with the topic of *Soil Health – from principles to practice.*

The conference will welcome four speakers who will each present their perspective of soil health and then engage in a panel discussion with questions from our delegates. The four speakers are: **Jim Harris** from Cranfield University, **Elizabeth Stockdale**, Head of Farming Systems Research at NIAB, **Dr Anna Krzywoszynska**, Faculty Research Fellow at the University of Sheffield and **Professor Matthias Rillig** from the Freie Universitaet, Berlin.

Soil Health – from principles to practice will conclude with the President's Lecture from renowned soil scientist, Professor Rattan Lal who was awarded the 2019 Japan Prize 'for the sustainable soil management for global food security and mitigation of climate change' and was named the recipient of the prestigious World Food Prize in 2020.

The virtual event will be followed by the Society's Annual General Meeting at 12:15pm.

The Annual Conference is free of charge to BSSS members and registration is available via www.britishsocietyofsoilscience.wildapricot.org/event-4230294.

Award Winner

Alexandre Wadoux was recentley awarded the Margaret Oliver Award for Outstanding Young Pedometrician which is supported by the International Union of Soil Scientists (IUSS). Congratulations!

EC Conference

Soils: Past, Present and Future

The Early Careers (EC) Committee is delighted to confirm the dates for the EC Conference which will take place virtually from 11 – 13 October 2021. The conference is fully funded for all BSSS EC members and will provide an online environment for postgraduate students, PhD researchers, post-docs, and early career industrial researchers to showcase their work whilst encouraging networking and collaboration.

The conference theme has been chosen as Soils: Past, Present and Future. The properties and functions of soils that we observe today reflect the complex natural history of soil formation in combination with the many ways in which most soils have been modified by current and former human activities. To address the great challenges of our time such as soil degradation, climate change and biodiversity loss, a holistic understanding of the soil system is required that accounts for the history of our soils, their present state, and the projections of how they may be altered by changes in climate and management.

The three-day conference will provide a daily programme consisting of a Keynote Speaker presentation, four oral abstract presentations and a one-hour afternoon workshop as well as the opportunity to view four poster presentations per day. The three days will in turn cover the past, present and future of soils and the workshops will offer learning opportunities for Writing About Soil for both academic and public audiences.

To book your place on the conference, visit the event page on www.britishsocietyofsoilscience.wildapricot.org/event-4350195. Further details, the conference programme and the joining link for each day will be emailed closer to the event.

Talking About Soil

The Early Careers Committee will be hosting an exciting event on **Wednesday 21 July from 1.30pm to 5.00pm** featuring two invited speakers to present *Talking About Soil*, your guide on presenting your research in an engaging way to academic and non-academic audiences. The afternoon session will allow Early Career members to meet their committee and trial GatherTown, the virtual platform that will be used to host the Early Careers Conference in October.

To book your place at this event, visit **www.britishsocietyofsoilscience.wildapricot.org/event-4350205**. Watch this space for programme information and keep up to date via the EC Twitter page – **@ECSoil_Sci**.

SPONSOR

Sponsorship Opportunities

Publicise your brand and support our Early Career members by sponsoring the Early Careers Conference. Sponsorship will give you the opportunity to reach your target market, network with early career professionals, show your support of the industry and advertise to your future employees!

Packages start from £500 or at a reduced cost of £300 if you are a Corporate Member (see page 13). Please contact admin@soils.org.uk for further information.

Corporate Membership

Our Corporate Membership scheme has launched!

Why become a corporate member?

Becoming a Corporate Member of BSSS demonstrates to your staff and customers that you care about soil and are building a collaborative partnership to help safeguard our soil for the future.

Join us and help make a positive difference in the sustainable management and long-term security of soils that is critical to solving the environmental and societal challenges we face today.

How to apply

Become a Corporate Member today by completing the online form at:

www.soils.org.uk/membership

For more information or to discuss your application further, please contact us at:

admin@soils.org.uk

PACKAGE DETAILS

What is included?

- Corporate Membership Scheme certificate
- Acknowledgement, link and blog opportunities on BSSS website
- Use of *"Corporate Member of the British Society of Soil Science"* and a specifically designed logo
- Access to BSSS' two scientific journals for one nominated contact
- Members' e-newsletters
- One ¼ page advertisement in *Soil Matters* (formerly *The Auger*)
- 20% discount on additional advertising in *Soil Matters*
- Free unlimited job advertisements on the BSSS website
- Members' discount on BSSS conference and event tickets (unlimited when booked through the company)

Membership Fees (based on annual turnover)

Up to £250k	£399 +VAT
£250k – £1m	£599 +VAT
£1m – £5m	£799 +VAT
> £5m	£999 +VAT

A discount on the membership fee will be offered to charities and not-for-profit organisations.

BOLT ONS

Options	Fee
1. 10% discount on any World Congress of Soil Science 2022 sponsorship opportunities (including arts, tours and exhibition)	£300 +VAT
2. Sponsorship of an Early Career members' event	£300 +VAT

The bolt-ons are offered at a reduced fee to Corporate Members who will also be given priority for booking.

Soil Use and Management

In Case You Missed It: SUM

Effect of farm management on topsoil organic carbon and aggregate stability in water: A case study from Southwest England, UK

Featured in SUM 37:1 (January 2021), the paper written by Collier, Green, Inman, Hopkins, Kendall, Jahn and Dungait acknowledges that there are few reliable data sets to inspire confidence in policymakers that soil organic carbon (SOC) can be measured on farms. The authors worked with farmers in the Tamar Valley region of southwest England to select sampling sites under similar conditions (soil type, aspect and slope) and management types. Their paper concludes that (1) SOC can be reliably measured in farmed soils using accepted protocols and related to land management and (2) WSA scores can be rapidly measured in clay soils and related to SOC stocks and soil management.

www.onlinelibrary.wiley.com/doi/10.1111/sum.12658

Effect of tillage and crop management on runoff, soil erosion and organic carbon loss

Published in both SUM 36:4 and *BSSS Cross Journal Virtual Issue: Opportunities and Challenges in No-Till Farming*, the study by Chowaniak, Głąb, Klima, Niemiec, Zaleski and Zuzek aims to determine the impact of specific tillage systems and plant cover on the organic carbon losses, as well as on runoff and soil losses, over a 6-year study period following the introduction of no-till. The six-year study confirmed the hypothesis that no-till decreases soil losses and organic carbons at different crop stages, but runoff was lower under conventional tillage.

www.onlinelibrary.wiley.com/doi/10.1111/sum.12606

Outstanding Peer Reviewers 2020

Soil Use and Management is dedicated to providing a rigorous and fair peer-review process. In 2020, 383 individuals from 47 countries provided a review for the journal and helped to maintain the high standard of research published. In February 2021 and chosen by the editors, a list of outstanding reviewers from 2020 was published celebrating their significant contributions to the journal. Congratulations!

www.onlinelibrary.wiley.com/doi/epdf/10.1111/sum.12698

Perspectives on validation in digital soil mapping of continuous attributes—A review

Piikki, Wetterlind, Söderström and Stenberg's invited review features in SUM 37:1 and explains how they performed a systematic mapping of validation methods used in digital soil mapping (DSM), in order to gain an overview of current practices and make recommendations for future publications on DSM studies. They present a list of method details that should be provided in DSM studies as well as a detailed summary of the 28 validation metrics used in published DSM studies, how to interpret the values obtained and whether the metrics can be compared between datasets or soil attributes.

www.onlinelibrary.wiley.com/doi/10.1111/sum.12694

Soil health at a crossroad

In the recently published SUM 37:2, Philippe Baveye provided commentary on an article by Lehmann *et al.* (2020) in which they propose a review of the very topical notion of soil health and of its practical significance for soil management. As the journal in which this review appeared does not accept comments or letters to the editor, Baveye offers his thoughts in the hope that it will lead to a constructive discussion about some of the limitations of the concept of soil health, and about how to proceed to come up with an alternative approach that would be more directly useful in terms of soil management.

www.onlinelibrary.wiley.com/doi/10.1111/sum.12703

Call for Papers: Soil Health and Recycling of Organic Resources

A Virtual Special Issue of *Soil Use and Management* entitled *Soil Health and Recycling of Organic Resources* is seeking to address the issues raised when contaminants, such as heavy metals and organic compounds, are added to soil with organic materials. Although the Special Issue will include a selection of papers presented at three high profile international conferences, submission of high-quality research papers from authors not attending these conferences are also encouraged. Review papers and informed commentaries would be particularly welcomed, as would studies demonstrating strong novelty, wide implications, or unexpected outcomes.

www.onlinelibrary.wiley.com/page/journal/14752743/homepage/cfp_special_issues

Online Journal Access

From January 2022, the European Journal of Soil Science (EJSS) and Soil Use and Management (SUM) will be moving to online only formats.

Led by our Envrionmental Policy, and with only 13% of our members accessing one or both journals in print, our Publications Committee agreed to cease printing hard-copy journals to provide a more sustainable output which will provide members with quicker, easier access to the latest articles.

Members will be notified of new issues being available by signing up for Content Alerts on the journal's website on Wiley Online Library;

www.onlinelibrary.wiley.com

To continue to access the journals for free, members can either:

- log on to their member profile on the website and click through to the journals to read all current and past editions free of charge
- download the free Apple app from the app store and log in using your Society website username and password. The app also allows you to save your favourite articles to review again later.

UK Members who would like to continue accessing hard-copy journals can receive both EJSS and SUM at an 83% discount on the usual price for all 2022 issues. To order your print copies of the journals or to request a price for non-UK delivery, visit the Sheridan webstore;

www.ondemand.sheridan.com/pages/wiley-home.

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www.onlinelibrary.wiley.com/journal/14752743

European Journal of Soil Science

ECR Letter to the EJSS Editor

Bypass and hyperbole in soil science: A perspective from the next generation of soil scientists

First published in November 2020 and featuring in EJSS 72:1, the letter written by a group of Early Career Researchers to the Editor of the European Journal of Soil Science was a reaction to the Russell Review by Phillipe Baveye, *Bypass and hyperbole in soil research: worrisome practices critically reviewed through examples* **(www.onlinelibrary.wiley.com/doi/10.1111/ejss.12941)** and to his follow-up Invited Opinion paper, *Bypass and hyperbole in soil research: a personal view on plausible causes and possible remedies* **(www.onlinelibrary.wiley.com/doi/10.1111/ejss.12940)** and the subsequent Letter to the Editor by Johan Bouma, *Soil challenges beyond publication issues* **(www.onlinelibrary.wiley.com/doi/10.1111/ejss.12947)**.

"The so-called "rat-race" in the scientific publication system, and the associated practices including "bypass" and "hyperbole" as highlighted by Baveye (2020a, 2020b), particularly affect the ability of early career soil scientists to begin and consolidate their careers and to make meaningful contributions to their disciplines. PhD students, postdoctoral researchers, junior and senior lecturers and well-established professors hold contrasting perspectives on these issues and unequally suffer from the pernicious impacts and imperfections of the current system. We strongly believe that finding and implementing effective and efficient solutions to adjust the system requires the involvement and collective responsibility of the whole soil science community."

Portell *et al* conclude their letter expressing their vulnerability to bypasses and hyperboles. They give five suggestions as to how the research community needs to address the culture of fast science that triggers these practices and condemn them while adjusting the publication system.

You can read the letter in full at **www.onlinelibrary.wiley.com/doi/10.1111/ejss.13064.**

The Early Careers members hosted a Zoom into Soil webinar on 9 June which explored some of the issues from the letter in more detail. A recording is available at **www.youtube.com/user/BritishSocietyofSoil**.

Celebrating the Work of Early Career Researchers

In an expansion of scientific discourse currently moving through publications in response to the Russell Review by Professor Phillippe Baveye, *Bypass and hyperbole in soil research; worrisome practices critically reviewed through examples*, the seventh webinar of the series focused on exploring themes from the rejoinder penned for researchers – from an Early Career Researchers (ECR) perspective, published in EJSS 72:1. The lead author of the latter piece, Dr.Xavier Portell-Canal, chaired the session with his co-authors Laura Schee and Dr Lorenzo Rossi presenting, and a guest appearance by Prof. Phillippe Baveye who hosted the Q and A session.

Laura Schnee Dr Lorenzo Rossi

Laura Schnee, a Doctoral Candidate from the University of Bremen, began the main body of the session by expanding on tensions between ECRs and traditional publishing. Laura proposed that we can view publishing from two sides, that of the researcher and that of the author. The researcher seeks fair, accessible, and relevant information; the author to produce publishable material that is citable and widely recognised. This dynamic, for those transitioning their career between, can cause tension between a need to produce quality work and that of volume. Hyperbole may be a trap easily triggered when seeking to gain swift recognition in the competitive field of scientific research. Laura concluded with several methods to reconcile tensions such as increased pre-publishing.

Research fellow at the University of Milan, Dr Lorenzo Rossi, then took us further on from the topics raised in the opinion pieces to discuss the impact of tensions in academic research, and how this may contribute to the mental health of ECRs. Lorenzo shared statistics demonstrating that ECRs are at significantly higher risk of suicide and depression than the general public and hypothesised this may be, in part, due to publication pressures and academic isolation resulting from the increased competition this inspires. When your career hangs in the balance of being published enough, on the metrics of citation and impact value, competition and emotional turmoil can ensue. Lorenzo also raised other contributing factors such as the likelihood of separation from friends and family, low support within roles, and the bottleneck of talent between Ph.D., to postdoc, to Professor roles.

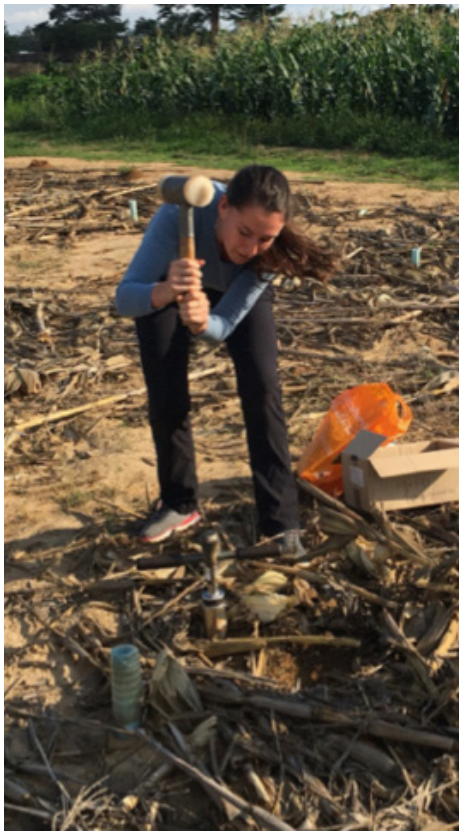
To round up the session Prof. Phillippe Baveye led a valuable Q and A session, starting with his advice to ECRs – persevere! Phillippe believes things in academia cannot continue in the current format and the situation will improve. Other topics surrounding the practicalities of pre-print publishing, the learning we can take from other fields, and other ways of relieving ECRs of burden were discussed between the panellists. In summary, the panellists concluded the coupling of funding to publishing 'success' caused a myriad of issues for ECRs and the wider academic field, and agreed innovative approaches were required to tackle these issues.

Zoom into Soil Series

Zoom into Soil: Zero Tillage

In October 2020, BSSS were delighted to welcome Hannah Cooper and Russell McKenzie to present at our third Zoom into Soil webinar on the topic of Zero Tillage.

Hannah Cooper, a Research Fellow at the University of Nottingham, presented an overview of her doctoral research assessing the effects of zero-tillage on carbon storage and greenhouse gas release on commercial farms at a regional scale. She explained how changes in the management of agricultural soils can affect their role as a source or sink in the global carbon cycle, and the scale and composition of their greenhouse gas emissions. Agricultural greenhouse gas emissions are complex and heterogeneous, but the active management offers possibilities for climate change mitigation. Many of these mitigation opportunities use currently available technologies and can be implemented immediately.



Zero-tillage, where the seed is sown directly into undisturbed soil, is an increasingly popular strategy to minimise soil erosion, increase biological activity and promote greater soil aggregate stability. However, the extent to which zero-tillage reduces greenhouse gas emissions and increases soil carbon storage, compared to the more common agricultural practice of conventional tillage, is extensively debated in the literature and represents a crucial knowledge gap in the context of climate change mitigation.

Russell McKenzie, Farm Manager for John Sheard Farms, discussed zero tillage in practice with his presentation *2020 Farming's Annus Horribilis; but were there some silver linings between the clouds?*. Russell explained how 2020 had been an incredibly difficult year for farmers in the UK with the extremes of weather during the growing season; from a very wet autumn to a spring drought which had huge impacts on cropping rotations and crop performance.

Two key months in the farming calendar have seen notable differences in the past 15 years with April being almost 30% drier and August over 25% wetter than weather figures from 1961-2000. Despite a challenging season, Russell explained that establishment of winter wheat was easier and better compared to those under tillage regimes on his farms. This was reflected with yields at harvest which saw the performance of no-till autumn wheat crops outperform the cultivated crops by 0.75 tonnes/hectare and similar with spring wheat and barley crops by 0.7-1.0 tonnes/hectare.

Russell highlighted the value of better soil management, allowing biology to build and how after a period of time, soils become more resilient to extreme weather conditions and are far better able to support machinery and traffic water away under wetter conditions over time. Although the returns are notable, the driving force for converting to no tillage should be the understanding of the importance of soil organic matter, porosity and capillary action.

Since the webinar, an overview of Hannah's research has been published in The Conversation UK: **www.theconversation.com/farming-without-disturbing-soil-could-cut-agricultures-climate-impact-by-30-new-research-157153**.

Zoom into Soil: Soil Organic Matter

The first webinar of 2021 and our fourth in the series was supported by our South East England Soil Discussion Group (SEESOIL) and welcomed Dr Tom Sizmur and Julian Gold with their presentations, *How does Organic Matter become Soil Organic Matter?* and *Building and Retaining Soil Organic Matter on Hendred Estate: Some Practical Issues and Thoughts.*

Dr Tom Sizmur gave an academic perspective on SOM and explained how the organic matter that enters the soil becomes soil organic matter and how different fractions of that organic matter provide different functions and services. He outlined some principles and strategies for how organic amendments can be used in such a way that may increase the proportion that become soil organic matter and reduce the proportion that becomes carbon dioxide.

Tom concluded his presentation with some take home messages for the delegates; i) not all soil organic matter is created equal, ii) we can increase soil organic matter by increasing Carbon Use Efficiency and iii) We still have a lot to learn about how to increase the Carbon Use Efficiency of our soil microbial communities.

Farm Manager, Julian Gold (below), provided a practical perspective on SOM from his experience at Hendred Estate. He outlined his strategies for building and retaining soil organic matter without the use of compost, farmyard manure or rotational leys. With photographs taken by him of the crops he grows, he shared with delegates his successes and failures to date and thoughts on how his soil health strategy will continue to evolve.

Zoom into Soil: Soil Functions

Supported by our Northern Soils Network (NSN) regional group, our fifth webinar in the series featured Professor Lorna Dawson and Dr Marcelo Galdos with two distinct topics broadly considering the function of soil for ecological and non-ecological purposes.

Professor Lorna Dawson (pictured below) presented first with her title *The Answer Lies in the Soil*. She explained how soils vary widely in their physical, chemical and biological characteristics and that soils are usually analysed for the purposes of agriculture, the environment or engineering. Lorna gave us an insight into her discipline of forensic soil science and how soils are characterised in order to assist police in search and in trace evidence comparison. She highlighted that methods used need to be applicable to trace amounts of soil and discriminating at appropriate scales and showed delegates how aspects of soil information can assist in criminal investigations.

Dr Marcelo Galdos offered a different perspective to the function of soil and how it is at the nexus of the global challenges of climate change, food security and water resource management.

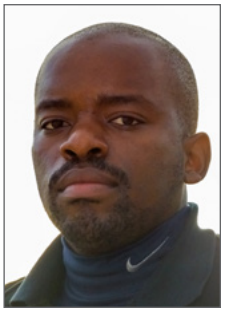
Besides supporting food production, soil provides ecosystems services such as storing carbon, filtering water, and maintaining biodiversity. Soil degradation is a threat to food security and environmental sustainability in the UK and globally and has been intensified by climate change.

Marcelo explained that whilst farming contributes to global greenhouse gas emissions, agriculture also provides significant opportunities for emission reductions and carbon sequestration. The concept of climate-smart agriculture includes sustainably increasing agricultural productivity and income, enhancing resilience and adaptation to climate change, and reducing greenhouse gas emissions. Managing soils sustainably and increasing soil carbon sequestration, improving soil structure, and increasing water and nutrient use efficiency are essential for this approach. He discussed some aspects of soil and climate interactions, and described ongoing research combining experiments, sensor networks and biogeochemical modelling to assess climate-smart soil management practices.

Zoom into Soil: Hidden Processes in Soils

Our sixth webinar of the series was once again support by the Northern Soils Network (NSN) with a focus this time on the hidden processes in soils. We welcomed Dr Carsten Müller and Dr Tinashe Mawodza with their presentations, *Soil processes regulated at the microscale – using microscopy to zoom into soil and Demystifying secrets of the hidden half – an exploration of root-soil interactions using X-ray and neutron tomography.*

Dr Carsten Müller explained that besides many other functions, soils' capacity to store carbon and being a habitat for soil fauna and microorganisms are intricately linked. Carbon entering the soil, dominated by plant residues, is decomposed and transformed by soil organisms. The decay of plant residues and the parallel build-up of soil organic matter happens at microscale sites within the complex 3D soil matrix. One way to better understand what happens at these small hidden spots within the soil is to use modern spectromicroscopic imaging techniques. Carsten's presentation took us to the microscale hot spots and highlighted the formation of soil organic matter at the interface of plants, microorganisms and soil minerals.



In his presentation, Dr Tinashe Mawodza described how previously hidden root interactions with soil can be visualised and analysed at the micro- and macro- scale using complimentary imaging techniques (X-ray and neutron imagery). He gave examples of how this has been used to unravel previously unknown soil phenomena and shared a few insights from his research within this field. He also outlined the challenges that may limit the deployment of these techniques in investigating soil processes at different scales.

All of our past Zoom into Soil webinars are available on our YouTube channel:
www.youtube.com/user/BritishSocietyofSoil

For details of upcoming webinars, head over to our events calendar at **www.soils.org.uk/events.**

Join us at WCSS 2022

Planning is really underway with the World Congress of Soil Science (WCSS), taking place in Glasgow from 31 July – 5 August 2022.

Our WCSS Working Group is now getting ready for a flurry of activity as the real planning begins! The Congress and its theme, *Soil Science – crossing boundaries, changing society*, provides an exciting opportunity for the Society to capitalise on the growing interest in soils with plenary sessions themed around **soil and security, the north/south divide, soils and land use in the 22nd century** and **data and information.**

We will also be hosting a range of interdivisional sessions, alongside sessions aimed at governments and policy makers. In addition, we hope to welcome members to exclusive networking events and provide our early careers members with the opportunity to meet their peers.

This Congress, organised by the Society in conjunction with the International Union of Soil Sciences (IUSS), will be the first to maximise opportunities for people from a diverse range of backgrounds and geographies to attend. The impact which Covid-19 has had, is likely to mean that delegates from many countries will be unable to attend the event in person and for the first time, we will be offering online streaming of several Congress sessions, allowing those unable to travel the opportunity to hear many of the speakers live and access poster presentations.

Abstracts, Bursaries and Registration

We will be welcoming abstract submissions for the Congress, along with early-bird registration from mid-summer via **www.22wcss.org**. Watch this space for further information on how to submit your poster or attend the event!

Volunteers

Later this year, we will be releasing details of the volunteers we will need to make the Congress and related tours and arts programme a success! If you are interested in finding out more about the volunteer opportunities when we release them later this year, please email **wcss2022@soils.org.uk**.

Sponsorship

There are a whole host of sponsorship opportunities for organisations big and small at the Congress. This will be the first major soil-related event to be held face-to-face since the pandemic and will provide sponsors with the opportunity to engage in-person and remote delegates, widening the reach of both the Congress and those who choose to support the event. Find out more about the packages available by visiting **www.22wcss.org** or contacting **Kirsten.Lamb@speak.co.uk**.

Tours

Our tour programme, *Small Island, Diverse Soils, Big Opportunities – Connecting people and soils*, will include a range of tours, providing international delegates with an opportunity to visit a number of UK destinations.

Our day tours, taking place on Friday 5 August, will visit:

1. Glasgow's Industrial Legacy
2. Forth
3. Isle of Arran
4. Lothian and the Bush Estate.

Tickets for the four, day tours will be available to book as part of the Congress registration process and from £70. Tickets are available on a very limited basis and please book as early as possible to avoid disappointment!

Our two, three-day post-congress tours will visit areas around the north east and north west or south west of Scotland and will include ample opportunity to review the local geology and coastal topography.

The programme will include a six-day pre-congress tour taking delegates from southeast England to the Southern Uplands of Scotland; one-day mid-congress tours to Edinburgh, Glasgow, Stirling, the Isle of Arran and Boghall Glen; and three post-congress tours with an opportunity to visit three diverse Scottish regions.

Our three-day pre and six-day post Congress tours will be opened for booking in late 2021/ early 2022 and to enquire about the tours please contact **wcss2022@soils.org.uk**.

Arts Programme

This month, part of our arts offering for the WCSS, Our Living Soil really started to get off the ground! **'Soil Voices'** and **'Soil Stories'** are exciting programmes being delivered by

"We recognise that the impacts of Covid-19 globally are still being felt and we are planning for every eventuality: to make sure WCSS is able to go ahead whatever the global situation and that we are as inclusive as possible"

Bruce Lascelles, President and Chair of the WCSS Working Group

Jude Allen and Isla Robertson. Both projects this month have been teasing us here in the office at BSSS with snippets from their work. Stay tuned to the **www.ourlivingsoil.art** and **www.soilvoices.org** websites to be among the first to see the finished results!

Isla is producing an exciting original audio drama called **'Digging Deeper'**; the thrilling story of Ella, a young girl who hears a voice from across the moors. Based around the theme of soils, Digging Deeper weaves bog bodies, modern farming conflicts, and soil stories through time together in a deeply engaging tale.

Jude is working on an oral heritage project seeking to preserve oral history relating to soils. She is interviewing scientists, farmers, and laypeople, exploring their connection to the soil through past, and current, relationships, narratives, and recollections. Storytelling is key to engaging people with their environment and these recordings will form a basis for engaging with people for years to come. Many shorter clips are available on YouTube and on the Soil Voices global map.

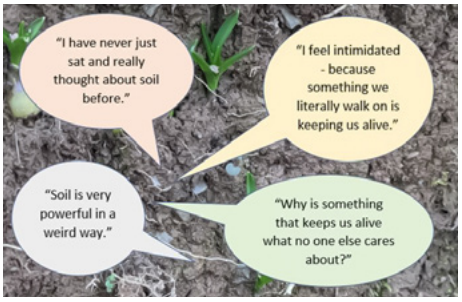
Soil Voices: Global Conversations in Schools. The wonders of modern technology enabled the delivery of the first online workshop in the series to twenty students; ten from Churston Ferrers school in Devon, UK, and ten from King's Kids in Nairobi, Kenya - all learning in the same classroom. Aged ten to fifteen, the students spent five weeks learning about soil and how we can invite it into our lives through creative writing and poetry. It has been wonderful to see how their interest has been piqued and how they have all engaged with soil over the weeks. In the fourth session, each of the children was given a soil character and they collaborated on the scripts for two mini audio dramas which you can find on YouTube:

Drying Out
https://youtu.be/OsUEndqVqgw

Waterlogged
https://youtu.be/1clj1BNmzvI

For more soil stories, follow Soil Voices on **Twitter** and **Instagram**: **@soilvoices**

Soil Voices



Marketing

We would love our members to share the news about the Congress amongst their own networks! We have produced a range of email banners and PowerPoint slides which can be used to promote the Congress. If you can support the event by adding slides into your future presentations, please email **wcss2022@soils.org.uk**.

Environmental Position

As an environmental charity, we are developing a policy which sets our commitment to making the Congress as sustainable as possible. This will include minimising our use of single-use materials and meeting virtually where possible. Delegates will be encouraged to play their part and will have the opportunity to off-set their impact in attending the event and will be signposted to carbon offsetting platforms.

If you aren't already, please follow our social media pages for the latest information on the Congress as it becomes available.

Facebook: @WCSS2022
www.facebook.com/WCSS2022

Twitter: @WorldSoils2022

An introduction to Chartered Scientist (CSci)

What is the Science Council?

The Science Council is a membership organisation representing learned societies and professional institutions across the UK. It aims to be a collective voice for science and scientists and provide the quality assurance system for those working in science across all disciplines.

What is Chartered Scientist (CSci)?

The Chartered Scientist designation allows professional scientists to be recognised for their competence, ability and integrity and serving the public interest. Registration is a voluntary means of demonstrating your professionalism and involves being held to account by your peers for your abilities and adherence to ethical standards. Chartered Scientists are committed to keeping their skills and knowledge up to date through continuing professional development (CPD) which is submitted for review on an annual basis. The main aim of CPD for registrants is to maintain, develop and broaden scientific and technical knowledge and acquire professional life skills.

Benefits of professional registration

Professional registration provides independent recognition of your skills, meeting the standards required to join the global community of professional scientists.

- **Get recognised** – Registration recognises your knowledge and experience in addition to any other qualifications you may have. It captures on-the-job experience and shows the level of competence you have as a practising scientist as well as demonstrating your commitment to integrity, regard for public interest and responsibility for others.
- **Reflect and shine** – Registration and chartership supports and encourages you to reflect on what you have achieved in your career so far and will build your confidence as a practising scientist.
- **Demonstrate your ethical credentials** – Registration tells others that you are committed to working to high ethical standards and gives them trust and confidence in you as a professional scientist.
- **Be the one that stands out** – Registration is a mark of quality and competence that is sought after by employers. It commits you to standards of integrity and professional development that help you stand out from the crowd.
- **Become a leader within your field** – Registration is a mark of excellence and reflects stages in your career as a scientist, encouraging you to work towards high standards of professionalism, skills and knowledge.
- **Join a worldwide community of cross-disciplinary scientists** – Science Council registered scientists are spread across many different countries and have the opportunity to volunteer as committee members, registrant champions and more – join the Science Council at events, workshops and share your voice and expertise.

How to apply

Chartered Scientist (CSci) is open to all members of BSSS who work in the practice, application, advancement or teaching of science and have the appropriate combination of qualifications and experience. To apply for Chartered Scientist status, please download the application form, criteria and guidance notes on our website. Completed application forms and all supporting documentation should be returned to **admin@soils.org.uk**.

www.soils.org.uk/education/chartered-scientist

Take the next step

Find out more about professional registration at one of the Science Council workshops. Learn how to succeed with your application, make your experience shine and get recognition for your skills in science.

The Science Council's expert workshop facilitators are ready to take your questions and queries, offering the support you need to successfully apply for professional registration.

Attend a workshop and find out more at:
www.sciencecouncil.org/workshop

The Chartered Scientist designation allows professional scientists to be recognised for their competence, ability and integrity and serving the public interest

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Employer Champions typically pay for your first year of professional registration or may offer grant schemes to become professionally registered.

Do you work for an employer champion? Find out here: **www.sciencecouncil.org/employers/our-employer-champions**.

David S Jenkinson Fellowship Award:
Dr Marie Arnaud Case Study

Overview

I have started a collaboration with Dr Megonigal, Dr Noyce and Ms Kent from the Smithsonian Environmental Research Center, US thanks to the BSSS David S Jenkinson Fellowship award.

Our collaboration aimed to quantify how climate change will affect the belowground carbon dynamics of coastal wetlands. This question is critical in tidal marshes where root production drives the accumulation of soil organic matter, and the elevation gain that is key to the resilience of coastal ecosystems to sea level rise. The project had two main questions: i) quantify the effect of temperature rise on root production; ii) quantify the interaction of temperature and atmospheric CO2 concentration on root production.

Project details

To answer those questions, I have used the Global Change Research Wetland (GCReW), a unique facility worldwide for studying the response of coastal wetlands to future environmental conditions. At GCReW, the temperature and its interaction with a CO2-enriched atmosphere are being manipulated. The basic design is a warming gradient composed of four heated zones. At the end points of the warming gradient (at ambient and +5.1°C) they are crossed with CO2 enrichments.

During this project, we have leveraged GCReW with the installation of minirhizotrons in four different treatments: i) ambient temperature and ambient CO2, ii) ambient temperature and enriched atmospheric CO2, iii) elevated temperature and ambient CO2, iv) elevated temperature and enriched CO2. Only few coastal ecosystems have been investigated with minirhizotrons, and none with those treatments. Minirhizotrons have been primarily developed for terrestrial ecosystems. Therefore, installing the minirhizotrons in this ecosystem required us to adapt the minirhizotron system.

Due to the pandemic, I could not go to the US. I therefore organised all the steps of the minirhizotron installation remotely. This has been more challenging than I anticipated, but also very rewarding due to the high level of support that I received from Dr Megonigal, Dr Noyce and Ms Kent. Together, we have re-designed the minirhizotron tubes to adapt them to the saltmarsh conditions of the Cheesepeak Bay, where GCReW is located. Thanks to a protocol that I established in collaboration with Dr Megonigal, Dr Noyce, and Ms Kent, we have built minirhizotron tubes from scratch adapted to the flooding and freezing conditions of the saltmarsh of GCReW. I have managed all the purchasing activities and the relation with the suppliers for the components that we needed to build the minirhizotron

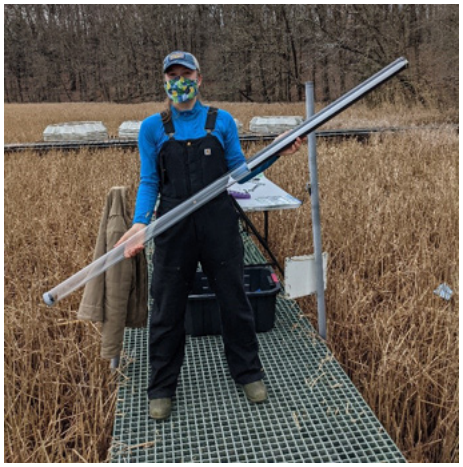
tubes. It was very challenging during this pandemic, due to the long delay of delivery and the shortage of some materials. It took longer than expected, but we successfully organised all materials to build the tubes and we successfully assembled them.

We also established a robust protocol to test the quality of our hand-made tubes in the laboratory. This was necessary to ensure that our minirhizotron tubes will be able to resist the harsh salt-marsh conditions for several years of root production monitoring.

After that, I established a protocol in collaboration with Dr Megonigal, Dr Noyce and Satya Kent to install, monitor and analyse the minirhizotron tubes and the root production. The space in GCReW is limited, but a good installation of the minirhizotron tubes is critical to have reliable data of root production. We had many discussions on how to maximise the quality of the root production measurements, while taking the minimum place and being efficient for the monitoring and the analysis of the root production. I have shared with Dr Megonigal, Dr Noyce and Ms Kent the best practices to install minirhizotron tubes, while they have been very resourceful for helping me to adapt the protocol to the GCReW site conditions and to the technician time available for the project.

I am happy to say that it has been a synergetic scientific relationship, and that now all the minirhizotrons are in the ground.

Despite the difficulties of being in the middle



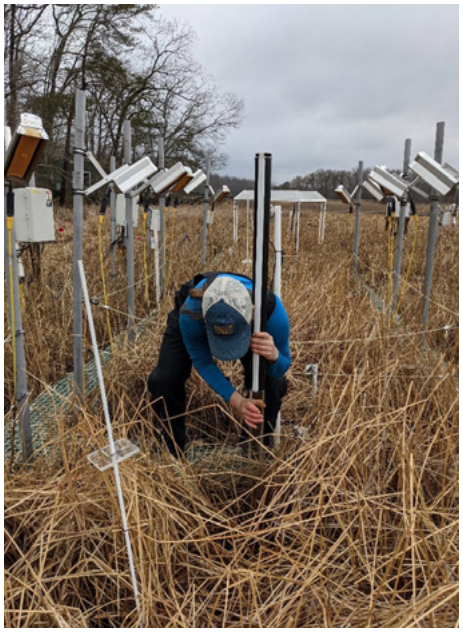
of a pandemic, we successfully managed to leverage GCReW to monitor the root production. In addition, we produced very robust protocols for the installation and preparation of minirhizotron tubes that we are soon going to make public. That will, without any doubt, be beneficial for the saltmarsh scientific community. In addition, I developed a protocol to analyse the image of roots that Ms Kent will soon use.

With Dr Megonigal, Dr Noyce and Ms Kent, we had many technical discussions during online meetings and through emails, but we also had several brain-storming meetings to discuss our likely results, how we will analyse them and use them for future publications. On my side, I have already started to draft our first manuscript, and started to train myself for the statistical analysis with dummy data, and I have now my R script ready for the

real data coming soon. All this pre-work will allow me to quickly finish the publication once we have the root production data.

Final words

Thanks to the David S Jenkinson Fellowship, I have started this collaboration with Dr Megonigal, Dr Noyce and Ms Kent, but we aim to continue to collaborate for several years. We have ideas for future projects and we will develop proposals together to continue this work. The David S Jenkinson Fellowship has definitely opened us to an array of future potential collaborations. Thank you BSSS!



If you would like to donate to one of our grant funds to support soil scientists like Dr Arnaud visit: **www.soils.org.uk/support-us/donations**

Or email: **admin@soils.org.uk**.

Grants

BSSS is dedicated to promoting the study and profession of Soil Science as well as supporting and encouraging excellence within the discipline. To achieve this, we offer several funding opportunities which include:

- **Early Career Conference Grant** – Available to BSSS Early Career members to help fund attendance at conferences applicable to their research field. **Value of up to £500**.
- **Innovation Grant** – Suitable for teachers of Primary, Secondary and Higher Education Institutions to encourage development of innovative ways of incorporating soil science into lessons. **Value of up to £500**.
- **Field Equipment Grant** – Suitable for Primary, Secondary and Tertiary Institutions to purchase field equipment to aid in the instruction and understanding of soil science. **Value of up to £1,000**.
- **Public Engagement Grant** – Available to BSSS members to undertake public engagement activities communicating soil to diverse audiences. **Value of up to £250**.
- **David S Jenkinson Fellowship Grant** – Available to support early career postdoctoral scientists from the UK to travel and collaborate with an overseas organisation. Suitable for Society Members who are UK residents and employed. **Up to £5,000 awarded annually**.
- **Brian Chambers Soils Fund** – Career development funding to help BSSS early career scientists and practitioners develop skills and knowledge needed to manage soils effectively in modern farming systems, essential for the future sustainability of agriculture. **Value is based on application (normally between £250–£2,500)**.

Following a review by our Grants & Awards Committee, the former Student Travel Grant has been renamed to the Early Career Conference Grant and the eligibility criteria has been broadened to reflect the diversity of our Early Career members. Applications will now be considered from all Early Career members, including but not limited to undergraduates, Master of Research and PhD (all years) students and those in employment. Priority will be given to final year PhD students for international meetings.

Visit us at **www.soils.org.uk/grants-awards** for guidelines and application forms or email us on **grants@soils.org.uk**.

Award Winner

BSSS is delighted to announce that Geoff Lovett has been awarded the MSc Dissertation Award from the University of Reading which is sponsored by the Society and he has received two years Early Careers membership as part of his prize. Congratulations!

News from Rothamsted Research

Despite the challenges of COVID-19, there has still been much activity in the Sustainable Agriculture Sciences Department, at both the Harpenden and North Wyke sites.

ROTHAMSTED RESEARCH

Where there's muck, there's brass

A new way of thinking about soil looks at why adding organic material to soil improves flood and drought resilience, climate control and crop yields – universal 'ecosystem services' that are widely recognised as worth billions to the global economy. Founded on more than 50 years' worth of data from a unique field experiment, researchers, led by Andrew Neal, have demonstrated that common farming practices drain the soil of carbon, altering the structure of soils' microscopic habitat and, remarkably, the genetics of microbes living within it. The team of microbiologists and physicists considered almost 9,000 genes and used X-ray imaging to look at microscopic soil pores, and, in concert with previous work, have started forming what they envisage will be a universal 'Theory of Soil'. In healthy soils, relatively low nitrogen levels limit microbes' ability to utilise carbon compounds, so they excrete them as polymers which act as a kind of 'glue' – creating a porous, interconnected structure in the soil which allows water, air, and nutrients to circulate. The Victorian-era switch from manure to ammonia– and phosphorous-based fertilizers has caused microbes to metabolise more carbon, excrete less polymers and fundamentally alter the properties of arable soils when compared to their original grassland state.

For further details see:

www.nature.com/articles/s41598-020-67631-0

Grasslands stopped fighting climate change over a century ago

The Park Grass experiment at Rothamsted.

An investigation led by Technical University of Munich and involving Andy Macdonald into why the world's 50 million square kilometres of grasslands aren't soaking up more carbon dioxide from the atmosphere has shown many such habitats reached their peak over a hundred years ago. Based on stable isotope analyses of archived samples from the world's longest running ecological experiment, Park Grass at Rothamsted, the study shows that grasses are physiologically constrained from taking up further carbon dioxide through declines in the time that stomata are open – even when nitrogen fertilisers are added to encourage their growth – and grasslands that have received high levels of nitrogen fertiliser are today taking up less nitrogen and yielding less than they were a century ago. The report's authors say the common practice of adding nitrogen fertiliser to grazing land to encourage greater grass growth – and hence greater carbon dioxide uptake – is not only fruitless from a climate point of view, but also counterproductive as it promotes the expansion of grasses at the expense of the more carbon dioxide responsive plants such as forbs and legumes.

For further details see:

www.bmcbiol.biomedcentral.com/articles/10.1186/s12915-021-00988-4

Increasing weed threat now greater than at any point in human history

Crops are now more vulnerable to weeds than before the advent of herbicides, according to a new study, led by Jonathan Storkey, which used data from the world's longest running experiment, the Broadbalk Winter Wheat experiment at Rothamsted. The study found that, on plots where herbicides have never been used, yield losses to weeds have been consistently increasing since the 1960s. Less than a third of the harvest was lost to weeds in the first ten years of the dataset, but between 2005-2014, this had risen to more than half. The researchers believe this is due to weeds doing better than crops in a warming climate, the shift towards shorter crop varieties that get shaded out by the taller weeds, increased herbicide resistance and that, just like our crops, many weed species have also benefited over this period from increased use of nitrogen fertilisers.

For further details see:

www.onlinelibrary.wiley.com/doi/10.1111/gcb.15585

Weeds on the section of the Broadbalk Winter Wheat experiment that receives no herbicide.

The North Wyke Farm Platform: three farming systems in farmlets, each consisting of five component catchments comprising approximately 21 ha.

Grazing experiment shows IPCC's own estimates of climate impacts are off

A team from Rothamsted, led by Graham McAuliffe and Laura Cardenas, have shown urine from animals reared on pasture where white clover grows – a plant commonly sown onto grazing land to reduce the need for additional nitrogen fertiliser – results in just over half the amount of nitrous oxide to be released as previously assumed. The research was carried out at Rothamsted's 'farm lab', the North Wyke Farm Platform, a unique facility where all relevant environmental, agricultural and economic data related to livestock farming are collected 24/7. For this experiment, herds of 30 cattle were grazed on either land that had long been pasture; a high-sugar grass commonly sown by farmers; or a high sugar grass and white clover mix. The IPCC assumes all cattle urine or faeces deposited to soils cause the same volume of nitrogen-based emissions irrespective of pasture type – estimating an 'emission factor' of 0.77%. However, the Rothamsted team's latest experiment found the figure to be 0.44% on the white clover-high sugar grass mix, once the additional nitrogen captured from the air by clover was accounted for.

For further details see:

www.sciencedirect.com/science/article/pii/S0167880920301638?via%3Dihub

Fertilisers decrease plant-beneficial bacteria found around roots

Chemical fertilisers reduce the number of nutrient solubilising bacteria associated with the roots of wheat, according to new research led by Tessa Reid and Tim Mauchline. They found the addition of fertiliser decreased the proportion of bacteria that help make nutrients such as nitrogen, potassium, phosphorous, iron, and zinc more readily available from soil. The results point to the idea that the addition of fertiliser means that plants no longer need to interact with these beneficial bacteria to access the nutrients required to grow ('short-circuiting' the natural cycling of nutrients by soil microbes), which could benefit the development of more targeted biofertilization strategies.

For further details see:

www.frontiersin.org/articles/10.3389/fmicb.2021.642587/full

Survey shows nearly 40% of arable soils 'degraded'

Rothamsted-Cranfield AgRIA programme student Jonah Prout has developed an easy to use 'soil health' measure that shows for the first time that 38% of arable soils in England and Wales are degraded. This is compared with less than 7% of grassland and woodland soils being given the same rating. Developed from the findings of a number of European studies, the index classifies soils by the proportion of organic matter versus clay that they contain, and is a good predictor of how much carbon they can take up and store – vital in the fight against climate change – as well as a general indicator of how well they are functioning. The data behind the index is based on more than 3,800 soils collected between 1978 and 1983 as part of the National Soil Inventory of England and Wales. Jonah is now looking at the changes in soil status using the index over time since that survey.

For further details see:

www.onlinelibrary.wiley.com/doi/full/10.1111/ejss.13012

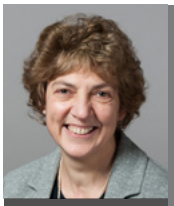
Biotechnology and Biological Sciences Research Council

New starters

Mieke Verbeeck received her MSc and PhD in Bioscience Engineering at the University of Leuven, Belgium (KULeuven). Her expertise lies in measuring and modelling the transport of metal(loid)s and nutrients in soils, in water quality, risk assessment and plant nutrition studies. Mieke is studying N cycling in grassland and arable agricultural systems at North Wyke on a mechanistic and field scale, to better understand and manage the trade-offs between food production and environmental quality. Also joining North Wyke is **Carmen Segura Quirante**. Carmen holds a doctorate from the University of Granada on the effects of land-use changes on nutrient cycling, soil quality, and carbon sequestration in agroecosystems, and worked as a Scientific Dissemination Technician for more than 10 years.

At Harpenden, **Rodrigo Taketani** has joined to work on establishing "The UK Crop Microbiome CryoBank" in a BBSRC Bioinformatics and Biological Resources Fund project, and **Susan Mosquito** has joined to work on enhancing the mechanistic understanding of plant growth promoting bacteria associated with wheat, both with Tim Mauchline. **Xiaoxi Li** will be working on the Large Scale Rotation Experiment that aims to provide the evidence for how alternative systems behave in terms of multiple outcomes including yield, soil health and biodiversity.

We welcome these new starters to Rothamsted.



Angela Karp, Director and CEO of Rothamsted.

New Director and CEO appointed

Rothamsted formally appointed Professor Angela Karp as the Institute's new Director and CEO in July 2020, having acted as interim director since December 2019. With more than 35 years' experience in crop genetics and breeding for food and bio-renewables at Long Ashton and then Rothamsted, and more than 130 refereed publications, Angela is the first female director of the Institute. Congratulations Angela!

First steps into soil

Name: Sia Chitnis **Current Student Status:** High School Junior
Education Institution: West Windsor-Plainsboro High School North, New Jersey

Why Soil Science?

Without healing our soil, we are starting the domino effect. Everything begins and ends with what we walk upon, what we plant upon, and what we depend on. If it becomes so malnourished and nutrient-poor, it cannot sustain the plant life, insect life, animal life, and microbial life that human life intimately depends on.

If we are to begin to address the carbon capture problem, to mitigate against climate change, it does not begin in the sky, it begins in the soil. If we weaken our topsoil, the plants' normal mechanism to eat carbon dioxide will be damaged. Those plants, the trees, cannot function as they were meant to be in the circle of life. The very identity of purpose, form, and function of the green world on planet earth lives and dies with soil, and how we treat our soil. Left alone, all of biodiversity expresses its purpose. And all is healthy. But humankind has influenced almost the totality of the planet to the point where we have to begin to undo the damage we have done.

With my soil genetics research project, I want to bring the soil back to its pristine state so the plants, trees, insects, and animals can function in their own nature.

I met Dr. Rien van Genuchten, inventor of the HYDRUS program, who helped me understand the physics of soil processes by using his program.

What is your key area of interest in Soil Science and why?

With my research, I want to demonstrate the importance of bringing genetic engineering to the soil, as engineering and nature have long been connected, and will continue to be connected. I hope to engineer the soil to increase water retention, sequester more carbon, and reduce atmospheric carbon levels drastically to prevent drought and mass starvation.

I met Dr. Rien van Genuchten, inventor of the HYDRUS program, who helped me understand the physics of soil processes by using his program and believed in my ideas with CRISPR to genetically modify a microbe. Together, we conceptualised and created a project to genetically modify acetobacter bacteria to overexpress the cellulose production gene, increasing cellulose and water retention in the soil. I have also collaborated with Dr. Rattan Lal to establish the realistic boundaries of my project and modifying it to increase soil organic matter.

Through my BSSS membership, I met Dr. Mary Beth Kirkham who guided me in designing an experiment from a greenhouse in my backyard. In my experiment, I will insert the modified acetobacter microbe into synthetic soil, by means of a liquid spray, and then use a Model SC1 Leaf porometer to check the water content, and a commercial soil testing centre to check the carbon content. Dr. Sunghun Park and his colleagues working with CRISPR at Kansas State University are assisting me with the project and the use of CRISPR with soil. Dr. Catherine Reardon, USDA, and I worked to find the microbe that I will insert into the soil to increase water retention (acetobacter).

What are you currently studying?

I am studying soil physics with Dr. Rien van Genuchten and his HYDRUS-1D program and soil microbiology with Dr. Catherine Reardon and Dr. Kristin Trippe from USDA Research. I am focusing on soil water infiltration, nitrogen fixation, and significant soil processes.

What are the next steps for your study?

I will be going to college in 2022, and I hope to study genetics, molecular biology, and soil microbiology. My goal is to get my PhD and work in a lab where I can experiment and assist geneticists to help bring soil back to a pristine state. During my studies, I want to work in a CRISPR-Cas9 or RLR lab where I can integrate soil science to create solutions for the soil carbon issue, microplastic pollution, and topsoil erosion.

What is your ideal job in Soil Science?

I hope to start my own lab in an academic setting as a professor, integrating soil genetics with my lab aspirations. I also dream of starting a company that can work worldwide to help soil recover, bringing genetics to soil microbiology! AND more! I want to be the first professor to create a soil genetics engineering major and department at university level.

Tell us about your aspirations

I am following in the footsteps of two great soil scientists: Dr. Rien van Genuchten and Dr. Rattan Lal, and I hope I can invent something like Dr. van Gencuhten's HYDRUS and do something so important for humanity to win a World Food Prize like Dr. Lal. I aspire to do everything I can to reinvigorate and maintain soil's integrity, so we prevent carbon loss for generations.

What is the best piece of advice that you have been given so far?

There is an analogy that I've never forgotten: There's a house burning in a neighbourhood, and people are walking by. Everyone thinks someone else will call the fire brigade. They stare but keep on walking. In the end, no one calls the fire brigade because they expect someone else to. And the house burns down.

Tell us one thing about yourself that not many people know

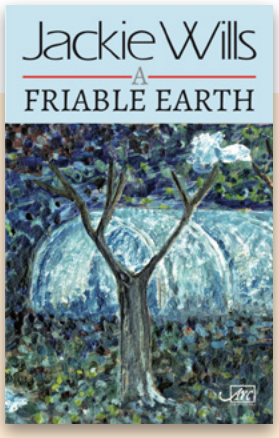
Nothing feels better than getting out on my high school's tennis courts and playing doubles for my Varsity team. I love going up to the net and daring the other team to lob over us, getting the chance for an overhead smash!

Is there anything else that you would like to share relating to your future in soil science?

I hope to influence the current generation, the next generation, and every generation henceforth to combat the world's most pressing issue. Everything revolves around soil: a circular, fair share, sustainable economy, leisure time, food security, health, family time, dreams. Without the soil, we have none of that. The soil is in grave danger, and humanity's ignorance to the Earth's largest crisis can no longer persist.

Soils in print

A Friable Earth by Jackie Wills



Jackie Wills, author of *A Friable Earth*, has shared her poem *Considering I'll Become Mud* which provided the title for her book. Her poem came out of thinking about the no-dig system of growing, as well as some old Sussex words for mud and a recognition of ageing.

Arc Publications state that *"Jackie Wills brings a multitude of characters to her poems including a young man sleeping in his car, an amateur entomologist, bird catchers, her jilted aunt, Ray Dorset, the three Robins, the office cleaner, family, friends and several gardeners. Her poems move from the GP surgery to eye clinic, dance studio to allotment, back and forward in time and from Brighton's streets to the landscapes of South Africa"*. The book has received five-star reviews on Amazon and her work has been described as irreverent, bewitching, compassionate and surreal.

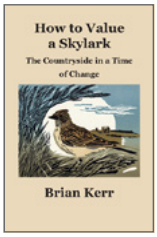
CONSIDERING I'LL BECOME MUD

by Jackie Wills from *A Friable Earth*
(Arc Publications, 2019)

It's time to pay attention to microbes
colonising the dark matter of humus and loam,
to the impossibility of knowing who was here before.
I've howked soil like Sussex cattle at a gate,
I've beasted it, breaking it up for years,
standing on the spade, raising broken bones,
disrupting the useful work of dandelions – so for the sake
of snegs, ammots, tap roots and Vasily Dokuchaev,
classifier of gubber and gawm, who mapped soils
in river beds and steppes, I'm done with digging.
I'll treat my beds as beds, soft enough to lie in,
for the sake of women, men and all our children.
and in time, my two will mix me with this wormy,
friable earth, conducted by the cutty's goistering.

Note: gubber and gawm are Sussex dialect words for mud. Howk means to dig, beasted means tired out, a sneg is a snail, ammot an ant, a cutty is a wren and goistering is loud feminine laughter. Vasily Dokuchaev was one of the first soil scientists.

HOW TO VALUE A SKYLARK: The Countryside in a Time of Change



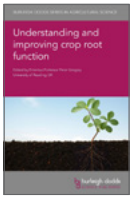
Brian Kerr, author of *HOW TO VALUE A SKYLARK: The Countryside in a Time of Change*, is a Visiting Fellow at Cranfield University and a retired soil surveyor often found helping out in their soils archive. His recently published book brings together much of the ongoing debate on the future of countryside and landscapes throughout Britain and is well illustrated using examples, largely from Bedfordshire.

At the beginning of 2020 there was a moment when we accepted the world needed to change; and then it did. During prolonged periods of lockdown, everyone in Britain was obliged to stay close to home. The importance of the outdoors and access to the countryside became more important than ever, and to a wider range of people. As we return to a 'new normal', the future of this vital green escape deserves scrutiny. The Government has promised a radical way forward in maintaining and enhancing our rural landscape, embarking on a new environmental 'nature friendly' approach. All future changes, though, are set against the backdrop of alarm over a climate emergency, and the continuing loss of wildlife.

This book sets out to provide a guide to these topics in a non-technical way. Will the pandemic accelerate these radical changes or push them into the background? What do we expect from the British countryside? Is time running out?

Brian's book is available in selected bookstores and online at Amazon.co.uk. **Support the Society while you shop by selecting BSSS as your chosen Amazon smile charity!**

Understanding and improving crop root function



A stronger understanding of the complex ways roots interact with soils is making it possible to 'design' roots to optimise water and nutrient uptake in low-input environments, as well as deliver other benefits such as improved soil health and reduced nutrient leaching. Understanding crop roots in their entirety can contribute to improving global food security, as well as the implementation of more sustainable farming practices across the sector.

Building on such research, **Burleigh Dodds Science Publishing** has collaborated with world-renowned soil and crop root scientist and BSSS member – **Emeritus Professor Peter Gregory** – alongside 50+ international experts to publish a new volume of research on plant roots.

Understanding and improving crop root function features authoritative reviews of current research in all aspects of root science, including root growth regulators, root anatomy, nutrient acquisition and root system architecture. The volume discusses the responses of plant roots to abiotic and biotic stresses and how understanding nutrient uptake can be exploited to optimise root function.

The publication of this new volume of research emphasises the need for continued research in this important area of study so that it can continue to contribute to more sustainable, 'climate-smart' crop production.

See page 8 for details of how to access a 20% discount on your order.

Competition

Are you a keen photographer? Do you have a soil image that could be the next front cover of *Soil Matters*?

Share your images with us at admin@soils.org.uk to be in with a chance to feature on the front of December's issue.

The winner will also be sent a copy of two of the books featured in this magazine; *Understanding and improving crop root function* and *A Friable Earth*.

Registration now open for the Contamination & Geotech Expo 2021

Event organisers ROAR B2B are pleased to announce that registrations are now open for the long awaited 2021 edition of the Contamination & Geotech Expo, taking place on 22-23 September. The event will welcome a plethora of visitors, thought-leading exhibitors and expert speakers to the NEC, Birmingham for an exhibition which can truly connect the industry.

After extensive research carried out by ROAR B2B, the resounding message from the sector showed that the Contamination & Geotech Expo is a key component in reigniting the market after such an uncertain period, and the event organisers are looking forward to presenting the exhibition that the market deserves.

The Contamination & Geotech Expo 2021 will provide an environment for education and networking. Boasting expert led CPD accredited seminars and cutting-edge suppliers, the event will address the latest topics, trends and solutions surrounding all things Contamination, Geotechnical and Environmental. In addition to a new Local Authority Lounge, the 2021 show will host demonstrations showcasing the latest technology, as well as market-leading companies, equipped with the industry's finest solution-led products and services.

This year at The Contamination & Geotech Expo, we have got some of the highest regarded organisations working in soil science and technology exhibiting at the show. Expect to discover some of the latest technology and innovations on the exhibition floor – network with the leading organisations in the field of soil science – and learn from our expert speakers in the CPD accredited seminars.

Some exhibitors at this year's Contamination & Geotech Expo include: **Neal Soils**, providing various grades of soil and compactable materials, recycled aggregates and soil treatment services. Neal Soils are industry leaders in soil segregation, recycling and recovery.

Soil is unfortunately under increasing environmental pressure. Noticing this opportunity are Contamination & Geotech Expo exhibitors **CDEnviro**. They deliver processing systems for clients internationally and have a sustainable approach to contaminated soil – soil is "of particular importance to the resource management industry should be the protection of soil through the reduction and removal of organic and inorganic contaminants, including heavy metals or manmade contaminants, rather than the removal and disposal of the soil itself, with the associated landfill issues. The EU has reported that there are a possible 2.8 million sites in the EU-28 countries where polluting activities have taken or are taking place, so this is a huge opportunity for the industry." – CDEnviro.

Alongside this, **Envirotreat LTD** are specialists in remediation, using unique and advanced E-Clay technology. Offering future thinking decontamination, stabilisation groundwater treatment solutions.

Also exhibiting at the Contamination & Geotech Expo 2021 are **Zulberti**, an industry leading environmental consultancy company. They create cost-effective and efficient solutions, determined to make your project effective and concrete.

The Contamination & Geotech Expo is **free to attend**, you can register for your ticket using the QR code. The organisers look forward to welcoming you back to the UK's leading event for Contamination, Geotechnical and Environmental professionals.

Visit our website

www.contaminationexpo.com

Or scan the QR code with your smart phone to find out more.

Regional Group Forums

If there is one thing that the pandemic has taught us, it's the need to stay virtually connected!

Regional Group Forums, an exciting new addition to our website, offer a platform for members of our six regional groups in Great Britain to come together online and exchange knowledge and ideas.

As a member of the Society, you can join the discussion by subscribing to one or more regional forum and be granted permission to create new topics and comment on existing ones. You can sign-up to receive email updates when a new topic or comment is posted to make sure that you do not miss a conversation!

To find out more and join a regional group, visit our website at **www.soils.org.uk/about-us/regionalgroups**.

Midlands Soil Discussion Group (MSDG) Regional Meeting

Written by outgoing MSDG Chair, Andy Tye

The Midlands Soil Discussion Group (MSDG) had an online get together on the afternoon of 24 March, consisting of five presentations over a leisurely two hours, before our AGM.

Our guest speaker was Professor Martin Broadley, University of Nottingham, who spoke about his work on Geo-nutrition in southern Africa. Martin spoke about micro-nutrient deficiencies and methods of biofortification.

We then had four talks given by our Early Career community from local Universities and research institutions. We continued our globe-trotting and went to Spitsbergen with Mihai Cimpoiasu, a post doc at the British Geological Survey (BGS), for a talk explaining the use of geophysical arrays to monitor moisture dynamics in soils, developing as a result of glacial retreat, and how these relate to developing soil properties. Tom Bott, a PhD student with the University of Nottingham and BGS, spoke about using microbial indicators to detect fugitive methane fluxes. Ana Natalio, a post doc at Harper Adams, spoke about using free-living nematodes as bioindicators of soil health, whilst Samuel Booth a PhD student at the University of Nottingham spoke about wireworms and their activities in the presence and absence of root crops. I know now what's been attacking my potatoes!

It was a very informative meeting and the ease at which virtual talks are now given is really impressive. After the conference, the group held its AGM. I stepped down as chairperson to be replaced by Iain Gould from the University of Lincoln and Mike Fullen stepped down as secretary with myself as his replacement.

Thank you very much to everyone who presented and attended on the day!

Vacancy: Welsh Chair

We are looking for a member to Chair our Welsh Regional Group. The Welsh Soil Discussion Group (WSDG) is a small friendly committee, made up of all categories of members in the Welsh region. The committee's role is to offer Society members in the Welsh region local support and implement the Society's strategy within the area.

We are keen to hear from existing WSDG members, or those who are keen to contribute to the Society's strategic aims and ensure that the Society represents the needs of its community in the region.

Please visit our website to find out more about the role; **www.soils.org.uk/vacancy/welsh-regional-group-chair**.

South West Soils Discussion Group (SWSDG) Regional Meeting

The South West Soils Discussion Group (SWSDG) held their annual regional meeting on 26 May via Zoom. Lynda Deeks, SWSDG Chair, opened with a warm welcome to all those in attendance and gave an overview of the group. She introduced the SWSDG Committee, and they each presented a 60 second summary about themselves and their role.

Invited speaker, Tim O'Hare from the soil and landscape consultancy Tim O'Hare Associates, gave the first of two presentations with his topic *Soil management for construction projects*. This was followed by the second invited speaker, Yog Watkins of the Westcountry Rivers Trust, with his presentation *Concerns for the growing enthusiasm for fodder beet and its impact on soil health*.

Both presentations sparked some fantastic questions and subsequent discussion around soil management, looking at what we have got right and where we still need to improve.

To find out more about any future regional events, sign up to the SWSDG forum!

Your Council and Committees

Trustees

Bruce Lascelles
President

Sacha Mooney
Past President

Jack Hannam
President Elect

Tom Aspray
Professional Practice Committee Trustee

Anna Becvar
Finance Trustee

David Hopkins
Governance Trustee

Committees

Early Careers Committee
Chair: Daniel Wardak

Education Committee
Chair: Jack Hannam

Grants and Awards Committee
Chair: Bruce Lascelles

Professional Practice Committee
Chair: Mike Palmer

Publications Committee
Chair: Sacha Mooney

World Congress of Soil Science 2022 Working Group
Chair: Bruce Lascelles

Regional Groups

Midlands Soil Discussion Group
Chair: Iain Gould

Northern Soil Network
Chair: Manoj Menon

Scottish Soil Discussion Group
Chair: Nikki Baggaley

South East England Regional Group (SEESOIL)
Chair: Leila Froud

South West Soils Discussion Group (SWSDG)
Chair: Lynda Deeks

Welsh Soil Discussion Group
Chair: position vacant

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Xavier Portell-Canal
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Daniel Wardak
Early Careers Committee Chair

Advertising

If you are interested in advertising in a future edition of *Soil Matters*, we have a range of packages available, from quarter to full page adverts and with discounts available for advertising in more than one edition. For further information, please contact admin@soils.org.uk.

Vacancies

Our members are able to post unlimited, soil science related job advertisements free of charge on our website www.soils.org.uk and in *Soil Matters*.

Advertising is available for non-members at the nominal fee of £75 + VAT. For further information or to list your vacancies, please contact admin@soils.org.uk.

Dates for your Diary 2021

Details of all events listed can be found at:

www.soils.org.uk/events

If you would like to advertise an event on our website, please email details to **events@soils.org.uk**

The following dates are subject to change and will be confirmed within the regular member newsletters. Please pencil these in your diary for now and keep an eye out for any changes!

7 July
Zoom into Soil: Soil Compaction (online)

21 July
Early Careers Event: Talking About Soil (online)

4 August
Zoom Into Soil (online)

1 September
Fellowship nominations open

7 September
BSSS Annual Conference and Annual General Meeting (online)

13 September
Board Meeting

22 – 23 September
Contamination Expo

26 September
Open Farm Sunday (online)

29 September
Regional Group Annual Meeting: SEESOIL (online) – TBC

6 October
Zoom Into Soil (online)

11 – 14 October
Early Careers Conference (online)

13 October
Regional Group Annual Meeting: SSDG (online) – TBC

14 October
Council Meeting

3 November
Zoom Into Soil (online)

11 November
Board Meeting

17 November
Regional Group Annual Meeting: NSN (online) – TBC

23 – 25 November
Agricultural Land Classification Course (online)

1 December
Zoom Into Soil (online)

2 December
Council Meeting

7 December
Agricultural Land Classification Course Follow-Up (online)

About us

Promoting the study and profession of soil science

Contact us

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What we do

The British Society of Soil Science (BSSS) was founded in 1947 and is an established international membership organisation and charity committed to the study of soil in its widest aspects. The society brings together those working within academia, practitioners implementing soil science in industry and all those working with, or with an interest in soils.

Research on soils and enhanced understanding and engagement with soils is essential for agricultural, landscaping, construction, remediation, conservation and archaeological projects, as well as policy direction on critical topics such as climate change.

We promote research and education, both academically and in practice, and build collaborative partnerships to help safeguard our soil for the future. This includes hosting the World Congress of Soil Science 2022 in Glasgow, where those with an interest in soil science can meet to discuss the critical global issues relating to soil.

Anyone with an interest in soil is welcome to become a member. Membership starts from £31 for Associate members, with Full membership, which allows the member to use the designation *M I Soil Sci*, for £56 per annum.

To find out more visit the BSSS website:

www.soils.org.uk

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