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Strategies to help pastoral agriculture cope with drought

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Photos taken decades apart show results of conservation work

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scrr

Scottish Consortium
for Rural Research

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This issue in numbers

40% of the earth's land surface is accounted for by drylands, where agriculture is marginal – **page 2**

41% increase in woodland area has been seen at Beinn Eighe NNR since 1951 – **page 3**

34 botanic gardens around the world will participate in a scheme to conserve the Wollemi pine – **page 4**

75% of Britain's seed potatoes, measured by area under cultivation, are grown in Scotland – **page 4**

£11,850 in grants has been awarded to 10 projects to explore Scotland's heritage – **page 5**

15 digital books have been made freely available by the Society of Antiquaries of Scotland – **page 6**

Responding to a challenge

Prof Lee Innes, new chair of the SCRR executive group, on how well placed we are to tackle difficulties through collaboration and collective effort

A VERY WARM WELCOME to the summer edition of the SCRR newsletter and we hope you enjoy some of the inspiring updates in this issue from our member organisations.

I am delighted to be the new chair of the SCRR executive committee and look forward to meeting many of you at some of the upcoming events and activities throughout the year.

On a personal note, I have just returned from several weeks of overland travel in Africa through Botswana, Zimbabwe, Zambia and Malawi. More than 30 years ago, I did my post-doctoral research in Africa on finding solutions to livestock diseases

and it was wonderful to have the opportunity to return.

This was thanks to a challenge my husband set for us several years ago to get an old Landrover Defender, convert it into an all-terrain expedition vehicle that you can also live in, and set out to explore the world. This he has done and our family and friends have joined him to travel to more than 90 countries across the world in the past five years.

Setting and responding to challenges is a great way to bring people together to share ideas, solve problems and find solutions. The United Nations Sustainable Development Goals have set the global

Equipped for a challenge – the Innes family Landrover

challenges to achieve a better and sustainable future for us all. Scotland has a long and proud history of science and innovation and the research being conducted in Scotland – focusing on food, farming, land use, biodiversity, climate change, our natural

Continued on page 2

About SCRR

THE SCOTTISH CONSORTIUM FOR RURAL RESEARCH exists to promote sharing of ideas and techniques among a group of organisations active in research into land, freshwater, coastal and marine resources, and their uses.

Our member organisations have bases throughout Scotland and are at work all over the world: further details can be found on the back page.

Members' reports

The University of Edinburgh

From page 1

environment, culture and heritage, health and well-being, and thriving communities – are relevant not only in Scotland but also internationally.

There is much to be gained from international collaborations and learning from others about the application and practice of innovative solutions to some of our challenges.

SCRR brings together a large and diverse group of research organisations working in Scotland on different aspects of rural research. The strength of this consortium is in its diverse membership base and the opportunities this provides for building new relationships and collaborations to increase mutual understanding of different perspectives. Taking an interdisciplinary approach can often create

a multiplier effect when trying to find solutions and has great potential to accelerate innovation and the uptake of research into practice.

I really look forward to working with SCRR members to highlight the inspiring, innovative and useful research being conducted within Scotland and collectively working to find solutions to the Grand Challenges that have been set for us all.



THE JAMEEL OBSERVATORY for Food Security Early Action is an international partnership led by the University of Edinburgh with the International Livestock Research Institute, Save the Children, the Abdul Latif Jameel Poverty Action Lab and Community Jameel.

The drylands account for over 40 per cent of the earth's land surface, and much of it is too dry for cropping to be viable. Indeed, for the hundreds of millions of pastoralists living in the drylands, extensively grazing livestock is often the most productive, if not the only, livelihood strategy available. Mobile herding strategies allow pastoral households to capture dispersed forage resources and concentrate them into animal proteins and income. Pastoralists and the livestock that they herd directly contribute massively to the national economies of many countries of the world and the livestock value chains provide nourishment and employment opportunities throughout the broader population.

While extensive grazing is extremely productive, it is also extremely

Tackling environmental shocks in the drylands

Dr Nathan Jensen of the Global Academy of Agriculture and Food Systems at the University of Edinburgh outlines the challenges facing communities in the world's dryland areas

vulnerable to drought – much more so than other types of rain-fed agriculture. For both pastoralists and cropping households, droughts can cause a complete loss of household income: in the form of crops for cropping households and in the form of calves, milk and meat for pastoralists. But for pastoralists, drought can also destroy the household's productive capital and wealth through livestock mortality. This dynamic can result in what is known as a 'poverty trap', whereby households that do not have livestock cannot exploit the principal natural resource of the drylands' extensive rangelands

Extensive grazing is extremely vulnerable to drought

and are therefore unable to produce the income necessary to purchase productive capital (livestock) and grow out of poverty.

While pastoral cultures have developed many strategies for protecting themselves from drought – such as mobility, herd diversification, informal risk pooling, livestock lending and livestock redistribution – these mechanisms cannot support all households through long periods of drought. And in many cases these strategies are being undermined by loss of access to open rangelands.

Such loss of access is often the result of the very policies aimed at helping people living in the drylands – for example, in providing education or health centres, introducing dryland crops, land reform, and irrigation schemes. Such dynamics, whereby policies and interventions aimed at improving the lives of individuals actually undermine the resilience of the pastoral system, have long been a challenge for the drylands.

Facing these challenges, the Jameel Observatory for Food Security Early Action combines the local knowledge and concerns of communities facing threats of hunger with innovations in data science and humanitarian action, teaming up to devise solutions that can predict, prepare for and overcome climate-related food security and malnutrition challenges in dryland areas.

Our focus is on using data and evidence to prepare for and act on environmental shocks as well as those impacts of climate change and variability which threaten human and environmental well-being. Our global community of practice – which had its annual meeting recently in Nairobi – unites data, science and practice for food-secure and resilient lives and livelihoods in drylands worldwide.

Jameel Observatory for Food Security Early Action: jameelobservatory.org/food-security-early-action/

Photography study reveals nature recovery

Comparing images taken decades apart shows clear evidence of regeneration at NatureScot reserves

A LONG-TERM photography study has revealed the scale of nature restoration at National Nature Reserves (NNRs) across the Highlands.

NatureScot has carried out repeat photography to illustrate the changes that have happened to the natural habitats at its NNRs over time.

This involves re-taking historical photos at the same location, and at the same time of year – in some cases dating back 70 years.

A new Storymap launched today showcases the expansion of the Caledonian pine forests at Invereshie and Inshriach NNR, Beinn Eighe NNR

NatureScot's NNR at Invereshie and Inshriach in 1973 (top) and 50 years on in 2023 (bottom)



and Dell Woods NNR; the spread of birch woodlands at Creag Meagaidh NNR and Creagellachie NNR; and the changes following peatland restoration at Ben Wyvis NNR.

The visual record supports recent data from our NNRs showing that:

- Trees increased by around 25 per cent at Invereshie and Inshriach NNR between 2017 and 2023 through natural regeneration, aided by deer management undertaken by Cairngorms Connect deer stalkers.
- Woodland at Beinn Eighe NNR has increased by 41 per cent since it was designated as the UK's first NNR in 1951, through a combination of tree planting, natural regeneration and sustainable deer management.
- More than 200 hectares of peatland has been restored on the mountainside at Ben Wyvis NNR as part of landscape-scale habitat restoration stretching from summit to sea.

Ian Sargent, NatureScot's nature reserves manager for Central Highland, said: 'Our aim over the years has been to restore nature to allow it to function naturally with minimal intervention on our NNRs. In turn, these nature-rich areas provide many benefits, including

'Of course these images can't tell us the full story of a place and its people, but it is certainly encouraging to see and reflect on the restoration of woodlands and peatlands over the years at some of our most special sites for nature'

increased biodiversity, carbon storage and resilience to climate change.

'Even when we are very familiar with an area, it is sometimes difficult to appreciate change, especially when it happens slowly. Repeat photography allows us a fascinating look back in time and an insight into the dramatic but sometimes unnoticed changes to the landscape down through the years.

'While of course these images can't tell us the full story of a place and its people, it is certainly encouraging to see and reflect on the restoration of woodlands and peatlands over the years at some of our most beautiful and special sites for nature.'

Members' reports

Royal Botanic Garden Edinburgh, SRUC

Dinosaur tree plantings start new era in conservation

A ceremony at Royal Botanic Garden Edinburgh marks the launch of the Global Conservation Consortium for Conifers

A CEREMONIAL PLANTING of six 'dinosaur' trees at the Royal Botanic Garden Edinburgh (RBGE) has officially marked the launch of a significant new partnership for global tree conservation – the Global Conservation Consortium (GCC) for Conifers.

These six critically endangered Wollemi pines (*Wollemia nobilis*) are part of a new conservation programme for the species, coordinated by the Botanic Gardens of Sydney, with 34 botanic gardens around the world involved in the initial planting phase.

The plants are part of a high-profile global 'metacollection' of *Wollemia nobilis* designed to safeguard the species from extinction. Thanks to advances in genetic techniques, Australian plant scientists and conservation experts have been able to identify and breed genetically diverse Wollemi pines for the first time and are distributing young stock to safe sites internationally. At the heart of a research institute which also happens to be a leading visitor attraction, the young trees will also help increase public awareness and encourage engagement with species conservation.

Under the umbrella of Botanic Gardens Conservation International (BGCI), the new GCC will develop and implement conservation strategies for threatened conifers around the world, inspired by models such as Edinburgh's

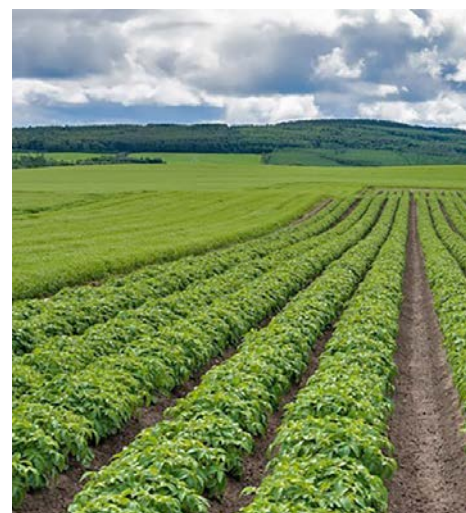
International Conifer Conservation Programme (ICCP) and the Wollemi Pine Metacollection.

Dr Hannah Wilson, head of the ICCP, explained: 'Currently, 30 per cent of all tree species are under threat. Conifers represent a group that is even more affected, with 34 per cent of all species recognised as threatened. Faced with these growing concerns, we need to catalyse more collaborative approaches to prevent extinction of this priority plant group.'

GCC Conifers is led by RBGE in collaboration with both BGCI and Forestry England Bedgebury National Pinetum and Forest. Bedgebury Pinetum hosts the largest conifer collection in the world and has been dedicated to the preservation of threatened conifers for nearly 100 years. Celebrating this newest addition to the Global Conservation Consortia, the Friends of Bedgebury Pinetum have provided the funds for the GCC for Conifers Grant, further promoting conifer conservation initiatives.

Simon Milne MBE, RBGE's Regius keeper, concluded: 'Fostering the opportunity for endangered species grown in both their natural habitats and in newly designated protected spaces, this model gives them the best chance of survival, while fostering greater public involvement in conserving our most vulnerable habitats.'

**Wollemi pines
freshly planted
at the Botanic
in Edinburgh**



New report shows importance of seed

Scotland has an international reputation for seed potatoes and now SRUC has shown how significant

FROM ROAST AND MASHED to chips and crisps, potatoes are eaten in many different forms. They can also be used in a variety of other ways, including in beauty products and household cleaning tasks. However, a new report by researchers at SRUC has highlighted a 71 per cent reduction in the demand for fresh potatoes in the UK since the 1970s, with consumers switching to alternatives such as rice and pasta.

More recently, the loss of access to export markets for seed potatoes following Brexit represents another loss of demand, particularly for Scotland where seed production is more important due to its disease-free growing conditions and associated 'high health' status.

Overall, the report found the potato market was more stable in Scotland than at a UK level, representing nearly a quarter of the overall potato production from farms. The farm gate production of potatoes in Scotland – including seed and ware potatoes – had a value of around £245 million between 2018 and 2020. This represented 6 per cent of Scottish agricultural output and 22 per cent of UK potato production.

While the UK is now importing more potato products, it is still a net exporter of seed potatoes, of which Scotland accounts for 75 per cent of the area grown in Britain.

Importantly, the contribution of potato production is greater than its



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tion for high-health seed potatoes
nificant this market is

farm gate value, with chilled, frozen, dried and cooked processed products representing further economic activity, in addition to the supply chain which has evolved around the industry – including specialised machinery, storage and processing facilities. Overall, the Scottish potato sector had an on-farm and upstream economic contribution of £507 million output and accounted for 2,880 full-time jobs.

Report author Steven Thomson, senior agricultural economist at SRUC, said: 'This is a timely reminder of how complex agri-food supply chains are, and that the integrated potato supply chain operates across the UK and beyond. Scotland has an international reputation for growing high-health seed potatoes, yet the economic contribution of the seed sector was often only reported as the farm gate value. This report demonstrates the economic importance of the Scottish seed potato sector.'

Gerry Saddler, chief plant health officer for Scotland, welcomed the report and said: 'This report throws a spotlight on how important our seed potato production is for the potato supply chain in the UK but also for many other countries around the world.'

'This report gives a clear indication of what could potentially be lost if the potato sector, working in partnership with the Government, fails to maintain the high production standards built over many years in Scotland.'

Ten new projects from the Borders to Orkney

The Society of Antiquaries of Scotland has announced its latest research grants, with notable projects in rural areas

IN APRIL 2024, the Society of Antiquaries of Scotland awarded funding totalling £11,850 to 10 archaeological and historical projects committed to researching stories from Scottish history, including several exploring sites in rural locations.

The *Geographies of Power* project investigates the relationship of local Iron Age communities with the western Roman Empire. It maps changes in settlement and economy to understand how Roman power exploited local resources, how local people may have profited from the new power balances, and whether Rome eradicated and displaced settlement.

Excavations in June 2023 at Bemersyde Hill, less than 3km from the Roman fort at *Trimontium* (Newstead) in the Scottish Borders, revealed evidence to suggest a long-standing settlement in repeated contact with the Roman military. This matches patterns seen by flourishing post-conquest settlements on the continent, rather than the rapidly abandoned landscapes immediately north of Hadrian's Wall.

The *Wartime Orkney Leaflet No.4* project will explore how Orkney was affected by war in the 20th century. The sheltered natural harbour of Scapa Flow was the Royal Navy's main fleet base in both World Wars. The loss of HMS Royal Oak in October 1939 and a series of air raids led to the islands

becoming one of the most heavily militarised parts of the UK. Homes and farmland were requisitioned and the landscape was transformed by thousands of structures including command centres, fuel stores, power stations, railways, accommodation huts, airfields, piers, radio stations and the Churchill Barriers. At the end of hostilities, these buildings and installations were demolished, scrapped, re-purposed or left to decay.

A grant from the Society will fund a free self-guided wartime trail leaflet covering around 30 prominent sites, the final instalment in a series of leaflets covering Orkney.

The Society supports high-quality research and publications relating to Scotland's past through several grants and awards each year. The grants are open to everyone and the next deadline is November 30, 2024.

The Society's Grants and Awards scheme is made possible through the subscriptions of its Fellows. If you would like to support high-quality research into Scotland's past, why not join their 2,800-strong network of Fellows across the globe? Visit the Society website for more information.

You can also find a full list of Spring 2024 awards and their project titles on the Society's website at www.socantscot.org

**Churchill Barriers
and shipwrecks
at Scapa Flow
in Orkney**



PICTURE: © PETER STENZEL, CC BY-ND 2.0 DEED

Members' reports

Society of Antiquaries of Scotland

Islands research framework for archaeology is ready for launch

This new initiative from the Society of Antiquaries of Scotland takes its place alongside other regional research frameworks and has been four years in the making

THE SOCIETY OF ANTIQUARIES of Scotland is looking forward to launching the latest regional research framework as part of the Scottish Archaeological Research Framework resource later this year.

The project to create Scotland's Islands Research Framework for Archaeology (SIRFA) has taken four years and has been led by Dr Rebecca Rennell based at the University of the Highlands and Islands working alongside local authority archaeologists based at Comhairle nan Eilean Siar, Orkney Islands Council and Shetland Amenity Trust.

Following three symposia based on each island group and a review

The team behind the Islands framework at the Dwarfie Stane, Hoy, Orkney



of the archaeological resource and research, the key research questions and recommendations for future archaeological research across Scotland's islands have been collated.

As well as investigating chronological periods, we have also focused on the themes of Landscape and Environment, Connectivity and Insularity and Economy and Subsistence. We look forward to releasing this new resource later this

year and expect it to be an essential tool for developmental control, academic research and developing new community projects.

Scotland's Islands Research Framework for Archaeology has been primarily funded by Historic Environment Scotland as part of Scotland's Archaeology Strategy.

The ScARF research frameworks can be found at scarf.scot/regional/

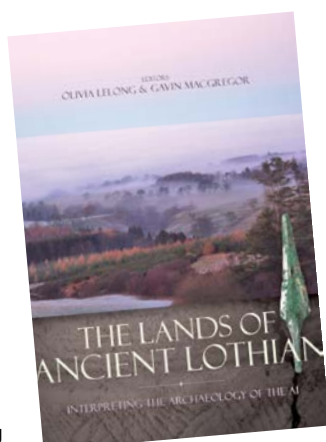
Open access digital books offer fresh view of our past

The Society of Antiquaries of Scotland has made some fascinating publications freely available online

TO IMPROVE OUR collective understanding of Scotland's past, the Society of Antiquaries of Scotland has made 15 of their books – many of them no longer in print – accessible on their Open Access E-Books platform. This collection provides in-depth, peer-reviewed research free to all, and the three latest volumes dig deep into stories from rural Scottish sites.

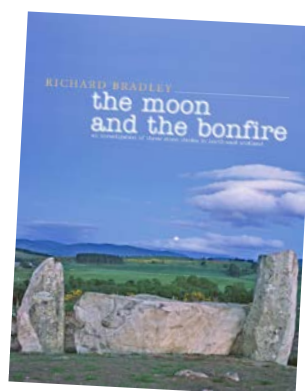
From 2001 to 2004, archaeological work conducted during upgrading of the A1 road between Haddington and Dunbar in East Lothian excavated 11 fascinating prehistoric sites spanning 5,000 years. Discover the story of the finds, including Mesolithic stone tools and mortuary structures, in *The Lands of Ancient Lothian*.

Were recumbent stone circles (like at Tomnaverie) built for astronomical observation? Or perhaps to frame



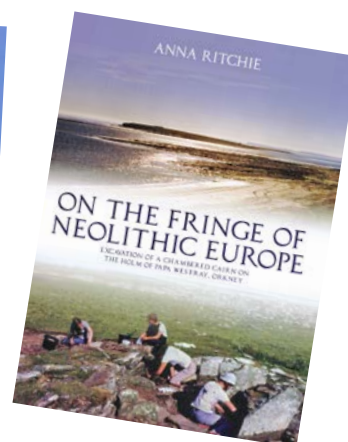
sacred landscape features? Dig into the results of excavations that shed light on these unique monuments in *The Moon and the Bonfire*.

Five thousand years ago, the Holm of Papa Westray Chambered Cairn North in Orkney was built to house the dead of a nearby community. Discover



the findings of the 1982–3 excavations – including burials and pottery – in *On the Fringe of Neolithic Europe*.

To read these titles and more, visit www.socantscot.org/publications/digital-books



Event Report • SCRR / RSE Peter Wilson Lecture 2024

Food for thought: food security in changing times

BY 2050, THE WORLD must feed two billion more people. Achieving food security means that all people, at all times, have reliable physical and economic access to sufficient, safe and nutritious food. The annual SCRR / RSE Peter Wilson event held on 7th May 2024 aimed to delve into the pivotal questions, obstacles, and potential solutions surrounding this complex issue.

For the first time in its 21 years, the Peter Wilson event was offered in a

hybrid format, allowing hundreds to join not only in Edinburgh but from across Scotland, listening and contributing to the discussion.

The evening began with the 'keynote speaker' Professor Rachel Norman FRSE (University of Stirling) provoking with her direct style around the politicisation of food poverty.

Two respondents then contributed. Dr Peter Alexander of the University of Edinburgh highlighted the need to transform the food system; and Dr Wu

Huang of Imperial College encouraged the audience to consider the global-yet-local ways that we can create solutions for food poverty.

As always, the Q&A was really engaging, with great audience debate around critical issues of food sovereignty and food justice for all.

We're grateful to Peter Wilson and his family for the continuation of this annual event which allows important matters to be debated, supported by SCRR and the RSE.



Prof Sarah Skerratt leads the Q&A session at this year's Peter Wilson lecture, which was attended both in person and online this year

SCRR Executive Committee welcomes and thanks...

SCRR IS DELIGHTED to welcome four new Executive Committee members.

They are Eileen Stuart of NatureScot; Eileen Wall of SRUC; Fiona Borthwick of the Global Academy of Agriculture and Food Systems, University of Edinburgh; and Alastair Macrae of the Royal (Dick) School of Veterinary Studies, University of Edinburgh. At the same time, we offer huge thanks to two departing

members for their contributions; Des Thompson of NatureScot, David Hopkins of SRUC.

Lee Innes of Moredun has taken over as chair of the Executive Committee, while Geoff Simm of the Global Academy of Agriculture and Food Systems, University of Edinburgh has become chair of the SCRR Board. We look forward to working with them both in their new roles.



Geoff Simm of the Global Academy of Agriculture and Food Systems, University of Edinburgh

SCRR member organisations

The University of Edinburgh	www.ed.ac.uk
Moray House School of Education	www.ed.ac.uk/schools-departments/education
Royal (Dick) School of Veterinary Studies	www.ed.ac.uk/schools-departments/vet
School of Biological Sciences	www.ed.ac.uk/schools-departments/biology
School of Engineering	www.see.ed.ac.uk
School of GeoSciences	www.ed.ac.uk/schools-departments/geosciences
School of History, Classics and Archaeology	www.shca.ed.ac.uk/Research/
School of Social and Political Studies	www.sps.ed.ac.uk
Biomathematics and Statistics Scotland	www.bioss.ac.uk
British Geological Survey, Edinburgh	www.bgs.ac.uk
Centre for Ecology & Hydrology, Edinburgh	www.ceh.ac.uk
Edinburgh Napier University, School of Applied Sciences	www.napier.ac.uk/fhlss/SLSSS
Field Studies Council, Millport	enquiries.sco@field-studies-council.org
Forest Research, Northern Research Station	www.forestry.gov.uk/forestresearch
Heriot Watt University, School of Life Sciences	www.sls.hw.ac.uk
James Hutton Institute	www.hutton.ac.uk
Moredun Research Institute	www.moredun.ac.uk
National Museums of Scotland	www.nms.ac.uk
Roslin Institute, University of Edinburgh	www.roslin.ed.ac.uk
Royal Botanic Garden Edinburgh	www.rbge.org.uk
Royal Society for the Protection of Birds - Scotland	www.rspb.org.uk/scotland
Science & Advice for Scottish Agriculture	www.sasa.gov.uk
Scotland's Rural College (formerly Scottish Agricultural College)	www.sruc.ac.uk
Scottish Association for Marine Science, Oban	www.sams.ac.uk
Scottish Natural Heritage	www.snh.gov.uk
SNIFFER	www.sniffer.org.uk
Society of Antiquaries of Scotland	www.socantscot.org
Society, Religion and Technology Project	www.srtp.org.uk
University of Glasgow	www.gla.ac.uk
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College of Social Sciences	www.gla.ac.uk/colleges/socialsciences/
University of the Highlands and Islands (UHI)	www.uhi.ac.uk
Agronomy Institute, Orkney College	www.agronomy.uhi.ac.uk
Centre for Mountain Studies, Perth College	www.perth.uhi.ac.uk/specialistcentres/cms
Centre for Remote and Rural Studies, Inverness College	www.crrs.uhi.ac.uk
Environmental Research Institute, North Highland College	www.eri.ac.uk
Lewis Castle College, Stornoway	www.lewis.uhi.ac.uk/research
NAFC Marine Centre, Shetland	www.nafc.ac.uk
West Highland College, Fort William	www.whc.uhi.ac.uk
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Institute of Aquaculture	www.aquaculture.stir.ac.uk
Biological & Environmental Sciences	www.stir.ac.uk/natural-sciences/about-us/bes/

Events

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PEOPLE AT SCRR

Scientific Director:
Prof Sarah Skerratt
sskerratt@therse.org.uk

Secretary/Treasurer:
Lyndsey Hayes
lyndsey.hayes@ed.ac.uk

CONTACT SCRR

Please contact SCRR by email via the Secretary/Treasurer

COPY DEADLINE

The deadline for copy in the next issue is October 7, 2024

DISTRIBUTION

For all queries about distribution, please contact the Secretary/ Treasurer by email.

FUTURE ISSUES

Contributions to the SCRR newsletter are welcomed. All contributions, comments and suggestions should be emailed to the Secretary/Treasurer as above.

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