BTO
Inspired by birds,
informed by science

TRUSTEES' ANNUAL REPORT & FINANCIAL STATEMENTS 2021/22

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BIRDWATCHING, BY DAVID TIPLING / BIRDPHOTO.CO.UK

Inspired by birds, Informed by science

FROM OUR CHAIR: PROFESSOR JENNY GILL

The United Nations Climate (CoP26) and Biodiversity (CoP15) meetings that took place during 2021 and 2022 were a timely reminder of the scale of the challenges that we face. As the world continues to adapt to the COVID-19 pandemic, the need to address these challenges is increasingly apparent. Protecting and recovering nature is fundamental to averting the impending ecological and climate crises and safeguarding future generations. BTO data and knowledge play a very important role in informing and influencing the policies and actions that can contribute to nature's recovery, and we are deeply committed to maintaining and enhancing these impacts of the extraordinary work of BTO volunteers. Working with our many partner organisations and building the collaborations that are needed to address these grand challenges are key elements, making the most of our data and knowledge, and we are proud of our trusted and respected status across the sector.

An important aspect of enhancing the impact of our work is broadening our reach and engagement. We are committed to ensuring that BTO is an inclusive organisation that welcomes, encourages and supports all communities, groups and individuals who share our concerns and interests. Delivering on this commitment will require actions, and we look forward to building on the experiences gained from working with our growing youth network to identify and remove barriers to access. The need for a better and more sustainable world for birds and for people is ever more urgent, and we will continue to work towards enhancing engagement, inclusion and the impact of BTO data to help meet these goals.

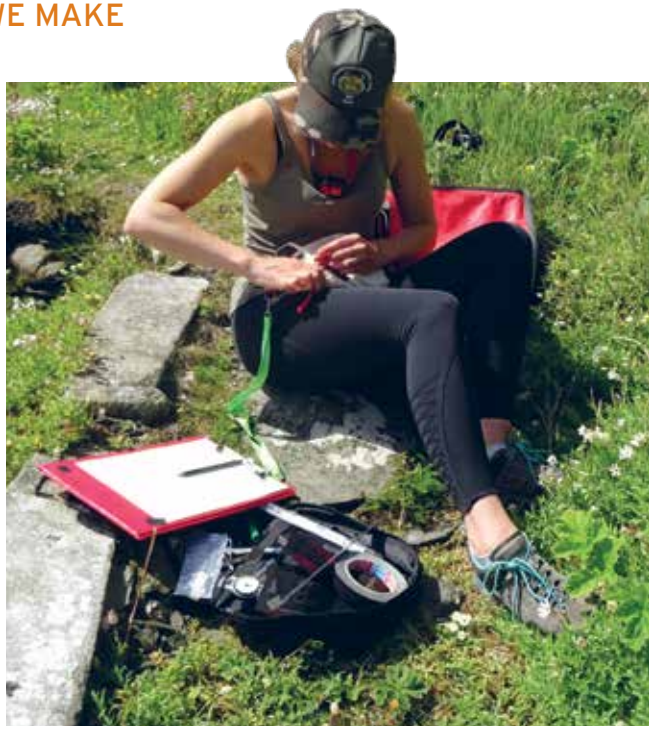
FROM OUR CEO: PROFESSOR JULIET VICKERY

The emergence from lock-down might have been wisely cautious but it saw a wonderful bounce back for BTO work. The BTO/JNCC/RSPB Breeding Bird Survey (BBS) achieved record levels of coverage in Scotland and Northern Ireland, and a remarkable 3,882 1-km squares were covered UK-wide. This is particularly welcome given the extent to which these long-term surveys are the bedrock of so much action for birds and biodiversity. For example, the results from core schemes provided the central evidence for a BTO report '*Climate Change and the UK's Birds*', published in November to coincide with CoP26 in Glasgow. The report highlighted the perilous future of our nationally important seabird populations if the world warms by over 2°C. BTO is already focusing on finding solutions that work for both birds and our own future, particularly through enhancing the monitoring of seabirds and using tracking studies to guide the development of offshore renewables in ways that minimise their impact on birds.

BTO impact comes not just through its data but also through the way these data are collected, and we are continuing to expand and refine opportunities to engage more volunteers in the joy of birds, birdwatching and participation in science. This sort of engagement, with its associated connection with nature, brings additional health and well-being benefits. These benefits should to be accessible to everyone but we know they are not, and BTO Youth are blazing a trail for us in this respect. There are now 36 Youth Volunteers (12 on the Youth Advisory Panel, and 24 Youth Reps) in England, Scotland, Wales and Northern Ireland, creating opportunities for young people to get involved with birds and wider nature, as well as advising the organisation on how to engage more young people with birds and the natural world.

FRONT COVER IMAGE : GREAT TIT, BY DAVID TIPLING / BIRDPHOTO.CO.UK

AT A GLANCE



A key BTO report showed how climate change is already impacting the UK's birds, particularly our internationally important breeding seabird populations and upland breeding birds.

BTO staff published more than one peer-reviewed paper each week throughout 2021, underlining the quality of our science.

Thanks to the generosity of BTO supporters, our Equipment Donation Scheme has provided over 1,800 young people with access to birdwatching field guides and optics.

Thanks to our members, funders and supporters,

£5.3 million

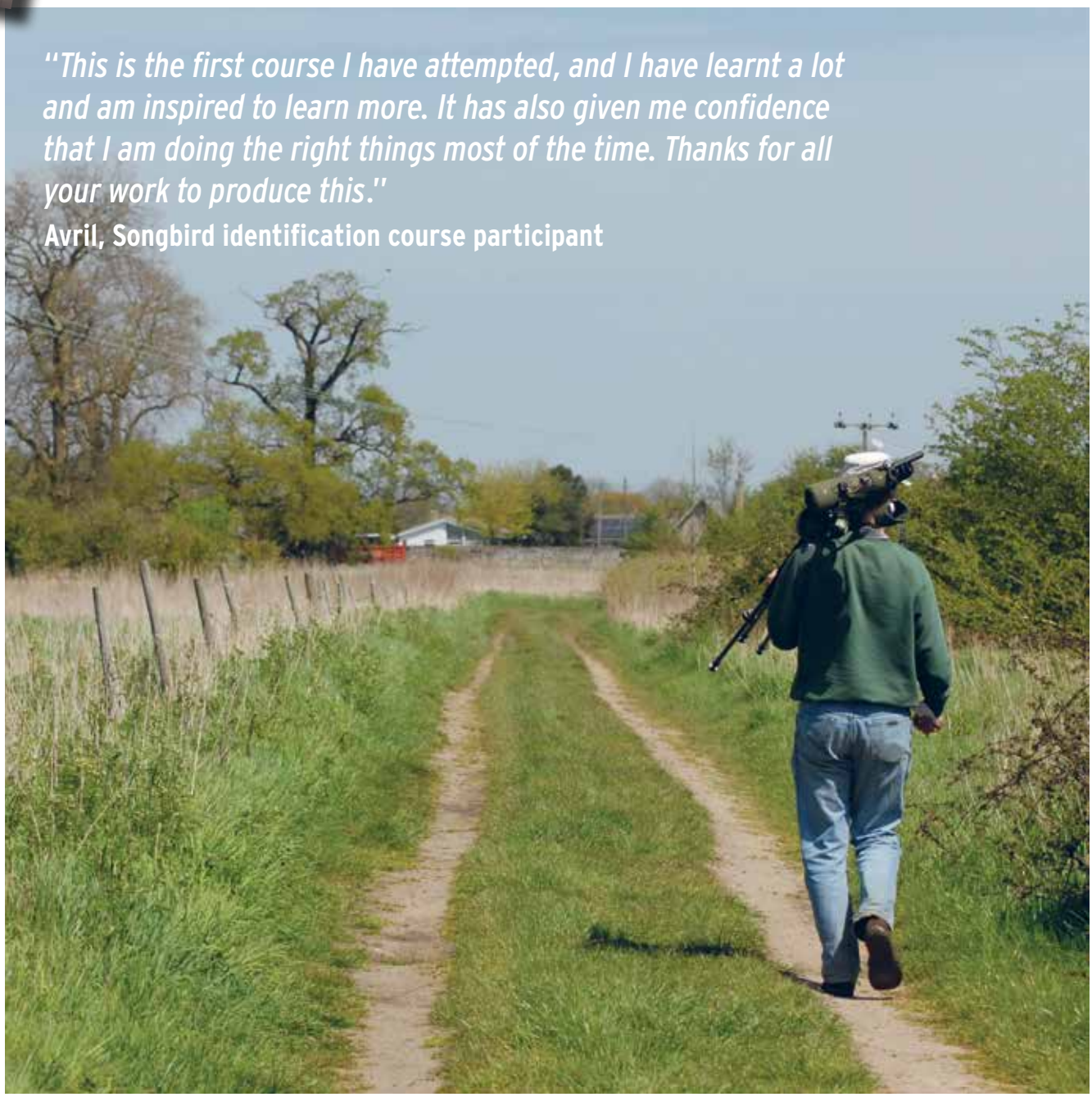
was spent during the ye carrying out our work, collecting and deliverin information about birds and inspiring people.

During 2021, volunteers contributed **2,029,493** hours to BTO work, representing an in-kind contribution of £41 million. This generosity delivers a significant part of the UK's bird monitoring.

Thanks to the support of Breeding Bird Survey volunteers, we saw coverage bounce-back in 2021, post-pandemic, allowing UK population trends to be calculated once again.

"This is the first course I have attempted, and I have learnt a lot and am inspired to learn more. It has also given me confidence that I am doing the right things most of the time. Thanks for all your work to produce this."

Avril, Songbird identification course participant



SEABIRD RINGING : DANIEL JOHNSTON / BTO; GOLDEN PLOVER : PHILIP CROFT / BTO; BIRDWATCHER : SARAH HARRIS / BTO

DELIVERING SCIENTIFIC IMPACT

BTO continues to deliver impartial, impactful and relevant science, providing the information needed to plan and assess conservation action, and to inform decision-making processes for the benefits of birds, wildlife and people.

ENABLING RECOVERY

Wildlife conservation policies directed at common and widespread, yet declining, species are difficult to design and implement. In part this a consequence of the multiple environmental changes likely to have contributed to the declines in the first place. It may also reflect the fact that, in some instances, the actions needed to deliver the recovery of a population may not be those addressing the original cause(s) of the decline – i.e. tackling the original issue may fail to deliver the hoped-for outcome. BTO research has, for example, identified that some bird declines are a consequence of periods of low survival rates, but recovery of these populations has been constrained by subsequent levels of productivity (the number of young produced per breeding attempt). Low survival rates may have been the trigger but the solution lies in increasing productivity.

Such complexity makes it difficult to correctly target conservation measures; should we, to continue our example, target measures at increasing productivity or at improving survival rates, both of which may be key to reversing population declines. Recent BTO work, led by Cat Morrison at the University of East Anglia and bringing in collaborators from across Europe, sought to address this uncertainly, using information on breeding bird abundance and data on productivity and survival (Morrison *et al*. 2021).

The team was first able to examine the population trends of migrant and resident species breeding at sites across Europe, using data from the Pan-European Common Bird Monitoring Scheme (into which BTO/JNCC/RSPB Breeding Bird Survey data feed). These were found to be in step; sites that were good for resident species tended to be good for migrants, and vice versa. This implies that local breeding season conditions have a strong influence on local population changes in both resident and migratory species.

The team then examined the demographic parameters (productivity and survival), using data from Constant Effort Site ringing schemes. The productivity of migrant and resident species showed similar patterns across sites; there were some 'good' sites and some 'poor' sites in this regard. However, this was not the case for survival rates, where there was only weak covariation at the site-level. Taken together this suggests that conservation action, targeted at boosting local productivity within Europe, has the potential to benefit populations of both migrant and resident species, particularly where this action is directed towards improving productivity on currently 'poor' sites. The findings also imply that efforts to tackle migrant declines, directed at their breeding sites, could also improve the fortunes of the declining resident species that breed alongside them.

WORKING FOR WADERS

BTO's work on declining wader populations is coordinated through our Breeding Wader Focal Area, which brings together staff from across the organisation. The work involves many different strands, from coordinating and supporting PhD fieldwork on Curlew decline, through to developing new approaches for involving land-managers in the collection of data on breeding wader populations. Alongside this, BTO expertise in survey design and the use of tracking technology, is contributing major pieces of work that are providing vital evidence helping us to address the challenges faced by this group of declining species.

Working in partnership with the University of East Anglia, RSPB, and various landowners, Harry Ewing's PhD is using an evidence-based approach to develop conservation management strategies, designed to increase breeding productivity and reverse the decline of the UK's lowland Curlew populations. The PhD is not the only piece of Curlew work to be based in East Anglia over the year. BTO has been working with the Defence Infrastructure Organisation, the Royal Air Force, Natural England, Pensthorpe Conservation Trust, and the Wildfowl & Wetlands Trust, on a Curlew headstarting project. Curlew eggs, rescued from military and civilian airfields where the risk of bird-strike means that the nests would otherwise have been destroyed, are hatched and reared in a specialist facility, where they can be ringed and tagged before release into the wild. The tracking component delivered by BTO staff provides a unique insight into the behaviour and survival of young birds and is helping to improve our understanding of headstarting as a conservation tool for Curlew recovery.

EVALUATING POLICY TOOLS

Work on a number of significant field survey projects was undertaken in 2021, involving both fieldwork and data analysis. This included the projects on woodland management (England), pollinator monitoring in Wales (see page 30), and agri-environment scheme monitoring in Northern Ireland (see page 35), amongst others.

BTO research in these areas continues to inform agri-environment schemes and their design, not least by evaluating how well these schemes actually work. Agri-environment schemes have required a huge investment of public funds and, aside from their conservation value, there is a clear public interest in ensuring that they deliver returns on this substantial investment. BTO expertise will be equally valuable as new policy tools come on stream, following the UK's departure from the European Union.

YELLOW WAGTAIL : DAVID TIPLING / BIRDPHOTO.CO.UK

CURLEW CHICKS AND CURLEW FIELDWORK : SAMANTHA FRANKS / BTO; SEDGE WARBLER : DAVID TIPLING / BIRDPHOTO.CO.UK

ENABLING PEOPLE TO LEARN & GROW

We are working to provide more and better opportunities for people to contribute to our work, at the same time helping them to learn new things and to grow in confidence as they develop their skills as birdwatchers and survey volunteers.

TAKING TRAINING TO THE NEXT LEVEL

One of the big success stories of the past year has been the number of people taking advantage of our training workshops, notably those being delivered online by the BTO's Training Team, led by Nick Moran. During the year, the team ran 96 training courses, reaching 5,549 attendees. The sessions delivered a mix of bird identification and survey-specific training to individuals from a broad mix of backgrounds. While some of the training is provided for free, many of the courses carry a small fee, which helps to secure attendance – individuals are more likely to turn up to something they have paid for – and ensures that we can continue to deliver on and expand our training offering.

Although many of the sessions were virtual, the team has begun to introduce more face-to-face opportunities now that things have eased post-pandemic. This hybrid approach will continue, recognising that getting to face-to-face events can be a barrier for some potential participants. Virtual events mean that we can reach more people, engage with new audiences, and reduce the environmental costs of delivering training. Such has been the success of the BTO training programme that we have had to recruit new staff in order to meet the demand for training courses.

MEMBERSHIP MATTERS

We ended the financial year with 18,926 members. Our membership offer was refreshed in November 2021 so new joiners can contribute any amount they choose, from a minimum of £3 a month (£36 a year). New membership includes all adults at the registered address, which will become available to all members in due course. Another new benefit, to be the first to hear about most nationally organised bird ID training courses, has been well received with members making up around 70% of training course participants. A second year of online-only events, notably our annual conference, has given us pause to consider how best to engage with our supporters both new and existing as we go forward.

ONLINE RESOURCES

The BTO YouTube channel continues to be a significant draw for individuals seeking information on bird identification. Our bird identification videos, each of which features two or more similar species, received 884,217 views during 2021, with over 30,000 hours watched. The most-watched video was one on Nightingales and other nocturnal singers. Such figures underline the value of this resource to the online audience.

BIRDWATCHERS : DAVID TIPLING / BIRDPHOTO.CO.UK

TRAINING : ROB READ / BTO; NIGHTINGALE : DAVID TIPLING / BIRDPHOTO.CO.UK; MENTORING : DAVID TIPLING / BTO

INSPIRING & EMPOWERING PEOPLE

We seek to inspire and empower people with an understanding of birds and the importance of scientific, evidence-based knowledge. Over the past year we have been working to increase the accessibility of our science.

ENGAGING SCHOOLS WITH SCIENCE

There are many benefits to engaging young people with nature and science. BTO's *What's Under Your Feet* project demonstrated very clearly how it is possible to do this in schools, delivering both scientifically valuable data and great engagement. By providing a structured scheme for schools to measure the abundance of soil invertebrates and birds using school playing fields, *What's Under Your Feet* resulted in two scientific publications. The first showed how the abundance of soil invertebrates varies with season and habitat, and particularly the impact that drought can have on the availability of earthworms to birds in the surface of the soil. The second linked earthworm abundance to the numbers of the birds that feed on them, raising the tantalising prospect that changes in bird populations may indicate changes in soil health.

SCHOOL SCIENCE : FAYE VOGELY / BTO

In a paper published this year in the journal *School Science Review*, a themed journal for science teachers, BTO's Director of Science Professor James Pearce-Higgins described how schools can contribute to long-term biodiversity monitoring schemes, at the same time underlining the benefits to schools and students of participation. The paper identifies predictable and sustained opportunities for schools to participate in the collection of scientifically valuable data year on year (Pearce-Higgins 2021).

The benefits to the students include opportunities for training and feedback and to gain practical experience. Some schemes, such as BTO's BirdTrack, provide an online repository of submitted data, whilst others provide access to additional information resources. These data can be used to provide students with experience of scientific analysis, and the paper suggests how this can be achieved. It is hoped that this new publication will increase awareness of the potential for schools to contribute to long-term biodiversity monitoring in the UK. Recognising that many teachers are stretched, the paper notes how secondary school pupils can also help to support these activities, for example through natural history clubs. Being able to provide support for students in schools is one reason why BTO established its Youth Advisory Panel and is developing its work with younger people.

MAKING SCIENCE ACCESSIBLE

The primary outputs from our scientific research are peer-reviewed papers. Peer-review is an important arbiter of scientific quality, but scientific papers are rarely the most digestible form of scientific information for non-scientist audiences. Because of this, we also seek to deliver the science from these papers in other ways. Each BTO-authored paper gets its own page on the BTO website, with a more accessible summary of the work carried out and what it showed. The findings from individual papers may also be reported through our case studies and blogs, again communicated for a broader audience and often with the research presented within the wider context in which it sits.

In addition we place articles in a range of magazines and newspapers, often drawing several different pieces of research together to deliver a narrative exploring a particular issue or topic. In 2021, for example, we brought together the science from our work on bioacoustic monitoring for a feature article in the Chartered Institute of Ecology and Environmental Management's magazine *In Practice*. This showcased how the science that BTO is developing can be used in an applied field like environmental impact assessment. Being able to reach audiences and present our science in an appropriate way is key to securing the support needed to deliver our charitable objectives.

CASE STUDY:
OPENING UP OUR SCIENCE

If our science is to have impact then it needs to be accessible to all of our audiences, from policy-makers and land-managers, to conservation practitioners, funders and the public.

Over the past year we have continued our work to make BTO's science more accessible to a wider range of audiences. We have, for example, sought to showcase the work of our scientists, putting them centre stage and getting them to talk about their research in a series of '*Science Shorts*'; videos that we can share on the BTO YouTube channel and across social media.

Being able to present our science in this bite-size way also enables us to demonstrate the passion and enthusiasm of our staff. In turn, this increases audience engagement with the science and provides role models for younger people thinking about a career in science or conservation. *Science Shorts* produced during the year included Harry Ewing talking about his PhD fieldwork on Curlews, Professor James Pearce-Higgins discussing the findings of our *Climate Change and the UK's Birds* report, and Hugh Hanmer and Michelle Reeve sharing the results of the BTO Tawny Owl Calling Survey. The BTO YouTube channel now has over 22,000 subscribers, and also hosts our extensive collection of video guides to bird identification.

Online channels have been of particular importance throughout the pandemic and are increasingly important more generally, as a greater proportion of information is sourced online. Online platforms provide an opportunity to do more things with our data and information than is possible when using offline channels, like books and papers. The annual Wetland Bird Survey outputs, delivered through WeBS Report Online, provide a powerful tool for those interested in the changing status and distribution of the birds using our coastal margins. In a similar way, the annual BirdTrends report delivers a suite of information on changing status, productivity and other metrics from our core terrestrial surveys, together with helpful commentary. The report has become something of a 'one-stop-shop' for anyone wanting the latest information on the UK's birds.

During 2021, work continued to develop the BTO Data Portal (a working title), which will bring together the core data from BTO schemes, extending back over many years, alongside other information on the UK's birds, the latter drawn from our BirdFacts pages. This ambitious project, seeking to leverage significant datasets to deliver something that truly is a one-stop-shop, will enable users to drill down into the data and to pull out information at a more local level. This initiative is only possible because of the incredible wealth of information collected by generations of BTO volunteers and contributed to a suite of surveys and monitoring programmes. The work being done now has been generously supported by the Esmée Fairbairn Foundation, who recognise the tremendous value in making this wealth of information available for a diverse audience of end users.

CURLEW : DAVID TIPLING / BIRDPHOTO.CO.UK

OUR VOLUNTEERS

What makes BTO different is the way we build and harness the passion, knowledge and curiosity of thousands of volunteers to tackle the urgent challenges of today by advancing our understanding of birds and their habitats.

VOLUNTEER BOUNCE BACK

It is a wonderful testament to our community of volunteers that, after the difficulties of the 2020 survey season, 2021 saw a strong return in survey coverage. This was particularly evident in the case of the BTO/JNCC/RSPB Breeding Bird Survey (BBS). COVID-19 restrictions had a significant impact on the survey in 2020, reducing our ability to report on the population trends of more common and widespread species, and requiring careful statistical examination of trend production for the annual report – an official government statistic. Thanks to the efforts of BBS volunteers, we saw UK coverage reach 3,919 squares, up from 2,029 squares in 2020 and not far short of the peak of 4,046 seen in 2018. 2021 also saw new record coverage levels in Scotland, Northern Ireland and the Isle of Man, at 625 squares, 152 squares and 10 squares respectively.

Some 275 of our 2,685 BBS volunteers visited their survey squares again later in the year to carry out the Wider Countryside Butterfly Survey, operated in partnership with Butterfly Conservation and with their volunteers taking coverage to 787 sites and recording 98,405 butterflies of 48 species. That our volunteers are making a significant contribution to the monitoring of a different taxonomic group underlines the willingness of our community to get involved and to make a difference for wildlife through the collection of that vital evidence base.

DELIVERING VALUE FOR NATURE

During 2021, volunteers contributed approximately 2,029,493 hours to our work, enabling us to deliver on our charitable objectives and to make a difference for birds. This represented an increase of 7% compared with 2020, and is the equivalent of 1,247 staff years. The estimated monetary value to society of this incredible contribution is at least £18 million (based on the UK National Living Wage of £8.91 per hour, introduced in April 2021).

As noted above, there was a recovery to pre-pandemic levels of participation in the BTO/JNCC/RSPB Breeding Bird Survey, as was also the case for the Heronries Census, the Waterways Breeding Bird Survey, the Nest Record Scheme and the two core Ringing Surveys – CES & RAS. Garden Birdwatch participation grew by a further 16% and young volunteers contributed over 3,500 hours to our youth programme. There were small declines in participation in BirdTrack and WeBS, and larger declines in the newly-introduced Garden CES ringing project and in Nesting Neighbours, the former perhaps reflecting increased opportunities for wider countryside ringing post-pandemic.

BTO VOLUNTEERS : DAVID TIPLING / BTO

While such top line figures provide a useful measure of the amazing contribution made by BTO volunteers, delivering so much for society, they hide the wealth of knowledge and expertise vested in these volunteers. As an organisation we need to continue to support, encourage and nurture our volunteer networks and, importantly, work to share this knowledge and expertise with others, growing opportunities for people to participate in science and to secure the well-being and other benefits that come from doing so.

As is evident throughout this year's annual report, there is a huge appetite to grow our volunteer networks and, alongside this, provides opportunities for more people from more backgrounds. The knowledge that, collectively, our passion, actions and financial contributions make a difference means that we are even more determined to inspire others, inform decision-makers and stimulate a deeper public understanding about the state of the natural world. In return, and through their involvement with us, our volunteers benefit from improved well-being, a stronger connection with nature, a better understanding of birds and the environment, and the knowledge that they are contributing positively to society.

RINGING CLOTHING FROM A SEABIRD SESSION : MIKE TOMS / BTO

OUR STAFF

BTO is fortunate to have dedicated and professional staff, whose expertise and commitment helps to drive forward our charitable activities. Working in partnership with volunteers, and staff at other organisations, they are a vital resource.

AT THE HEART OF WHAT WE DO

There has never been a time when our long-term data and rigorous scientific analyses have been more important, their use today helping us to address the urgent global crises of biodiversity loss and climate change. Our data, coupled with our distinctive approach, provide the impartial, impactful and evidence-based knowledge that empowers society to respond effectively to these and other challenges. That we are able to do this so effectively is down to the successful partnership between our hard-working volunteers and staff.

Most of our staff also participate in BTO surveys and schemes as volunteers themselves, something that enables them to understand the motivations for participation, and to share experiences with our wider volunteer network. Our survey organisers and scientists can talk with passion about their schemes and research because they share the excitement and passion of our volunteers, of people wanting to discover the answers to important questions.

We have been working to make our staff even more accessible to our members and volunteers, something that has been challenging with home-working an important tool for the business throughout the COVID-19 pandemic. Our website and social media channels have been of particular importance while the opportunities for face-to-face encounters have been restricted. We are learning the lessons from this, and bringing these into our working practices as we go forward. Online events, where supporters can meet and interact with staff, and other volunteers, have proved popular, and have enabled us to reach audiences that have traditionally not attended face-to-face events.

BTO STAFF IAN HENDERSON AND GREG CONWAY SETTING NETS FOR NIGHTJARS : MIKE TOMS / BTO

REFLECTING SOCIETY BETTER

We recognise that candidates from minority ethnic groups are under-represented in our organisation, and that there are often additional barriers present for people from these groups when applying for roles in the charity sector. It is our policy to help under-represented groups get into the conservation and environmental sector. This policy also defines our approach to staffing and recruitment, and we now guarantee first stage interviews to any candidate from an ethnic background who meets the essential criteria for a role. As a member of the Disability Confident Scheme a similar guarantee is made to applicants with a disability. We have also introduced blind hiring and have put resources in place to address unconscious bias during recruitment.

YELLOWHAMMER : JOHN HARDING / BTO

ROYAL RECOGNITION

The societal contribution of BTO staff was recognised during the year through honours bestowed by Her Majesty The Queen. Dr Andy Clements, former BTO Chief Executive, and a career conservationist, was awarded an Order of the British Empire medal in the Queen's Birthday Honours for his services to conservation and policy.

Dr Gavin Siriwardena also received an Order of the British Empire medal in the Queen's Birthday Honours, this time for services to biodiversity. Gavin leads BTO's Land-Use Research team, whose work focuses on the pure and applied research of terrestrial bird ecology. His work on farmland birds, in particular on testing the agri-environment solutions to farmland bird conservation problems and on measuring the effects of current issues in farmland such as the disappearance of set-aside, has made a significant contribution.

BTO STAFF ON FIELDWORK : STEVE WILLIS / BTO

OUR COMMUNITY

One of our strengths is the breadth of opportunities for people to be part of our community through their shared love of birds. That we have such a vibrant community emphasises that what we are doing matters to a great many people.

RECOGNISING CONTRIBUTIONS

The contribution made by each of our supporters is highly valued and gratefully received, but it is right that we should sometimes single out particular individuals who have made a significant contribution to our work. We do this through two awards, presented at our Annual Conference.

The first of these awards is the Jubilee Medal, awarded to an individual who has shown outstanding and committed devotion to BTO. This year's recipients were Tony Cross and Mike Archer. Tony's inspirational enthusiasm for ornithology has been passed on to many individuals through numerous projects across Wales and beyond. Mike Archer recognised the need to support and encourage young ornithologists and has helped to set up, and continues to support, several key initiatives. These include initiatives that support young people attending the BTO Annual Conference, and provide young people with opportunities to spend time at one of the country's network of Bird Observatories. The Bernard Tucker Medal is awarded in recognition of outstanding contributions to BTO's scientific work, and this year's recipient Tony Davis was recognised for his significant contributions to BTO work on migrant birds, and for the huge amount of time that he has put into training the next generation of ringers and nest recorders.

LISTENING TO YOUNG PEOPLE

In December 2021, His Royal Highness the Duke of Cambridge invited a group from the BTO's Youth Advisory Panel to meet with him at Kensington Palace so that he could hear first-hand about the work they do in a voluntary capacity for BTO. His Royal Highness heard about the importance of the work they do with BTO, as well as the way they are working to help the organisation 'grow younger'. He also heard about the benefits of encouraging more young people to connect with nature, including the positive effect on their mental health. Lastly, he learned about their desire to address their concerns for the climate and the need for clear scientific data to help do so.

The BTO Youth Advisory Panel has proven a springboard for new projects and schemes for young people. These schemes help them develop their skills and enjoyment of birdwatching and to become more actively involved in collecting the information that underpins our understanding of what is happening to the UK's bird populations. One of the most popular schemes that the Panel has initiated is the Equipment Donation Scheme. The scheme enables birdwatchers to donate surplus binoculars, telescopes and bird identification guides, to BTO to distribute to young people who cannot access or afford such equipment themselves. So far over 1,800 young people have benefited from the scheme.

BTO YOUTH ADVISORY PANEL MEMBERS MEETING HRH THE DUKE OF CAMBRIDGE : KENSINGTON PALACE

A COMMON INTEREST

During the first year of the pandemic we sought to provide lock-down households with the motivation to engage with the wildlife in their gardens, and to contribute meaningful data through participation in citizen science. We did this by opening up our Garden BirdWatch scheme, removing the payment barrier so that more people could be part of this amazing project. Thousands of people signed up as a result, joining the existing community of BTO Garden BirdWatchers whose generosity continues to enable the collection, analysis, and reporting of vital information on the UK's garden birds.

The ongoing response to opening up this weekly survey has been so positive that we have decided to continue with an option for free participation going forwards post-pandemic. Of course we still need to cover the costs of running the survey, so a donation-based option is continuing alongside the free option. Those participants who are so generously supporting the project, and enabling our research into urban birds, receive additional feedback through a quarterly magazine, which also had a refresh during the year.

The impact that this now extended community of BTO Garden BirdWatchers is having is neatly demonstrated through a series of research outputs submitted for peer-review publication, likely to emerge next year. For the individuals who participate there are likely to be various well-being benefits resulting from structured and regular time spent engaging with the natural world.

GARDEN BIRDWATCHER AND ROBIN : DAVID TIPLING / BIRDPHOTO.CO.UK

A PARTNERSHIP APPROACH

Partnership is at the heart of our approach. With our impartial, evidence-based position, delivering robust science, we are able to work with a very broad range of partners and to tackle important questions.

SHIFTING SOUNDSCAPES

A particularly interesting example of partnership working can be seen in a piece of research published in 2021 that looked at the extent to which our avian soundscapes have changed. Bird song helps us to build and maintain connections with the natural world and is a core component of the natural soundscapes that define the landscapes around us.

The diversity of bird song at a given location plays an important role in defining the quality of our engagement with these soundscapes. Long-term declines in bird populations across the globe are likely to have reduced the diversity and scale of avian soundscapes, but the lack of historical recordings makes it difficult to assess the impact of these changes over time. This is something that has been explored through work led by Cat Morrison at the University of East Anglia, working with a broader partnership, including BTO.

The study uses a novel approach, reconstructing 'lost' soundscapes from the information collected by volunteers for bird surveys operated across Europe and North America. By combining survey data, including those submitted through the BTO/JNCC/RSPB Breeding Bird Survey, with recordings for over 1,000 bird species, taken from the online Xeno Canto database of songs and calls, Cat and her colleagues were able to reconstruct soundscapes for more than 200,000 locations over the past 25 years. The acoustic properties of the reconstructed soundscapes could then be explored statistically through a series of standard measures, capturing the richness of each.

While these measures broadly mirror avian species richness and abundance, they are primarily driven by song complexity and diversity across the contributing species. Because of this, the measures are likely to describe those aspects of avian soundscapes that are most important to their perception by human listeners. The analysis reveals variation in soundscape quality, both across sites and over time, and demonstrates a chronic deterioration in soundscape quality over time. Sites that experienced the largest declines in total abundance and/or species richness also showed larger declines in acoustic diversity and sound intensity. Ongoing declines in bird populations are expected to cause further reductions in attributes of soundscape acoustics and, by extension, a continued decline in the quality of our experience of the natural world.

SUPPORTING UK BAT MONITORING

The UK has one of the best-developed bat monitoring programmes in the world, delivering vital information on their changing status. However, for six of the UK's 17 resident bat species the available data are insufficient to support the production of population trends. In a report to the Joint Nature Conservation Committee (Newson *et al*. 2021), BTO has been able to draw on its expertise in bioacoustic monitoring to provide advice on how this important knowledge gap could be filled.

Large-scale deployment of passive acoustic monitoring devices is an approach that BTO has already used successfully at the regional level, demonstrating the potential for the monitoring of bats, bush-crickets and small mammals. Key to this success has been the use of effective survey and sampling protocols, something that is again highlighted in this new report.

By analysing passive acoustic data collected by volunteers from a study area in the south-west of Britain, the BTO authors were able to quantify the ability of the approach to detect population declines in bat numbers in relation to a number of methodological considerations, such as whether recording is carried out across the whole night and the number of sites surveyed. The report's recommendations will inform possible approaches to the national monitoring of all 17 of our resident bat species.

HOUSE SPARROWS : DAVID TIPLING / BIRDPHOTO.CO.UK

PRIORITISING CONSERVATION ACTION

Perhaps the best example of effective partnership working is the periodic production and publication of the UK's Birds of Conservation Concern review, which reports on the status of our bird populations and assesses their conservation status (Stanbury *et al.* 2021). The most recent review, the fifth since 1990, assessed 245 species and assigned each to one of three lists of 'conservation concern'. Data from the core schemes operated by BTO enable each species to be assessed against criteria reflecting changing population size and changing range. In addition, global conservation status and evidence of an earlier historical decline are also used in the assessment process.

Some 70 species (nearly one in three of those assessed) were placed on the Red List, with 11 moving to the Red List since the last review. Included in these are three familiar species: Swift, House Martin and Greenfinch, whose population declines are of particular concern. More positively, six formerly Red-listed species moved to the Amber list, highlighting that directed conservation action can improve fortunes. The listing processes is a vital aid to identifying species and habitat conservation priorities, something that means that finite resources can be targeted most effectively.

GREENFINCH : LIZ CUTTING / BTO

INFORMING POLICY & PRACTICE

BTO evidence and expertise continues to inform policy and practice across a broad range of areas, supporting decision-making processes, as we seek to respond to the challenges of competing land-use needs and a changing climate.

SPEED MATTERS ...

Renewable energy is playing a vital role in attempts to counter the effects of climate change, but is not without its own impacts. BTO has continued its research into the effects of wind energy developments on birds, providing valuable evidence that is informing the placement and design of the infrastructure delivering renewable energy around the UK and beyond.

Whilst wind energy developments help to reduce carbon budgets, they may also impact bird populations through the increased mortality from collisions, the modification of habitats used by the birds, and changes to foraging behaviour, as birds avoid renewable infrastructure such as offshore wind farms. BTO work on collision risk models, which are used to estimate the potential mortality caused by wind turbines, has been of particular importance in this regard, as a study published in 2021 reveals (Masden *et al*. 2021).

GEESE AND WINDFARM : DAVID TIPLING / BIRDPHOTO.CO.UK

Collision risk models are widely used by the industry and those making judgements about the design and placement of new infrastructure. However, the value of these models is dependent upon the quality of the data available to test their underlying assumptions. New work, bringing together BTO researchers and colleagues from the University of the Highlands and Islands, RSPB, and the University of Amsterdam, explores the sensitivity of the models to differences in bird flight speed. By using GPS-derived flight speeds from tagged Lesser Black-backed Gulls, rather than a standard generic value, the team established that the models were sensitive to flight speed. By using site-specific flight speed data from tagged birds rather than a standard value reduced the predicted number of collisions. This underlines a need for need for more representative flight speed data and, where possible, site-specific data, so that decisions about possible future developments can be based on the most robust information.

USING THE RIGHT TOOLS

A related piece of work, this time partnering BTO with RSPB, the University of the Highlands and Islands, and the Norwegian Institute for Nature Research, reviewed the methods and technologies currently used to provide bird flight data for assessing the impact of wind energy developments (Largey *et al*. 2021). The review identified four tools, including radar and tracking technologies, that improved the estimation of bird flight parameters. Interestingly, the study also revealed that these empirical sensor-based tools were more often used in academic peer-reviewed studies than in report-based environmental statements. Where sensor-based tools were used in the report-based literature, their inconsistent application often resulted in an uncertain regulatory environment for practitioners. While sensor-based tools may not be the most cost-effective option for practitioners, these costs offer a good return on the investment required when viewed against the costs of a proposed development being refused consent.

SUPPORTING POLICY DEVELOPMENT

Policy development and implementation can be difficult, not least because of the dynamic nature of the wider political environment. An example of the dynamic nature of the environment in which policy development operates was highlighted by the UK's recent departure from the European Union. Understanding the possible impacts of that departure, and how these might differ depending upon what that departure looked like, would be key for identifying what this might mean for future land management opportunities and the associated environmental costs or benefits.

Working with staff from UKCEH, ADAS and Forest Research, BTO ecologists have combined existing agri-economic modelling approaches with well-tested environmental models, to explore potential Brexit impacts on land use, environmental outcomes and the agricultural labour pool in Wales (Thomas *et al*. 2021). Agriculture in Wales is dominated by animal production on grassland systems, so a particular focus was on potential changes in livestock numbers under three potential post-Brexit trade agreement scenarios (an EU Deal, No Deal, and the implementation of a Multilateral Free Trade Agreement) and what these might mean for levels of employment and pollution, as well as for biodiversity and sustainable development goals.

By working collaboratively, and involving the Welsh Government throughout the process, this work has delivered valuable evidence to support policy development. The outputs will support Welsh Government as it seeks to develop programmes that manage the Brexit transition pro-actively, while mitigating risks to the agricultural sector, the environment, and rural communities.

COMMON CRANES : DAVID TIPLING / BIRDPHOTO.CO.UK

CASE STUDY:
WHICH SITES TO PROTECT?

Can managing sites that are specifically designated for a target community help to counter the effects of a changing climate and secure that community for the future?

The traditional approach to site-based conservation policy has been guided by three overarching aims: to prevent species from going extinct, to mitigate habitat degradation, and to counter the depletion of natural resources. More recently a fourth aim has been added: to facilitate species' responses to climatic warming. This new addition identifies a need for sites to support the 'movement' of a species through a landscape so that its distribution can track the changing climate. In simple terms, the species should be able to redistribute from sites that are no longer suitable to new sites that have become suitable because of the change in climate.

Protected area networks are a conservation tool that can facilitate these responses to climate change, but it is unclear which management approaches are most effective at delivering this. Two pieces of work published during the past year examine this question, both of which use data collected through the Wetland Bird Survey (WeBS) – a partnership jointly funded by BTO, RSPB and JNCC, with fieldwork conducted by volunteers. The WeBS data used are from the January count dataset, which forms the UK contribution to the International Waterbird Census – the wider dataset examined in these two papers.

BLACK-TAILED GODWITS : ALLAN DREWITT / BTO

Gaget *et al.* (2021) examined the effectiveness of the European Natura 2000 network of protected sites, which in the UK includes Special Protection Areas and Special Areas of Conservation. The authors found that, in the face of climate warming, it was those sites that were explicitly designated to protected waterbirds and those with management plans that were the most effective in enabling waterbird communities to respond. There was no evidence that effectiveness was linked to the length of time that a site had been protected, which implies that targeted conservation policies, identifying and protecting suitable sites, could be a particularly effective approach to adopt.

A paper in the journal *Nature* by Wauchope *et al.* (2022), using BTO data with other data sources at a global scale, looked at the value of protected areas for waterbirds at a larger spatial scale. Using International Waterbird Census data for over 27,000 waterbird populations from across the world, the study revealed a mixed impact for the 1,506 protected areas examined. Some of the less favourable outcomes were linked to poor management of the sites or to the impacts of effects operating outside of the area protected, and there was also only a weak signal that larger areas are more beneficial than smaller ones. However, the study also found that management for waterbirds or their habitats was more likely to benefit populations. While the study shows that protection alone does not guarantee good biodiversity outcomes, it does underline the value of managing these sites for their target species.

Such studies are only possible because of the thousands of hours that volunteers put into collecting data on waterbirds at sites across the UK, and beyond. These data are used to inform the designation of protected sites and, as seen here, to evaluate their effectiveness in delivering conservation objectives. Being able to combine such data at much wider spatial scales is testament to partnership working, and enables a global response to these planet-wide challenges.

SHARING DATA & INFORMATION

BTO data fed into a wide range of projects over the past year, supporting policy, land management and conservation work across the UK and beyond. Our long-term datasets, in particular, provide incredibly powerful evidence of the changes to our bird populations, and the reasons behind them.

A CONTINENTAL SCALE

BTO's long-term datasets continue to play a key role in identifying changes in our bird populations, and enabling the evaluation of conservation efforts and policy decisions. They are the evidence base used by a wide range of stakeholders. The long-term nature of these datasets is important, as is being able to collect data at large spatial scales. This is because identifying long-term population trends across the full range of a species can help to tease out variability in the processes driving the changes seen.

However, collecting long-term and broad-scale information on population changes for multiple species is challenging. Financial resources are often limiting, and there may be a lack of volunteers or paid staff with the right skills. The monitoring of birds benefits from the numbers of people for whom birdwatching is a hobby, but this is not necessarily the case in every country. It is reassuring, then, that thanks to datasets like those collected by BTO volunteers, it has been possible to report on the relative changes of widespread and common European species.

During 2021, the Pan-European Common Bird Monitoring Scheme (PECBMS) delivered its latest database of between-year and long-term changes for 170 species, the data collected by thousands of volunteers across 28 countries (Brlík *et al.,* 2021). This publicly available dataset is being used to answer research questions, report on international biodiversity targets, support policy work, and assess conservation efforts. That these data are available, and are continuing to play such a vital role, is testament to the incredible efforts of the volunteers who contribute each year.

BBS VOLUNTEER : JILL TARDIVEL / BTO

ACOUSTIC PIPELINE

The launch of BTO's Acoustic Pipeline provides a rather different example of the ways in which BTO has been able to mobilise data and information over the past year. The pipeline provides the infrastructure to allow audio recordings to be uploaded to a secure remote server in the cloud, where they are then processed to find and identify biological sounds, before returning the results back to the user. With a current focus on 34 species of European bat, the system also identifies 14 small mammal species, 18 bush-cricket species and two moth species, where these are recorded as by-catch.

The system not only delivers powerful cloud processing, running the recordings through a suite of acoustic classifiers to deliver an identification with an associated measure of confidence, but it also facilitates data storage and onwards use by researchers and others. The system has been developed with a range of end users in mind. For example, projects can be private and hidden, or public to allow any users to register and participate. This functionality provides support for both local atlases and commercial projects, ensuring that BTO expertise in the field of bioacoustic monitoring can be shared as widely as possible.

MONITORING OTHER WILDLIFE

During the quieter summer months many birdwatchers turn their attention towards other taxa, collecting records of butterflies, plants, dragonflies and damselflies. Such is the interest in of other taxa that several core BTO projects now enable the capture other taxa data by those observers wishing to contribute records. Mammal data are submitted from 90% of BTO/JNCC/RSPB Breeding Bird Survey sites, for example, while BTO Garden BirdWatchers have been adding records of butterflies, bumblebees, mammals, dragonflies and damselflies to their weekly counts since 2001. Users of BTO's BirdTrack app also have the option to record sightings of certain other taxa groups.

Collectively these records feed into the National Biodiversity Network Atlas, and they are also shared with other organisations, such as the British Dragonfly Society, contributing to atlas and other worthwhile projects. BTO's Hedgehog data, for example, form a vital component of the periodic *State of Britain's Hedgehogs* report, published by the People's Trust for Endangered Species and The British Hedgehog Preservation Society, and enabling the production of population trend figures for a species with an unfavourable conservation status. While birds remain our focus, we will continue to support partners working on other taxa through the collection of these additional data.

WHEATEAR : BETHAN CLYNE / BTO; YELLOW WAGTAIL : SARAH KELMAN / BTO; DARK BUSH-CRICKET : MIKE TOMS / BTO; HEDGEHOG : STEVE ROUND / BTO

CLIMATE CHANGE REPORT

The *Climate Change and the UK's Birds* report, published in November, provided a timely synthesis of climate change impacts, not only highlighting the species at greatest risk and how to respond, but also demonstrating the value of our science.

REVEALING CLIMATE CHANGE IMPACTS

An increasing body of research demonstrates the impacts of climate change on bird species across the globe, revealing a suite of responses. The timing of bird breeding and of migration have both become earlier, and there is a consistent poleward shift in the distribution of bird species, the rate of change exceeding 11 km per decade. Climate change is driving large-scale shifts in bird communities across the globe, and we are seeing a consistent simplification of bird communities as they become more similar to each other. BTO data provide the evidence base for many of these changes, underlining the vital role of our long-term monitoring and research work continue to play in understanding climate change impacts and identifying ways in which we can help bird populations adapt to these.

In November 2021, alongside the United Nations Climate conference in Glasgow (CoP26), we published an important report assessing the impact that climate change is having on UK bird populations. The work, carried out by BTO's Director of Science, Professor James Pearce-Higgins, showed how climate change is already having a widespread impact on UK bird populations. The report provides the most comprehensive synthesis of the likely future impacts of climate change on UK birds to date, whilst also highlighting examples of where large-scale climate mitigation work, such as woodland planting, has the potential to transform landscapes and impact on bird populations. It also demonstrated where conservation action might help species adapt to climate change.

PTARMIGAN : SARAH KELMAN / BTO

SEABIRDS AND UPLAND BIRDS AT RISK

The report identified that breeding seabirds and upland breeding birds are the two UK groups most vulnerable to climate change. Fourteen seabird species and nineteen upland breeding bird species are regarded as being at risk of negative climate change impacts. Tendencies for upland birds and seabirds to decline may be related to their more negative responses to warmer temperature. In contrast, positive impacts of temperature change may contribute to increases in wetland and non-native species.

Importantly, the report also highlighted the lack information about the extent to which climate change might be driving population trends for 132 (55%) of our breeding bird species and for most of our wintering birds. It is essential that we address these important knowledge gaps, and BTO staff have been considering what additional monitoring approaches might be able to deliver.

MANAGING MITIGATION

It is essential that we not only understand the potential future impacts of a changing climate on the populations of UK birds, but that we also identify any possible impacts that might arise from mitigation measures that we adopt to combat climate change. The report explored two of these, increasing renewable energy generation and woodland establishment to support net zero targets, by way of example.

If we are to identify where conflicts might arise between planned mitigation measures and the populations of birds that these areas currently support, then we need extensive data on the distribution and abundance of species. Such data are collected through the core surveys and schemes operated by BTO, but it is worth noting that attaining adequate survey coverage can be difficult for some of these locations (e.g. across our uplands). This is one reason why BTO has been seeking new ways to encourage and increase survey participation in our more remote areas.

PROTECTING THE RIGHT SITES

As is evident from some of the other BTO work reported in this Annual Report, BTO researchers have been working with others to understand the resilience of protected sites and reserves for birds under a changing climate. The *Climate Change and the UK's Birds* report underlines that the maintenance of an extensive network of large sites that protect important natural and semi-natural habitats, such as the Special Protection Areas established under the EU Birds Directive, will play an important continent-wide role in the conservation of birds in a changing climate. There is also growing evidence that how we manage that land will also be important.

DUNLIN : DAVID TIPLING / BIRDPHOTO.CO.UK

SPOTLIGHT ON SEABIRDS

The UK is of particular importance because of its breeding seabird populations. Many of these are in decline and there is an urgent need to address gaps in our current understanding of these birds. Here we spotlight the work BTO has been doing.

IDENTIFYING AN URGENT NEED

The UK is home to eight million breeding seabirds and hosts some of the largest seabird colonies in Europe. With many of their populations suffering significant declines, and with seabirds highlighted as a group particularly vulnerable to the impacts of climate change (see page 24), it is essential that we have robust information on their numbers, breeding success, and survival. Only with this information can we understand the threats they face and target appropriate conservation action towards them.

Because of the gaps in our understanding, BTO identified an urgent need to recruit, train and support a new generation of volunteers. Thanks to the generosity of our supporters, contributing to the 'Our Lost Seabirds Appeal', we have been able to develop a series of new initiatives and resources directed towards seabird monitoring.

RAZORBILL : DAVID TIPLING / BIRDPHOTO.CO.UK

SHARING SKILLS

Thanks to the funding we have received, and having identified the key audiences to address, we are now working to increase the number of volunteers involved in seabird monitoring. Some 476 individuals signed up for our online seabird identification courses, delivered through June and July 2021. The courses covered all of the species monitored by the Seabird Monitoring Programme – the core programme for these species in the UK – and had a particular emphasis on the more common and accessible species. Unlike most of our other online training courses, which have a strong focus on identification, the seabird courses included significant material on the ecology and status of seabirds. This information provides valuable context to those wishing to become involved with seabirds, and helps to reinforce why monitoring these birds is so important for their future fortunes. Material was developed by the BTO Training Team, with support from BTO seabird scientists, who delivered the courses together. It is hoped that participants will go on to attend an advanced course on gull identification, already offered by BTO, and engage with survey and ringing training opportunities in the future. A second series of these courses is planned for 2022/23.

DEVELOPING NEW RESOURCES

The work to provide training on seabird survey methods ties in with other developmental work to update the *Seabird Monitoring Handbook*, last revised in 1995. Alongside this BTO has been working with partners to shape the future form of the Seabird Monitoring Programme, bringing into play our expertise in managing volunteer-based monitoring schemes and delivering a robust evidence base. This work is ongoing but should result in a new look programme to be launched in time for the 2023 breeding season.

In addition to the training being offered to volunteers, funding has been used to secure photographic and video resources that can be used in online training materials. The material has been sourced so that it is suitable for a range of different uses, including some more technical audiences who we hope will become involved in collecting new information on the ecology, behaviour and movements of our seabirds. As such, the emphasis here has been on methods to catch, handle, ring and tag seabirds.

TACKLING BARRIERS

Ringing provides vital information on changing survival rates for these often long-lived birds, but is not the most accessible of activities because of the locations in which many seabirds breed. In order to increase opportunities for seabird ringing we have first carried out work to understand the barriers that stop people from getting involved. This work included a focus group with experienced seabird ringers, and a wider questionnaire study.

One of the barriers identified was the funding needed to access the often remote seabird colonies. In response, BTO has made grants available so that more individuals and ringing groups can access colonies to collect vital data. Another key barrier was found to be the equipment used for ringing seabirds. The types of rings fitted to seabirds require a strong grip when using ringing pliers, which can be problematic for people with small to medium-sized hands. Thanks to appeal funding, we are developing an adaptor for existing pliers that will overcome this problem.

KITTIWAKES : DAVID TIPLING / BIRDPHOTO.CO.UK

KITTIWAKES : DAVID TIPLING / BIRDPHOTO.CO.UK

ENGLAND

Many policy decisions have a strong country- or regional-focus, and BTO's work reflects this. We continue to deliver projects from our Country Offices, often working with country-level partners and other stakeholders.

SAFEGUARDING SHELDUCK

Having a working knowledge of the movements made by migratory birds is an essential first step in understanding the risks that these species face from development and changes in land management. Shelduck from across Britain and Ireland undertake an annual moult migration, which sees much of our breeding population migrate to moulting sites in the Wadden Sea, notably the Helgoland Bight. While it is clear that a significant proportion of the north-west European Shelduck population moves back and forth across the North Sea each year, there are no published data on the routes used, the time taken, or how fast and at what altitude Shelduck fly.

Given the scale of marine renewable development planned for the southern North Sea, and because the UK hosts internationally important numbers of Shelduck during the non-breeding season, there is an urgent need to address the gaps in our understanding of Shelduck movements, so that we can identify the magnitude of possible impacts on their populations from increasing numbers of wind turbines.

A team of BTO staff, led by Ros Green, have been addressing this question, first through an analysis of Shelduck ring-recovery data from the British and Irish Ringing Scheme, and then by carrying out a pilot GPS tracking study, in order to demonstrate the utility of this technology for collecting data on the migratory routes, flight speeds and altitudes of Shelduck (Green *et al.* 2021).

Through the pilot tracking work, four Shelduck were successfully tracked from East Anglia to the Wadden Sea, the birds using four separate routes, with previously unreported stopovers noted in the Dutch Wadden Sea, before birds continued on to moulting sites in the Helgoland Bight. Flight speeds averaged 30.3 knots, with the birds flying at altitudes of up to 354 m. An expansion to the tracking study is planned, to increase sample sizes and geographical coverage.

BADGERS AND BIRDS

The Badger is a highly adaptable and opportunistic forager, whose diet includes a wide range of animal and plant material. Although earthworms are the most important component of Badger diet, these robust mammals may also predate Hedgehogs, frogs, small mammals and small (often ground-nesting) birds. The Badger is thought to be the main wildlife transmitter of bovine tuberculosis to cattle in England and, as a result, has been the subject of control measures in areas where they have been identified as an important factor in spreading the disease to cattle.

The licensed reduction of Badger populations across large areas of the countryside to combat bovine tuberculosis is likely to have an effect on some other animals and plants, some of which may be ecologically significant. Investigating these consequences is of interest, both for evaluation of the culling policy itself and in terms of basic ecology. The existence of landscape-scale survey data from the BTO/JNCC/RSPB Breeding Bird Survey (BBS) provides an opportunity to explore the implications of the culling policy for bird populations, and this is something that BTO has done, resulting in a peer-reviewed publication this year (Kettel *et al.* 2021).

The study led by Esther Kettel set out to investigate whether there was any detectable effect of the Badger cull on birds, evident in the BBS dataset. There was no evidence for broad or consistent effects within the cull areas, but it is worth noting that the small sample sizes available, coupled with likely habitat and management differences between sites, may have limited the statistical power of the approach. This initial work is being followed up with additional analyses, with additional years of data and an increased sample size.

THE IMPACTS OF LIGHT POLLUTION

As noted opposite, migratory birds face many challenges during their annual movements between breeding and wintering areas. BTO research, led by Simon Gillings and published in 2021, has investigated whether artificial light at night could disrupt the movement patterns of migrant thrushes (Gillings & Scott 2021). Previous studies have shown that artificial light at night can disorientate nocturnally migrating birds and cause them to collide with structures such as oil platforms and tall buildings. This problem is particularly associated with skyscrapers in North America. While UK cities tend to have fewer tall buildings, we still need to understand possible impacts on this side of the Atlantic.

By using passive acoustic monitoring devices, deployed in the gardens of local birdwatchers to record the calls of nocturnally migrating Redwings, Blackbirds and Song Thrushes, Gillings and Scott examined a gradient of nocturnal illumination in Cambridgeshire – from the brightly lit city of Cambridge to the darker surrounding villages and countryside. The audio recordings were analysed using artificial neural networks, which had been trained to identify calls of the target species and differentiate them from other sources of night-time noise. The results showed that thrush call rates were up to five times higher over the brightest urban areas than in the darkest villages, suggesting a strong effect of artificial light on these migratory species. Although evidence from studies involving radar indicates that this result can be explained by birds being attracted to brightly lit areas, it is also possible that individual birds call more often than normal in such environments if they are disorientated. The new work underlines the need to better understand the effects of artificial light on birds and other wildlife. It also demonstrates the potential for passive acoustic monitoring to help answer ecological questions.

BADGERS : LIZ CUTTING / BTO

SENSITIVITY MAPPING FOR WADERS

The creation of new woodlands provides opportunities for biodiversity (including birds) but it can also damage populations of other species dependent on the existing habitat at sites where the new woodland is being established. One group of birds that may be at particular risk from the establishment of new woodlands are our breeding waders, most of which now have an unfavourable conservation status.

A BTO report published in 2021 describes the development of a tool that can support decisions on where to establish new woodlands and, at the same time, minimise the risk to existing breeding wader populations (O'Connell *et al.* 2021). Using data from *Bird Atlas 2007–11*, John Calladine and Mark Wilson used predictive modelling to create 'wader sensitivity maps' for the whole of Britain. The performance of the models used to create the maps was examined by using both empirical data and ground-truthing surveys, the latter carried out in two areas of particular interest: Northumberland and the NE Cumbria Forest Investment Zone, and the Cairngorms National Park.

The best models were for species with more data underpinning them, for example, Curlew and Oystercatcher. In addition to guiding wader conservation and forest planning, the tool can be used to assess the relative importance of particular landscapes, land uses and areas with statutory designations for breeding waders. Being able to inform high-level policy decisions affecting breeding waders, including balancing wader conservation and forest expansion, should bring real benefits.

SHELDUCK : DAVID TIPLING / BIRDPHOTO.CO.UK

WALES

BTO Cymru gives a Welsh voice and perspective on issues that are important to the birds of Wales. This is achieved by working closely with partners across Wales, including the Welsh Government, Natural Resources Wales, the Welsh Ornithological Society, RSPB, bird clubs, and our members and volunteers.

MONITORING POLLINATORS IN WALES

The Welsh environment supports significant economic sectors, including agriculture, fisheries, tourism and forestry, which are also of importance to other key policy areas, including health and well-being, energy, and infrastructure. Understanding how the policies that shape these economic sectors deliver on their objectives requires a monitoring and reporting framework, to which BTO is contributing.

BTO is one of 22 partners undertaking the Environment and Rural Affairs Monitoring & Modelling Programme (ERAMMP) in Wales. Like its predecessor, which ran from 2013–2016, ERAMMP is collecting monitoring data across the Welsh landscape and will be a key source of data for future editions of the State of Natural Resources Report, published by Natural Resources Wales.

In 2021, BTO put together a team of fieldworkers to monitor pollinator abundance and habitat use in 80 survey areas spread across Wales. The outputs of these surveys - numbers of bees, butterflies and hoverflies, and their associated flora – will be added to the modelling work that will be submitted to Welsh Government, and later published in peer-reviewed papers. Because the study is repeating previous monitoring (2013–2016) of the Glastir agri-environment scheme, it will report on any changes that have occurred in abundance and community structure.

Fieldwork targeting birds is taking place in 2022, but this is the first time that BTO has been directly involved in running pollinator surveys of this kind, something that underlines the transferability of our expertise in monitoring work.

FISH-EATING BIRDS

Amongst the complex and inter-related reasons for the decline of migratory salmonids (Atlantic Salmon and Sea Trout) – which include changing land use, climate and rainfall, and alterations in the marine environment – it is important to understand any additional contribution made by the changing populations of fish-eating birds. This has been the subject of recent BTO work in Wales.

Migratory salmonid populations in Wales are classified as 'at risk' or 'probably at risk' and most populations are declining. The species are important to anglers and net fishers, supporting both recreational activities and the wider socioeconomic benefits that arise from well-run fisheries. In addition, these species have a broader societal value as iconic indicators of healthy river systems.

If the numbers of a species fall below safe biological limits, then predation may limit the population further or suppress any recovery. It is therefore important to document and understand the extent to which predation is impacting Salmon and Sea Trout populations in Wales. The main predators of these species in Welsh rivers are fish-eating birds, notably Cormorant and Goosander. Both the fish and the fish-eating birds are protected under national and international legislation, which again highlights the need to balance the conservation and human interest components linked to both the fish and the birds.

Welsh Government, Natural Resources Wales and a broad coalition of partners and stakeholders have been working to understand the multiple factors affecting Welsh salmonid populations. The interests of different stakeholders do not always align with one another, adding complexity to the work being done, and this is where BTO's scientific independence and political neutrality can bring benefits. Our independent and robust evidence base enables effective decision-making, supports the testing of solutions, and informs debate. Rachel Taylor (scientific lead for BTO Cymru) has participated as scientific advisor to the multi-stakeholder Wales Fish-eating Birds Advisory Group since its inception in 2018.

The Wales Fish-eating Birds Advisory Group has spent several years developing a shared understanding of both fish and bird ecology, the critical environmental pressures and the concerns of the relevant stakeholders; informed throughout by BTO data and scientific expertise. Several pieces of review, research and survey work have been commissioned, including the Winter River Survey delivered by BTO in 2020–21 (see below). These have informed cooperative development of a set of strategic recommendations to policy on the future management of this difficult conservation conflict in Wales. The Group recommendations will be presented to Natural Resources Wales and are expected to underpin a new policy for supporting salmonid recovery in future.

WINTER RIVER SURVEY

An early task identified by the Welsh Fish-eating Birds Advisory Group was to improve our understanding of both populations and distribution of Cormorant and Goosander in Welsh rivers through the winter months. Goosanders demonstrate a complex seasonal migratory pattern, which includes a sex-biased moult-migration, and we lack a detailed understanding of their winter movements. Cormorant populations also demonstrate complexity in their movements, with the majority of the Welsh breeding population being of the coastal-breeding *carbo* race. However, the winter population is thought to be supplemented by breeding birds from elsewhere in Britain (and of probably both the *carbo* and *sinensis* races), plus an unknown and variable number of *sinensis* race birds from the Continent.

The distributions of both species change seasonally but BTO's core long-term datasets do not provide a robust enough basis for management activities intended to reduce predation risk to critical salmonid populations. This is because the Wetland Bird Survey and the Non-estuarine Waterbirds Survey deliver much better winter coverage across estuaries and still-waters than on open rivers, where many Welsh Cormorants and Goosanders are thought to winter.

Natural Resources Wales tasked BTO Cymru with designing a survey capable of robustly assessing populations and winter distributions of these two highly mobile species, and subsequently delivering this challenging survey and providing population estimates for 10 principal salmonid rivers across Wales. The team, expertly supported by staff from across BTO and including six contracted field staff, surveyed 956 km of river channels through December, and a further 1,400 km of channels and tributaries through January and February. This was a challenging survey, especially against a backdrop of coronavirus restrictions, and the more predictable problems of snow, rain, flooding and remote fieldwork.

The project delivered modelled distributions and population estimates for both Cormorant and Goosander for the 10 rivers, their wider catchments and (extrapolated) population estimates for all-Wales, and provided these and the underpinning data to Natural Resources Wales and the Fish-eating Birds Advisory Group at the end of the winter (and BTO's financial year).

GOOSANDERS : DAVID TIPLING / BIRDPHOTO.CO.UK

COMMON BLUE : MIKE TOMS / BTO

SCOTLAND

The staff in our Scottish office understand the specific needs of their country. They provide an important point of contact for our regional volunteer network and our many members, funders and partners. Their deep Scottish knowledge is fed back to BTO's headquarters to ensure that UK-wide schemes are relevant to Scotland.

LOOKING FOR DIFFERENCES

Populations of some familiar summer migrants are faring better in the north of the UK than they are in the south. These differences could be rooted in conditions on the breeding grounds – perhaps there is more invertebrate prey available in the north – or they could be the result of factors operating elsewhere, either in the wintering areas or during migration. If birds from northern breeding populations use different wintering areas or migration routes to those in the south, then this might be contributing to the contrasting fortunes.

In order to tackle the latter possibility, BTO Scotland staff, led by Chris Hewson of BTO's International Team, have been fitting tiny tracking devices, called geolocators, to migrant Tree Pipits, Whinchats, Garden Warblers, Willow Warblers, Wood Warblers, and Spotted Flycatchers nesting in woodland and scrub habitats in central Scotland. We already have a good idea of where the birds from southern populations winter, and the sites they use along the way, so the data from this project should reveal any differences.

MONITORING SCOTTISH RAPTORS

Scotland is home to important bird of prey populations, whose changing fortunes are being monitored through the Scottish Raptor Monitoring Scheme. During 2021, the scheme was again funded by NatureScot, BTO, RSPB, FLS and SOC, with in-kind contributions from all the partners (the others being SRSG, RBBP, SF and JNCC). The scheme, which was launched in 2002, seeks to provide robust information on Scottish raptors, especially trends in numbers, range and productivity, and to understand the pressures faced.

Analyses using Scottish Raptor Monitoring Scheme data to produce the first set of national and regional trends for Scottish raptor populations were completed in 2021 and will be launched as part of the scheme's 20th anniversary in 2022. Such information is extremely valuable, not least because these species are often poorly represented in core, multi-species, monitoring schemes, and the work of the Scheme and its partners is making a significant contribution to the conservation of these iconic birds.

During 2021, as well as leading on trends development, Mark Wilson reviewed the information collected by Raptor Patch, the scheme's initiative to promote better monitoring coverage of widespread raptor species in Scotland, like Common Buzzard and Raven. In particular, analyses were carried out to assess the numbers of sample patches likely to be needed in future to contribute rigorous information on trends for the widespread species. The findings will be fed into plans for enhancing raptor monitoring in Scotland that will be developed further during 2022.

WHITE-TAILED EAGLE : LIZ CUTTING / BTO

STUDYING SAWBILLS

It is not just Welsh fish-eating birds (see page 30) that have been the focus of BTO research over the last year. BTO Scotland staff have carried out a pioneering piece of work to improve our understanding of Goosander movements. As noted earlier, the movements of these birds are complex and poorly understood, something that is now being addressed through the use of GPS–GSM tracking devices. These devices use either Global Positioning System (GPS) satellites or the Global System for Mobile Communications (GSM) to determine their location, which is transmitted to a base station at regular intervals through the day.

TAGGING GOOSANDERS / BTO

There are two particular challenges in deploying and using these devices on Goosanders; the first is that Goosanders are difficult birds to catch, the second is that they are adept at removing the devices, which typically only remain on the bird for a couple of weeks. The BTO Scotland team has developed a safe method for catching the Goosanders using mist nets positioned across shaded river sections. So far, 11 birds have been captured on two river systems, the River Devon – a tributary of the River Forth in Clackmannanshire – and the River Tweed in the Scottish Borders. Interesting differences in the movements of birds on the two rivers have been revealed, and it is hoped that the information gained will help to inform the debate about the impacts of these fish-eating birds on fish stocks. This important work was funded through the generosity of Mark Constantine, to whom we are extremely grateful.

ENGAGING YOUNG PEOPLE

BTO's efforts to engage more younger people in our work has seen a number of UK-wide initiatives, together with additional targeted work. BTO Scotland staff have been working in partnership with the Scottish Ornithologists' Club to provide more opportunities for Scotland's young people. A series of monthly Youth Engagement Events was launched in October 2021 and has proved to be very popular, with up to 60 young people booked on each session.

The online training delivered by BTO Scotland staff also increases opportunities for younger people, and others for whom the practicalities of attending face-to-face training events can be a barrier. During the year, BTO Scotland staff delivered virtual training events on bird songs and calls, upland birds, waders and waterbirds, together with training relating to particular BTO-led surveys. A programme of face-to-face sessions complemented the virtual courses. Virtual training has a particular benefit in Scotland, increasing accessibility, including for people living in more remote areas. The team also supported delivery of training for supporters in Northern Ireland, and helped the BTO's Training Team to deliver a series of UK-wide training events online.

WOOD WARBLER : EDMUND FELLOWES / BTO

NORTHERN IRELAND

BTO Northern Ireland plays an active role, working with partners and our members and volunteers, to deliver much-needed information on Northern Ireland's birds. Our team works closely with BTO staff in other offices, sharing expertise and feeding into our wider strategic work.

TRACKING BLACK GUILLEMOTS

Marine Protected Areas are a vital mechanism for seabird conservation, but high-quality evidence is required to ensure they are well placed and managed. To this end, BTO was contracted as part of the Marine Protected Areas Management and Monitoring (MarPAMM) Programme to study the at-sea distribution and habitat use of Black Guillemots in Northern Ireland, a charismatic species at the southerly limit of its global range, and one not typically included in traditional protected sites due to its non-migratory nature. This project has been supported by the EU's INTERREG VA Programme, managed by the Special EU Programmes Body. Using a novel combination of location and depth recorders, the sea floor foraging behaviour of Black Guillemots was described for the first time, and the findings of the study are being used to increase the protection afforded to the species in Northern Ireland.

BTO also oversaw censusing of Northern Ireland's largest and most challenging seabird colonies for the MarPAMM project. Field teams were kept busy counting over 150,000 Guillemots and around 23,000 Razorbills on Rathlin Island and the north Antrim coast. Considering Rathlin alone, records of 149,510 Guillemots and 22,421 Razorbills made the island the UK's largest Guillemot colony and third-largest Razorbill colony at the time of surveying. Red-listed Kittiwake has increasedon Rathlin by 38% since the Seabird 2000 census with ~13,700 pairs counted.

The picture was less rosy for Puffin, which continued to decline on the island, with only 407 individuals counted. The abundance and trend data collected will underpin conservation management plans for seabirds in the region and provide important context for future research.

DELIVERING ESSENTIAL EVIDENCE

Back on dry land, BTO is providing essential evidence on the impacts of agri-environment scheme (AES) interventions on Northern Ireland's birds, as part of a Department of Agriculture, Environment and Rural Affairs (DAERA) funded partnership project with the RSPB. The six-year project aims to assess the effectiveness of Northern Ireland's current AES, the Environmental Farming Scheme, in benefiting three groups of birds of special conservation importance in the region: waders, upland birds and seed-eating birds.

Surveys are similar in structure to the BTO/JNCC/RSPB Breeding Bird Survey (BBS), involving a random sample of 1 km squares, but each square includes 3 km of transects and more detailed habitat recording. The first two spring and summer survey seasons (2021 and 2022), and first round of winter surveys (2021/22), are now complete, enabling some reflection on progress so far. In particular, the support of DAERA in liaising with landowners and facilitating access has been exemplary, but as is often the case, achieving survey coverage in Northern Ireland has been a challenge compared to more populated parts of the UK.

This project highlights the importance of empowering and upskilling a greater number and diversity of people in bird survey techniques through our engagement work, so that we can continue to collect evidence essential to informed decision-making.

TAGGING A BLACK GUILLEMOT : DANIEL JOHNSTON / BTO

INCREASING VOLUNTEER NUMBERS

The BTO team achieved record BBS coverage in Northern Ireland in 2021, with 85 volunteers surveying at least 100 grid-squares. With the continued support of the Northern Ireland Environment Agency (NIEA), an additional 52 squares were surveyed by professional contractors, resulting in a total of 152 squares. The previous highest totals were 70 volunteers and 131 squares. This period also saw record numbers of active BTO Garden BirdWatch participants in Northern Ireland (116 in 2021).

It is thought that online training in both bird identification and BTO-led projects, introduced during the first lock-down in 2020 and latterly combined with field trips in a 'hybrid' approach, has helped BTO reach out to a new audience in Northern Ireland. Enthusiastic and knowledgeable local representatives, who can provide one-to-one mentoring and support, are absolutely vital in Northern Ireland. Building and maintaining this network has been a priority over the last few years. Engagement and training work continues, with hybrid courses in the Wetland Bird Survey, BBS and the Nest Record Scheme delivered this year.

SONG THRUSH : TOM CADWALLENDER / BTO

WORKING WITH COMMUNITY GROUPS

The team in Northern Ireland is working to reach new audiences through engagement with existing community groups and partnerships with other environmental NGOs. This has particular value when targeting monitoring gaps in Northern Ireland, including our understanding of Northern Ireland's woodland birds. A partnership project with the Woodland Trust in the Faughan Valley, Co. Londonderry, is providing a beginner-friendly introduction to monitoring for Woodland Trust volunteers interested in learning more about birds. By training new volunteers in simple point-count methods, we aim to boost the confidence and experience of fledgling birders and provide basic but under-recorded information on birds in native woodland.

BTO has also been developing its relationship with the Lough Neagh Partnership, which works to improve the environment (ecological, economic, social) in and around Lough Neagh. We are working towards a pilot joint project, to collate and interpret data on the lough's waterbirds, to build a shared understanding of threats and conservation action that can be taken.

ACROSS THE WORLD

BTO data and expertise continue to contribute to projects across the globe, reflecting our strong partnership approach and the regard in which our work is held. Working with international partners will continue to be a key component of our efforts to address the issues affecting migrant birds.

PROTECTING WATERBIRD FLYWAYS

The future of many migratory waterbirds depends on the conservation of a network of key wetland sites, situated along their flyways. The suitability of these sites is changing because of climate change, and it is essential that we understand what this means for the birds that use them.

A large international consortium, led by Wetlands International but also involving BTO and analysing BTO-data, developed a priority index to highlight sites that are currently important for waterbirds, for example because they harbour a high number of threatened species or a high proportion of the population. Using bioclimatic models the team found that projected climate change will reduce habitat suitability for waterbirds across 58% of existing Critical Sites within the African-Eurasian flyway. African and Middle East sites are particularly threatened, comprising 71 of the 100 most vulnerable sites (Breiner *et al.* 2021). By highlighting priority sites for conservation, and classifying Critical Sites into Climate Change Adaptation Strategy classes, the results can be used to support the climate change adaptation of both individual sites and the wider network.

PROTECTING SPOTTED EAGLES

We have been working with Ukrainian and Belarusian colleagues in Polesia since 2019 on a multinational, multi-partner project, funded by the Endangered Landscapes Programme and led by Frankfurt Zoological Society (FZS). The project aims to boost conservation efforts in the huge wet lowland region of Polesia. Polesia spans the border region of southern Belarus and northern Ukraine, and contains the largest national park in both countries: the Chernobyl Exclusion Zone.

We are appalled by Russia's invasion of Ukraine and stand in full support of those affected by this conflict. Our project partner Frankfurt Zoological Society (FZS) has been working to get partners and staff in Ukraine to safety, though most remain on-site, providing refugees with resources and supporting the protected areas' running costs at a time when other funding has been cut off. We hope that the global support of Ukraine will help bring an end to this terrible conflict, and that we will be able to continue to work with our colleagues to learn about and protect the country's precious habitats and wildlife.

Part of our work in Polesia has involved the GPS-tagging of Greater Spotted Eagles to find out why this species is declining in the region and what resources it needs to reverse these declines. A peer-reviewed paper, published in the journal *Bird Conservation International* during the year, provides the first systematic study of Greater Spotted Eagle migration (Vali *et al*. 2021). BTO's Adham Ashton-Butt and the team used GPS tracking devices to following the migrations of eagles from the three remaining European breeding populations in Estonia, Poland, and Belarus.

The tracked eagles wintered across three continents, with 46% wintering in Africa (mostly in the eastern part of the Sahel), 43% in southern Europe (mostly in Greece) and 11% in the Middle East. The three populations were found to differ in their migration strategies; while birds from the Estonian population wintered in Southern Europe, those from Poland and Belaruse were divided between southern Europe and Africa. Single birds from each of the breeding populations wintered in the Middle East.

The eagles chose to winter in wetland sites throughout their wintering range, with roughly half of the birds wintering within internationally or nationally protected sites (including 12 Ramsar sites). Interestingly, nearly a third of the birds wintering in southern Europe chose the same Greek national park, which might indicate a lack of other options in the region.

The findings of the study highlight the importance of protected wetlands to Great Spotted Eagles and, alongside this, the vulnerability of these populations to future wetland degradation. It also reveals that, with just two of the 14 wintering sites in Africa under some form of protection, male eagles are at greater risk than females because they are the ones more likely to winter at a greater distance from the breeding areas.

GARGANEY : DAVID TIPLING / BIRDPHOTO.CO.UK

LESSER KESTREL : DAVID TIPLING / BIRDPHOTO.CO.UK

SHOULD I STAY OR SHOULD I GO?

One consideration when planning conservation action for a migratory species is where to target that action; should it be targeted towards local factors or those acting on the species elsewhere, either of which may be driving a population decline. Migration may expose individuals to a range of anthropogenic threats, some of which may act to reduce future breeding success – perhaps because birds arrive back on their breeding grounds later than ideal or in poorer condition. Understanding these effects is important, and can inform conservation action.

One way to examine the potential impact of carry-over effects – those that affect an individual in one season but impact it in a subsequent season – is to compare the breeding parameters of two or more populations, where one is migratory and the other resident. Lesser Kestrels breeding in Spain provide a particularly good opportunity to test this approach, because resident individuals breed in mixed colonies alongside long-distance trans-Saharan migrants (Buchan *et al*. 2021).

BTO's Phil Atkinson, working with colleagues at the universities of East Anglia, Porto, and Lisbon, the Estación Biológica de Doñana, and the Tumbabuey Grupo de Anillamiento in Cádiz, combined tracking data, stable isotope analysis and resighting data to examine the effects of this stark difference in migratory strategy on body condition, breeding phenology and breeding success. Four Lesser Kestrel colonies in southern Spain were monitored for five consecutive years (2014–18), yielding 1,962 captures, and revealing the migratory strategy for 107 adults.

Despite a 3,000 km difference in distance travelled, and marked differences in the wintering experiences of migrant and resident Lesser Kestrels, the reproductive carry-over effects were limited, with conditions on the breeding grounds being of greater relevance for adult and chick body condition. There was little evidence to support the hypothesis that anthropogenic change could be having a disproportionate effect on migrants, and thereby disrupting the balance in reproductive fitness benefits of each strategy. However, because the study looked at reproductive success, rather than survival, recruitment or population trends, the choice of migratory strategy could still have important consequences for these populations, and this is something that will require future work.

BEING FIT FOR THE FUTURE

We continue to face complex challenges, resulting from climate change, and pressures on our environment to meet growing demands on the planet's resources. Ensuring that society can respond effectively depends on organisations like BTO playing a strong role and making our voice heard.

LOOKING TO THE FUTURE

BTO has extended its current strategy through 2021 and into 2022, and is continuing to deliver the commitments made, which coalesce around the following four core aims: i) to enable and deliver high quality, impartial and impactful science, ii) to share data information and knowledge through excellent communications, inspiring and empowering people with an understanding of birds and the importance of knowledge, iii) to enthuse and encourage existing and new members, enabling more people to learn and grow through participation and environmental discovery, and iv) to grow our financial independence. In addition to our current commitments, we will carry out other work to ensure that we are ready to deliver for birds; this work will focus on three areas: Staff and Supporters, Sustainability, and Impacts.

In 2023, BTO will celebrate its 90th anniversary. As part of those celebrations we will launch a new strategy that, whilst remaining true to the original core value of its central founder Max Nicholson, "recognising the potential of cooperative birdwatching to inform conservation", will focus to a much greater extent on the impact of BTO work.

We intend to reach this anniversary as a fit and healthy organisation, confident in its ability to deliver for birds. This will mean building on what BTO has always done best: the robust, long-term national monitoring schemes, capitalising on novel scientific approaches like tracking technology and acoustic monitoring, and engaging new supporters, particularly through our youth work.

RISKS AND UNCERTAINTIES

The transition to living with COVID-19 provides a moment to re-evaluate and reset our ways of working. The increase in people connecting with nature at this time suggests a unique opportunity and a responsibility to broaden, deepen and diversify our engagement. We have, for example, seen the opportunities that have come from virtual events, reaching new audiences and fostering new forms of engagement, and we will learn from these, broadening our offering so that we continue to support and engage with a wider section of society.

We recognise that the COVID-19 pandemic, together with growing recognition of the climate crisis, is both changing the ways in which society operates and reshaping individual behaviour. Our organisation must understand and reflect on these changes, so that we can continue to deliver appropriate opportunities for participation in our work. It is essential that we continue to demonstrate the impact of our work and how it delivers for birds, wildlife and people, and this will be a focus for our new strategy.

The financial environment remains challenging, but our work and the datasets we collect, curate and analyse have never been more important. With your support we will continue to direct our resources towards the pressing questions affecting birds and their environment, so that the results of our efforts deliver outcomes that are better for birds and society. We need to grow unrestricted income, diversifying income generation and addressing the pension deficit, and review the way we deliver our most impactful research through contracts and appeals.

RESPONDING TO CHANGE

We are conscious of both our environmental and social footprints, and will, for example, continue our work towards being a more inclusive organisation, attracting, supporting, developing and retaining excellent staff and volunteers (see page 14). We will develop and deepen links with existing supporters, and widen our reach to engage with new and more diverse communities.

We will develop and implement a stronger environmental sustainability strategy and integrate the drive towards greater equality, diversity and inclusiveness across all of our operations. New ways of working will require us to invest in business-critical digital infrastructure and systems, ensuring that we can sustain existing commitments and rise to the challenge of future demands and priorities.

FUTURE PROJECTS

We want BTO science to be more strongly focussed on addressing the issues of biodiversity loss, climate change, and human health and well-being. To do this we will consider the questions we want to answer, by strengthening our links to policy and environmental decision-makers to ensure we understand the key environmental questions, and raise awareness of the vital role that BTO science and data play in answering them.

We will review our long-term core surveys and contract research, to maximise their value in addressing emerging needs, supporting nature's recovery, meeting local and country level requirements, and engaging a diversity of supporters. We will build active links with social science, in particular, to better understand, quantify and improve the benefits of connecting to nature for people.

We will raise the profile of science communications with key audiences, including volunteers, collaborators, funders and decision-makers, to ensure our science is prominent and accessible. By doing all of this we will deliver the impact that is both needed and expected of us as a Registered Charity.

BIRDWATCHERS : DAVID TIPLING / BIRDPHOTO.CO.UK

THANK YOU FOR YOUR SUPPORT

Each year we need to raise thousands of pounds to fund our work so that we can deliver the charitable outcomes that are so important to our supporters. We are fortunate to receive wonderful support from members, funders, trusts, corporate partners and many others, all of which help to make our work possible.

SUPPORTERS FUND VITAL RESEARCH

This year thousands of supporters gave generously to appeals, played the spring raffle, sponsored Cuckoos and much more. These donations supported BTO staff and volunteers to produce important research like the *Climate Change & the UK's Birds Report* that launched during CoP26 to highlight how climate change is already impacting the UK's birds. Globally, up to 7% of birds are considered to be at risk of extinction due to climate change, and in the UK some of our most iconic species like Puffin are at serious risk from rising sea temperatures. Understanding the potential impact of climate change relies on our long-term monitoring efforts, which provide crucial evidence to explain and find solutions to some of the biggest threats to our wonderful wildlife. Our monitoring and research are fundamental to challenging policy-makers and governments to make the changes needed to reduce the impacts of climate change and pull these iconic species back from the brink.

Our spring appeal raised vital funds to help improve seabird monitoring efforts. UK breeding seabird populations have declined by a quarter since 1986, and we urgently need a better understanding of why. Due to the remote nature of many seabird colonies, there are significant gaps in the data that could provide crucial answers. Supporters responded generously, donating to fund a programme to recruit, train and support seabird surveyors across the UK, helping to provide compelling evidence to incite the action our seabirds so sorely need. We kicked this off with a series of online training courses for the public, aimed at increasing confidence in seabird identification, while raising awareness of their ecology and population declines. A total of 476 supporters joined us to learn about the 25 species that breed in the UK and the major conservation issues they face.

PUFFIN : SARAH KELMAN / BTO

SUPPORT FROM TRUSTS & FOUNDATIONS

BTO is fortunate to have the support of several trusts which generously fund us each year, often by making unsolicited donations despite the current economic pressures.

One key funder is the Esmée Fairbairn Foundation, which has supported BTO with substantial annual grants, plus discretionary Trustee awards to specific projects. During 2021/22, we were successful in securing a further large grant from the Foundation, providing £130,000 per annum over five years to fund monitoring, research and our growing programme of work with younger people.

We made a successful applications to Covid Recovery Grant funds set up by government departments through the Heritage Lottery Fund, securing a grant of £110,000 over 18 months from the Green Recovery Challenge Fund (GRCF/Defra) to recruit a Youth Engagement Coordinator, providing training for youth volunteers and organising events and activities for young people. Our application for a part-time Project Officer to develop our engagement with people in Northern Ireland was also approved by the Covid Recovery Employment and Skills Initiative for Heritage (CRESI/Dept. for Communities, NI), and we were awarded a grant of £83,500 over three years.

In Scotland, we received a grant for the very first time from the Hugh Fraser Foundation, towards our work with young people, and with the support of an Esmée Fairburn Foundation Trustee, we received a grant of £13,000 to support our project tracking migrating songbirds from Scotland (see page 32).

We are immensely grateful for all of this support, enabling BTO to continue with valuable work and to develop as an organisation.

THE WITHERBY CUSTODIANS MEET AGAIN

After two years of virtual events, the BTO Witherby Custodians finally met in person again in December 2021. The group of committed supporters, who not only support BTO financially but also share experience and input to our plans and strategy in meetings with the BTO board and staff, visited the Natural History Museum in Tring for a private viewing of Henry Forbes Witherby's collection of bird skins, sold in 1933 for an impressive sum of £1,400, which was then used to fund the start of BTO. BTO Chief Executive, Juliet Vickery. along with key wader researchers and members of the Youth Advisory Panel updated the Custodians on developments in research and how BTO is adapting to meet future challenges. If you are interested in becoming a Witherby Custodian, please contact: david.agombar@bto.org

OUR SUPPORTERS' MEMORIES LIVE ON

BTO has been incredibly fortunate to have received £1.46 million from gifts in Wills – 64% of our annual fundraised income. We are so grateful to all those supporters whose life-long love of birds and a concern for their future drove them to include a bequest to BTO in their Wills.

Peter Arbery was a valued member of the BTO family, whose passion for birds was ignited when he saw his very first Redwing. Eileen, Peter's partner of 43 years, remembers a walk through farmland one early spring, when they saw a flock of Lapwings displaying. Peter had never seen them before and Eileen remembers him being quite bewitched. Peter and Eileen loved to birdwatch on their hill-walking holidays in the Lakes, Yorkshire and Scotland. Eileen recalls a 'magical trip' to South Uist, where they watched Raven, Golden Eagle, migrating waders and Merlin, and a wonderful trip to the Isle of Mull, where (despite being bitten by midges) they looked on in wonder at a Golden Eagle hunting over the moorland. Peter loved taking part in fieldwork for *Bird Atlas 2007–11*, and at home he would look out for the returning Swallows and House Martins, noting down their numbers and dates of arrival. He was saddened over the years to notice the decline of birds like Golden Plover, Tree Sparrow and Yellowhammer, which were no longer common occurrences on his daily walks. We are so grateful to Peter for choosing to support BTO in this incredibly special way, to monitor the health of the birds that brought him and Eileen so much pleasure.

Linda Blenkinship, valued BTO member and Garden BirdWatcher, sadly passed away before she received a bequest from a late friend's Estate. Her husband, David, chose to pass on that gift from Linda's estate, to charities and groups that were precious to her during her life. We were touched to be one of those organisations whose values were appreciated by Linda. During her time as a BTO Garden BirdWatcher, Linda submitted an incredible 15,465 individual observations of birds from her garden. David, Linda's husband, told us that "*first thing in the morning, Linda would be there in the garden – putting food out for the ground-feeders, and checking that the feeders on the fence were full for those who flew in. The birds were her first call, whatever the weather*." The data Linda submitted during her life are a wonderful legacy, alongside the gift in her Will which will support future BTO research on the birds that she had diligently counted for so many years.

We are grateful to both Eileen McLernon and David Hawtin for allowing us to share personal stories about Peter and Linda and the gifts they gave.

We continued to hold gifts in Wills awareness events online during 2021/22 due to COVID-19 restrictions. Three events were delivered: Celebrating your BirdTrack records, BTO's Youth Engagement Programme and Celebrating 10 Years of BTO Cymru. All three events were well attended and gave a special opportunity for guests to pose questions to BTO staff 'face-to-face'. We hope to begin to offer in person events later in 2022, COVID-19 permitting, as well as continuing to offer opportunities to attend online.

CORPORATE PARTNERSHIPS

This year, BTO has successfully raised funds through our partnership with Westland Horticulture and our Corporate Membership Scheme. Along with contributing vital funds towards our core work, Westland has helped raise awareness for the charity by displaying a wide range of BTO-endorsed goods throughout garden centres across the country, as well as providing several prizes for our spring raffle. Through their sister company, Marshalls, we received donations of wildflower seeds which are sent to the families of supporters who have passed away, to plant and attract birds and wildlife as a way to remember them.

If you would like to know more about any of the projects or how you might support our work, please contact: fundraising@bto.org

LAPWINGS : DAVID TIPLING / BIRDPHOTO.CO.UK

OUR SUPPORTERS

We are very grateful for the generous support that we have received, both in time and money, in the past year. In addition to members and other fieldworkers, there are many other individuals and companies who support our work with financial contributions. We are particularly pleased to acknowledge the following corporate and other supporters.

CORPORATE SUPPORTERS 2021/22

Anglian Water, Birding in Portugal, BirdGuides, Birdkind, Brinvale Bird Foods, CJ Wildbird Foods, Eddowes Aviation Safety Ltd., Gardman Ltd., Grant Arms Hotel, HR Wallingford Ltd., Natureguides, Northumbrian Water, Opticron, Outdoor Alternative, Roys of Wroxham, S. E. Marshall & Co. Ltd., Swallowtail Print, Swarovski UK Limited, Westland Horticulture Ltd.

CHARITABLE TRUSTS 2021/22

The British Birds Charitable Trust, Chapman Charitable Trust, Downton Banister Trust, The Dovehouse Trust, The D'Oyly Carte Charitable Trust, The Edinburgh Trust, Esmée Fairbairn Foundation, The Hugh Fraser Foundation, The Gilander Foundation, The Helen And Horace Gillman Trusts, The National Lottery Heritage Fund, Tasso Leventis Foundation, The Lizandy Charitable Trust, The Jack Patston Charitable Trust, The Penchant Foundation, Cecil Pilkington Charitable Trust, The Evelyn Rose Fund, Sandra Charitable Trust, The Saxham Trust, John Swire 1989 Charitable Trust, The Emily Weircroft Charitable Trust, The Whaites Charitable Fund.

LEGACIES 2021/22

Richard Allen, Peter Arbery, Dr Antony Robin Atherton, Yvonne Mary Rose Bishop, Linda Blenkinship, Gerard Burns, Gary Caine, Mary Kathleen Coates, Patricia Louise Collier, Ann Cotton, Jean Davis, Moira Duncan, Joan Margaret Edwards, Benjamin Flavel, Linton Gaunt, Joan Hollis, John Raymond Huntingford, Kathleen Joyce, Suzanne Kelsey, Margaret Kettlewell, Enid Marion Mercer, Stephen Metcalfe, Mrs E. M. Milton, Geoffrey Richard Moss, Peter Arthur Rawlins, John Ewart Rednall, Pamela Rhodes, Sarah Elisabeth Rowlands, Charles Edward Saxton, Marian Burr Smith, Kitty Southern, Jim Stevenson, Geoffrey William Stone, Sheila Mary Veronica Thompson, Wallace Thomas Thrower, Angela Triplett, Susie Diana Ullman, Dorothy Vincent, Michael John Welch.

IN MEMORIAM 2021/22

Myrna Anderson, Olga Andrews, Peter Arbery, Alwyn Arnold, Elaine Baker, Fran Bowman, Jill Bullock, Mr R. Bulman, Peter Catchpole, Heidi Chaterjee, John Claridge, James Cobb, Mary Crook, Allan Gaunt, David Harris, Mr Honour, Christine Hazel, Malcolm Higgin, Michael Holdsworth, Trevor Johnson, Sheila Mary Jones, Jane Kemp, Mary Kershaw, Frank Lowe, Paul Marshman, David Mason, Anne McKeever, Geoffrey Orton, Nicholas George Page, Helen Phipps, Lorraine Piercy, HRH Prince Philip, Duke of Edinburgh, Shane Robinson, Richard Simons, Mary Squires, Arthur John Welch, Peta Wright.

FUNDERS OF BTO WORK 2021/22

ABP Research & Consultancy, Agri-Food and Biosciences Institute (AFBI), APEM Ltd., Bat Conservation Trust, Bayer, Bookend Trust, Bureau Waardenburg bv, Butterfly Conservation, Cairngorms National Park Authority, Cambridge Conservation Initiative, UK Centre for Ecology & Hydrology, Chilterns Conservation Board, The Crown Estate, DAERA, Department of the Environment, Food and Rural Affairs, Department for Business, Energy and Industrial Strategy, Devon Wildlife Trust, DONG Energy, Duchy of Cornwall, EURING, European Commission, European Food Safety Authority, Forest Sciences Centre of Catalonia, Forestry England, Forestry & Land Scotland, Frankfurt Zoological Society, Galloper Wind Farm Ltd., Game & Wildlife Conservation Trust, Hartley Anderson Ltd., Heather Trust, Hepple Estate, Hi-Def Aerial Surveying Ltd., Institute of Avian Research, Interreg, John Neighbour, Joint Nature Conservation Committee (on behalf of the statutory nature conservation agencies: Natural England, Natural Resources Wales, NatureScot and the Department of the Environment Northern Ireland), Ken & Linda Smith, KPMG LLP, Mark Constantine, Moors for the Future, National Grid Hinkley, National Trust, Natural England, Natural Resources Wales, Natural Environment Research Council, NIRAS Consulting Ltd., North York Moors National Park Authority, Northern Ireland Environment Agency, ORSTED, Rifcon, Royal Society for the Protection of Birds, Scottish Government, NatureScot, Scottish Raptor Study Group, Scottish Ornithologists' Club, Sound Approach, Star of the Sea Windfarm, States of Guernsey, Swedish University of Agricultural Sciences, Tasso Leventis Foundation, Ulster Wildlife Trust, University of Cambridge, University of West England, University of East Anglia, University of Edinburgh, University of Exeter, University of Stirling, Vattenfall, WEG, Welsh Government, Wildfowl & Wetlands Trust, WOOD Environment & Infrastructure Solutions UK Ltd., Woodland Trust, Yorkshire Dales National Park Authority, Zoological Society of London.

CLOCKWISE FROM TOP LEFT: YOUNG LEADERS COURSE / BTO; YOUTH ADVISORY PANEL MEETING OUR PATRON / KENSINGTON PALACE; BTO YOUTH GET-TOGETHER : BTO; BTO/MARSH TRUST AWARDS : MARTIN SYLVESTER

Peer-review is an important process, establishing the validity of research through review by other expert researchers in the field. It also provides valuable feedback, enabling researchers to improve their papers before publication. BTO reports annually across a number of indicators relating to its scientific work; three of these relate to scientific publications, reflecting the quality of the publications being produced, their impact, and the degree to which the work has been delivered through collaboration.

During 2021 our staff produced 60 peer-reviewed papers, of which 47 were in ISI-listed journals and 22 were published in high impact publications (with an impact factor of 3.5 of greater). Twenty-one of the publications were BTO-led, and 53 were collaborative in nature, underlining the strong partnership approach to our work.

PHEASANT : EDMUND FELLOWES / BTO

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FINANCIAL OVERVIEW

The principal sources of funds continued to be contract research, membership subscriptions, individual donations and legacies. Record legacies of £1,464k (2021 £856k) were received in the year, and the expected bounce back in contract work also generated exceptional income. Voluntary income formed 43% of total group income for the year (2021 41%). We aim to raise this to over 50% in the longer term.

A total of £5,301k (2021 £4,544k) was spent during the year on carrying out, supporting and communicating ornithological research, with a significant increase in youth related work. An uptick in bond yields (and thereby the discount rate) meant a significant reduction in the present value of the defined benefit pension obligation. A periodic external evaluation of the Nunnery land and buildings also boosted the balance sheet, so that net assets returned to a positive total.

The Board has a free reserves target range of 3 to 4 months' running costs. These reserves are held against any unexpected falls in income or other unforeseen circumstances. Free reserves are total General funds less Tangible fixed assets. At 31 March 2022 these stood at £1,849k (2021: £1,068k), equivalent to 3.9 months' budgeted expenditure (2021: 2.5 months').

TRUSTEES' STATEMENT

These are summarised financial statements. To gain a full understanding of the financial affairs of the Trust please refer to the Annual Report and Financial Statements published on the BTO website, or request a printed copy from the Director of Finance & Services, BTO, The Nunnery, Thetford, Norfolk IP24 2PU.

The Annual Report and Financial Statements were approved by the Board on 1 August 2022 and will be submitted to the Registrar of Companies, the Charity Commission and the Office of the Scottish Charity Regulator.

The auditors have issued an unqualified report on the full financial statements and on the consistency of the Trustees' Report with those financial statements. Their report on the full financial statements contained no statement under sections 498(2)(a), 498(2)(b) or 498(3) of the Companies Act 2006.

SUMMARISED ACCOUNTS: 2021/22

	£'000	£'000
INCOME	**2021/22**	**2020/21**
Donations and legacies	3,334	2,539
Charitable activities	3,527	2,486
Other trading activities	970	956
Investments	1	3
Coronavirus Job Retention Scheme grants	10	203
Total income & endowments	**7,842**	**6,187**
EXPENDITURE	**2021/22**	**2020/21**
Raising funds	1,167	1,463
Charitable activities	5,301	4,544
Other - defined benefit pension scheme	104	120
Total expenditure	**6,572**	**6,127**
Net income / (expenditure)	1,270	60
Net gains on investments	18	95
Gain on revaluation of fixed assets	550	–
Actuarial gain/(loss) on defined benefit pension scheme	986	(519)
Net movement in funds	**2,824**	**(364)**
Total funds brought forward	(734)	(370)
Total funds carried forward	**2,090**	**(734)**
REPRESENTED BY	**2021/22**	**2020/21**
Fixed assets	2,908	2,343
Net current assets	3,059	1,800
Creditors due after one year	(100)	(83)
Defined benefit pension liability	(3,777)	(4,794)
	2,090	**(734)**

INDEPENDENT AUDITORS' STATEMENT TO THE MEMBERS OF THE BRITISH TRUST FOR ORNITHOLOGY

We have examined the Financial Overview for the year ended 31 March 2022 set out on page 46.

RESPECTIVE RESPONSIBILITIES OF THE TRUSTEES AND THE AUDITORS

The trustees are responsible for preparing the Strategic Report in accordance with applicable United Kingdom law.

Our responsibility is to report to you our opinion on the consistency of the Financial Overview within the Strategic Report with the full financial statements and the Trustees' Report, and its compliance with the relevant requirements of section 427 of the Companies Act 2006 and the regulations made thereunder.

We also read the other information contained in the Strategic Report and consider the implications for our report if we become aware of any apparent misstatements or material inconsistencies with the Financial Overview.

We conducted our work in accordance with Bulletin 2008/3 issued by the Auditing Practices Board. Our report on the company's full financial statements describes the basis of our opinion on those financial statements and on the Trustees' Report.

OPINION

In our opinion the Strategic Report is consistent with the full financial statements and the Trustees' Report of the British Trust for Ornithology for the year ended 31 March 2022 and complies with the applicable requirements of section 427 of the Companies Act 2006, and the regulations made thereunder.

Ensors Accountants LLP, Connexions, 159 Princes Street, Ipswich IP1 1QJ 10 August 2022

FIELDFARE : DAVID TIPLING / BIRDPHOTO.CO.UK

The British Trust for Ornithology
Board of Trustees and Management
2022

Patron	HRH The Duke of Cambridge	
President	F R Gardner OBE TD VR FRGS	
Board of Trustees		
Chair	Prof J A Gill	*2016-22*
Honorary Treasurer	I Packer FCA	*2016-22*
Chair of Finance & Risk Committee	J Spencer	*2015-22*
Chair of Governance & Nominations Committee	F M Hurst	*2013-22*
Chair of Regional Network Committee	Dr D M Parker	*2014-22*
Chair of Ringing Committee	Dr L Wright	*2022-25*
Ordinary Board Members	I Coucher	*2022-25*
	R du Feu	*2022-25*
	S J Marquis	*2020-23*
	Dr D J Reynolds	*2016-23*
	N A Sherwin	*2017-22*
Vice Presidents	Dr F Barclay	*2022-30*
	Prof S Bearhop	*2019-26*
	D C Jardine	*2020-27*
	Prof I P F Owens	*2016-23*

Finance & Risk Committee
Chair J Spencer; I Coucher; I Packer; Dr D J Reynolds.

Governance & Nominations Committee
Chair F M Hurst; Dr D M Parker; N Sherwin.

Regional Network Committee
Chair Dr D M Parker; C Gunn; A Jarratt-Knock; S Marquis; Dr D McGarvie; S Taylor; E Tigwell.

Ringing Committee
Chair Dr L Wright; S Bayley; L Clewley; R du Feu; P Kirmond; S Vickers; R Walsh; *Representatives*: H Land; A Phillips.

Senior Leadership Team
Chief Executive Officer Prof J Vickery;
Director of Science Dr J W Pearce-Higgins; *Director of Engagement* Dr D I P Evans; *Director of Finance & Services, Company Secretary* A T Scott ACIS; *Director of Information Services* G N Hatt; *Associate Director Country Offices* Dr C V Wernham; *Head of People and Organisational Development* S Knott.

The British Trust for Ornithology
Board of Trustees and Management
2022 - Continued

Past Presidents and Chairs

Presidents		*Chairs*	
1958-60	R C Homes	1933-39	The Right Hon. Lord Scone MP, 7th Earl of Mansfield and Mansfield
1961-64	C A Norris	1940-41	The Right Hon. Malcolm MacDonald MP
1965-68	R C Homes	1942-47	Dr A Landsborough Thomson CB OBE DSc
1969-72	I J Ferguson-Lees	1948	Dr E M Nicholson CB CVO
1973-76	R A O Hickling	1949	A W Boyd MC
1977-80	J M McMeeking MBE	1950	Sir Norman Kinnear
1981-84	S M Taylor	1951-56	Major-General H P W Houston
1985-89	J A Hancock OBE	1957	R C Homes
1990-93	R P Howard	1958-87	No Chair
1994-96	Sir William Wilkinson	1988-91	G H Green
1997-2001	Sir Frederick Holliday	1992-96	I C Castle
2002-05	Lord Blakenham	1996-2000	Dr H P Sitters
2006-13	Baroness Young of Old Scone	2001-04	A J Martin
2014-18	C G Packham	2005-08	Dr S Hunter
2019-	F R Gardner OBE TD VR FRGS	2009-13	Prof I Newton FRS OBE
		2014-16	Prof A D Fox
		2016-	Prof J A Gill

The British Trust for Ornithology
Staff List
As at 31 March 2022

CHIEF EXECUTIVE OFFICER
Prof Juliet Vickery
PA to the Chief Executive Officer: Nicki Read

SCIENCE
Director: Dr James Pearce-Higgins
PA / Senior Secretary: Nicki Read
Senior Secretary: Jane Chase

Associate Director – Research: Dr Rob Robinson (Secretary: Jane Chase)
Senior Research Fellow: Dr Stephen Baillie (Secretary: Jane Chase)

Terrestrial Ecology

Head & Principal Ecologist	Dr Gavin Siriwardena
Senior Research Ecologist	Dr Ian Henderson
Research Ecologist	Dr Greg Conway
Research Ecologist	Dr Kate Plummer*
Research Ecologist	Dr Joseph Cooper
Research Ecologist	Dr Hugh Hanmer
Research Ecologist	Dr Charlotte Ward
Research Ecologist	Maddie Barton
Research Ecologist	*Vacant*
Senior Research Officer	David Norfolk
Survey Assistant	John Worthington-Hill
Secretary	Maria Knight/Nicki Read

**based at Exeter University*

MONITORING
Demography

Head	Dr Dave Leech
Ringing Licensing and Sales	
Manager	Jez Blackburn
Licensing Data Manager	Nicola Bugg
Ringing Sales Officer	Anne Trewhitt
Ringing Data Management	
Ringing & Nest Records Process Manager	Bridget Griffin
Ringing Officer	Sabine Schäfer
Ringing Officer	Kevin Leighton
Demographic Monitoring Projects	
Demographic Surveys Officer	Lee Barber
Ringing & Nest Record Database Officer	Carl Barimore
Ringing & Nest Record Comms Officer	Ruth Walker
Scheme Administrator	Hazel McCambridge

Surveys

Head & National Survey Coordinator	Dawn Balmer
BirdTrack Organiser	Scott Mayson
BBS National Organiser	Sarah Harris
Engagement and Surveys Officer	David White
Wetland Bird Survey	
WeBS Manager	Dr Teresa Frost
Data Request Coordinator	Neil Calbrade
WeBS Counter Network Organiser	Gillian Birtles
Secretary	Maria Knight/Nicki Read

International Research

Head & Principal Ecologist	Dr Phil Atkinson
Senior Research Ecologist	Dr Chris Hewson
Senior Research Ecologist	Dr Adham Ashton-Butt
PhD student	Jen MacIsaac
Research Scientist	Máire Kirkland*
Secretary	Maria Knight/Nicki Read

**based at David Attenborough Building*

Monitoring Research

Principal Ecologist	Dr David Noble
Research Ecologist	Dr Ailidh Barnes
Research Ecologist	Dr Blaise Martay*

**based at BTO Scotland*

RESEARCH
Population Ecology & Modelling

Senior Ecological Statistician	Dr Philipp Boersch-Supan
Spatial Ecologist	Dr Jenni Border
Secretary	Jane Chase

Wetland & Marine Research

Head & Principal Ecologist	Dr Niall Burton
Senior Research Ecologist	Dr Graham Austin
Principal Ecologist - Offshore Renewable Energy	Dr Aonghais Cook
Principal Ecologist - Sea Birds	Dr Liz Humphreys*
Senior Research Ecologist	Dr Sam Franks
Research Ecologist	Dr Jacob Davies*
Research Ecologist	Ros Green**
Research Ecologist	Dr Nina O'Hanlon*
Research Ecologist - Offshore Renewable Energy	Christopher Pollock*
Senior Research Ecologist	Dr Chris Thaxter
Research Officer	Ian Woodward
Secretary	Maria Knight/Nicki Read

** based at BTO Scotland*
***undertaking PhD part time*

Data Science and Bioacoustics

Head & Principal Ecologist	Dr Simon Gillings
Senior Research Ecologist	Dr Stuart Newson
Research Ecologist	Dr Dario Massimino
Secretary	Jane Chase

The British Trust for Ornithology
Staff List
As at 31 March 2022 - Continued

BTO SCOTLAND

Associate Director Country Offices: Dr Chris Wernham
Senior Secretary: Rebecca Cranston

Senior Research Ecologist	John Calladine
Data and Admin. Officer	Anne Carrington-Cotton
Head of Development and Engagement	Dr Ben Darvill
Development and Engagement Officer	Steve Willis
Principal Ecologist - Sea Birds	Dr Liz Humphreys**
Research Ecologist	Dr Blaise Martay*
Research Ecologist	Dr Mark Wilson
Research Ecologist	Dr Gary Clewley
Research Ecologist	Dr Daniel Johnston
Research Ecologist	Peadar O'Connell
Research Ecologist/ Offshore Renewable Energy	Christopher Pollock**
Research Ecologist	Anthony Wetherhill
Research Ecologist	Dr Jacob Davies**
Research Ecologist	Dr Nina O'Hanlon**
Scottish Raptor Monitoring Coordinator	Dr Amy Challis
Wader Project Officer	Paul Noyes

**Monitoring Research Team*
*** Wetland & Marine Team*

BTO CYMRU

Senior Ecologist	Dr Rachel Taylor
Research Ecologist	Dr Katharine Bowgen
Research Ecologist	Dr Callum Macgregor
Development Coordinator	Kelvin Jones

BTO NORTHERN IRELAND

Northern Ireland Officer	Stephen Hewitt
Scientific Officer	Dr Katherine Booth Jones

INFORMATION SYSTEMS

Director IS: Graham Hatt
Senior Secretary: Jane Chase

Senior Database Officer	Dr Andrew Joys
Database Developer	Steve Pritchard
Database Developer	Justin Walker
Database Developer	Charlotte Clark
Website Manager	*Vacant*
Website Developer	Tom Sage
Website Developer	Daniel Higgins
Senior Software Developer	Mark Hammond
Senior Software Developer	Matthew Baxter
Software Developer	Oliver Barrett
Junior Software Developer	Ewan Stacey
Junior Software Developer	Hayden Woods
Senior Systems Manager	Ben Brooke
Computing Support Officer	Dom Render
Business Analyst	Dave Turvey

PORZANA

Business Director	David Agombar
Business Manager	Shane Muggridge
Production Assistant	Alex Court
Production Assistant	Philippa Elson
Production Assistant	Elaine Ennis
Production Assistant	Lucy Willsher

ENGAGEMENT

Director of Engagement: Dr Ieuan Evans

Engagement & Fundraising

Head of Income Generation	Mike Naidu
Senior Supporter Administrator	Sam Graham
Supporter Development Officer	Caroline Foot
Supporter Administrator	Samantha Culverhouse
Supporter Administrator	Amanda Gee
Trust & Foundation Fundraising Manager	Bonita Johnston
Legacy Manager	Sam Rider
Fundraising Administrator	Jessica Hooks
Major Giving Officer	David Agombar
Digital Marketing Manager	Jon Boardman
GBW Manager	Dr Michelle Reeve
GBW Supporter Development Officer	Robert Jaques

Communications

Head of Communications	Mike Toms
Media Manager	Tom Stewart
Media Manager	Paul Stancliffe
Science Communications Manager	Dr Viola Ross-Smith
Social Media Officer	Tom Stewart
Website Editor	Miriam Lord
BTO Archivist	Lesley Hindley

Training

Training Manager	Nick Moran
Training Officer	Emily Cuff

Youth Engagement

Youth Engagement Manager	Faye Vogely
Youth Engagement Officer	Anna Dupont
Youth Engagement Coordinator	Chris Marais

FINANCE & SERVICES

Director: Andrew Scott

Accounts & Facilities

Financial Accountant / Facilities Manager	Mary Gray
Management Accountant	Irene Bowles
Finance Assistant	Terri-Louise Montgomery
General Sales Officer / Admin. & Finance Assistant	Sonya Calder
Admin. Assistant	Diane Bragg
Facilities Officer	Pat Sparkes
Receptionist	Ronnie Hatt

Human Resources

Head of People and Organisational Development	Sian Knott
People and Projects Officer	Holly Stevenitt
People, Health and Safety Officer	Cheryl Wilson

Research Support

Resource Manager	Virginia Cates
Research Support Administrator	Sandra Sparkes
Research Support Officer	Penny Mitchell
Research Support Officer	Heidi Mellan
Research Support Officer	Dean McFarlane
Nunnery Lakes Site Manager	Ian Henderson

The British Trust for Ornithology
Trustees' Annual Report (incorporating the Strategic Report)
For the Year Ended 31 March 2022

For the purposes of Section 162 of the Charities Act 2011 and the Directors' Report for the purposes of Section 415 of the Companies Act 2006.

Company number:	00357284 (England and Wales)
Charity number:	216652 (England and Wales) SC039193 (Scotland)
Registered Office:	The Nunnery, Thetford, Norfolk IP24 2PU
Principal Advisers:	
Auditors	Ensors Accountants LLP, Connexions, 159 Princes Street, Ipswich IP1 1QJ
Principal Bankers	National Westminster Bank plc, 7 Cornhill, Bury St Edmunds, Suffolk IP33 1BQ
	The Royal Bank of Scotland plc, 2 Blenheim Place, Edinburgh EH7 5JH
Solicitors	Browne Jacobson LLP, Castle Meadow Road, Nottingham NG2 1BJ
Pensions Advisers	Russell Ulyatt Financial Services Ltd, 1 The Triangle, ng2 Business Park, Nottingham NG2 1AE
Investment Advisers	Russell Ulyatt Financial Services Ltd, 1 The Triangle, ng2 Business Park, Nottingham NG2 1AE
Insurance Brokers	Uttings Insurance Brokers, 16 The Fairland, Hingham, Norwich, Norfolk NR9 4HN

The members of the Board are the directors of the charitable company under company law and the trustees for the purpose of charity law. Those serving during the year were as follows:

Dr I P Bainbridge
Dr F Barclay
Mr I Coucher
Mr R du Feu
Professor J A Gill
Ms S R R Guy
Dr S Hunter
Ms F M Hurst
Mr S J Marquis
Mr I Packer
Dr D M Parker
Dr D J Reynolds
Mr N A Sherwin
Mrs J Spencer
Dr L Wright

Structure, Governance and Management

Governing Document

The British Trust for Ornithology (known generally as the BTO) is a company limited by guarantee governed by its Memorandum and Articles of Association. It is registered as a charity with the Charity Commission and the Office of the Scottish Charity Regulator. Membership is open to any person whose application is approved by the Board upon payment of the requisite subscription. Members undertake to contribute up to £1 each in the event of an insolvent winding up, which represents the limit of their guarantee.

Trustees

Trustees are nominated by the Board, on the recommendation of the Governance and Nominations Committee, following open advertisement, or by members and elected by the members at the Annual General Meeting each year, to serve from the following 1 January. The normal term of office is four years, with a limit of two consecutive terms. New trustees receive a comprehensive information pack and undergo induction to brief them on the BTO and their role as company directors and trustees.

Organisation and Key Management Remuneration

The Board of Trustees is the governing body of the BTO. It meets at least four times a year. The Board is supported by the Finance & Risk Committee, Governance & Nominations Committee, Regional Network Committee and Ringing Committee. The day-to-day operational management of the BTO is delegated to the Senior Leadership Team, led by the Chief Executive Officer (CEO).

The salary of the CEO is determined by the Board on the basis of comparability to relevant benchmarks. The remuneration of all other staff is set according to a bespoke job evaluation scheme, benchmarked to the Croner Charity Rewards database. All salaries are subject to annual cost of living review. There is no bonus scheme.

The British Trust for Ornithology
Trustees' Annual Report (incorporating the Strategic Report) - Continued
For the Year Ended 31 March 2022

Related Parties

The BTO's wholly owned subsidiary, BTO Services Ltd, was established to undertake commercial activities to support the work of the BTO, and gifts its profits to the Trust. On 30 August 2017 BTO Services Ltd acquired the ring manufacturer Porzana Ltd. The net assets and activities of Porzana Ltd were subsequently hived up to BTO Services Ltd and it then became dormant. On 15 November 2019 BTO Services Ltd incorporated BTO Consulting Ltd which company is dormant. 'Porzana' and 'BTO Consulting' are trading names of BTO Services Ltd.

The BTO co-operates with many other charities, with government agencies and other bodies in pursuit of its objectives, as illustrated in Parts A and B of this document .

Volunteers

The Trust depends on the contributions of many thousands of volunteers who participate in BTO surveys and other activities. We are greatly indebted to them, and especially to the Regional Representatives and other regional volunteers who organise so much BTO activity at a local level. BTO volunteers contributed the equivalent of approximately 274,250 days of work in calendar year 2021 (2020: 255,500 days).

Risk Management

A risk register is maintained which identifies the significant risks faced by the BTO and the measures in place to manage and mitigate those risks. These are monitored by the Senior Leadership Team and regularly reviewed and amended as appropriate by the Finance & Risk Committee and the Board.

Fundraising Standards

BTO is registered with the Fundraising Regulator and follows the Fundraising Regulator's Code of Fundraising Practice. All fundraising from individual giving is undertaken by BTO staff, and during the year we used the services of a specialist consultancy to help us research and approach charitable trusts and foundations. We have not received any complaints regarding our fundraising practices. We take all reasonable steps to treat supporters fairly and transparently, especially if we believe they may be in a vulnerable position.

Investments

The Memorandum of Association permits the Trust to invest monies not immediately required for its purposes as the trustees see fit. The trustees' investment policy is to maximise long term total return by investing in a combination of 40% high quality short dated bonds and 60% globally diversified equities. The equities part of the portfolio is invested in a sustainable fund (see Note 10). Investment performance against benchmark was as follows:

	Portfolio	**Benchmark**
Year ended 31 March 2022	+3.93%	+6.79%
Since inception (28 August 2014)	+68.10%	+67.92%

Objectives and Activities

Charitable Objects

The objects of the Trust, as set out in its Memorandum of Association are, for the benefit of the nation:

(i) To promote, organise, carry on and encourage study and research and particularly field work for the advancement of knowledge in all branches of the Science of Ornithology.

(ii) Permanently to preserve and protect lands and objects which by their natural features are suitable for the preservation and study of bird life and of fauna and flora generally.

The British Trust for Ornithology
Trustees' Annual Report (incorporating the Strategic Report) - Continued
For the Year Ended 31 March 2022

Public Benefit

The trustees have complied with the duty in Section 17 of the Charities Act 2011 to have due regard to public benefit guidance published by the Charity Commission. The following paragraphs set out in detail the aims, activities and performance of the Trust, and the way in which they provide public benefit.

Objectives and Activities

The BTO's purpose and public benefit is to deliver objective information and advice, through undertaking impartial research and analysis about birds, other wildlife and habitats, to advance the understanding of nature. We inform policies and evidence-based decisions that impact on the environment such that future generations can benefit from a healthy and wildlife-rich environment. The BTO does this by:

- Sustaining long-term extensive programmes and smaller scale intensive research to study the population trends, movements, breeding, survival, ecology and behaviour of wild birds;
- Encouraging, enthusing, training and supporting volunteers to take part in scientific studies;
- Bringing together professional scientists and volunteer birdwatchers in surveys of wildlife (particularly, but not exclusively, birds); and
- Analysing the data gathered through these studies, making information available to Government and other bodies, and publishing the results in the primary scientific literature and via the internet, the birdwatching and conservation press and the media more generally.

Strategic Report

The Strategic Report (Achievements and Performance, Plans for Future Periods) is contained in Part A of this document.

Principal Risks and Uncertainties

The trustees consider that the principal risks and uncertainties which could affect BTO's ability to deliver its objectives in the short term are public expenditure reductions leading to reduced contract, grant and partnership funding, and in the medium to long term, inflation and the final salary pension scheme deficit. These are able to be mitigated through the continued growth strategy and careful cash management.

Financial Review

The Directors' Report, the consolidated financial statements and the accompanying notes thereto comprise Part B of this document.

The principal sources of funds continued to be contract research, membership subscriptions, individual donations and legacies. Record legacies of £1,464k (2021 £856k) were received in the year, and the expected bounce back in contract work also generated exceptional income. Voluntary income formed 43% of total group income for the year (2021 41%). We aim to raise this to over 50% in the longer term.

A total of £5,301k (2021 £4,544k) was spent during the year on carrying out, supporting and communicating ornithological research, with a significant increase in youth related work.

An uptick in bond yields (and thereby the discount rate) meant a significant reduction in the present value of the defined benefit pension obligation. A periodic external evaluation of the Nunnery land and buildings also boosted the balance sheet, so that net assets returned to a positive total.

Reserves

The Board has a free reserves target range of 3 to 4 months' running costs. These reserves are held against any unexpected falls in income or other unforeseen circumstances. Free reserves are total General funds less Tangible fixed assets. At 31 March 2022 these stood at £1,849k (2021: £1,068k), equivalent to 3.9 months' budgeted expenditure (2021: 2.5 months').

The British Trust for Ornithology
Trustees' Annual Report (incorporating the Strategic Report) - Continued
For the Year Ended 31 March 2022

Statement of Board Members' Responsibilities

The Board members are responsible, as Directors of the Company, for preparing the Annual Report (including the Strategic Report) and the financial statements in accordance with applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

Company law requires the Board members to prepare financial statements for each financial year, which give a true and fair view of the state of affairs of the charitable company and the group at the year end and of the incoming resources and application of resources, including the income and expenditure, of the charitable company and the group for the year.
In preparing these financial statements, Board members are required to:

- select suitable accounting policies and then apply them consistently;
- observe the methods and principles in SORP (FRS 102);
- make judgements and estimates that are reasonable and prudent;
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements; and
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the charitable company and the group will continue in operation.

Board members are responsible for keeping adequate accounting records that disclose with reasonable accuracy at any time the financial position of the charitable company and the group and enable them to ensure that the financial statements comply with the Companies Act 2006, the Charities and Trustee Investment (Scotland) Act 2005 and the Charities Accounts (Scotland) Regulations 2006 (as amended). They are also responsible for safeguarding the assets of the charitable company and the group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Board members are responsible for the maintenance and integrity of the corporate and financial information included on the Trust's website. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

In so far as Board members are aware:

- there is no relevant audit information of which the Trust's auditors are unaware; and
- Board members have taken all steps that they ought to have taken to make themselves aware of any relevant audit information and to establish that the auditors are aware of that information.

Auditors

A resolution to re-appoint Ensors Accountants LLP as auditors will be proposed at the Annual General Meeting under section 485 of the Companies Act 2006.

The Trustees' Report (incorporating the Strategic Report) was approved by the Board as Directors and Trustees and authorised for issue on 1 August 2022.

Prof J A Gill
Chairman

I Packer FCA
Honorary Treasurer

Opinion

We have audited the financial statements of The British Trust for Ornithology (the 'parent charitable company') and its subsidiaries (the 'group') for the year ended 31 March 2022 which comprise the Consolidated Statement of Financial Activities, the Charity Statement of Financial Activities, the Consolidated Group and Charity Balance Sheets, the Consolidated Statement of Cash Flows, and notes to the financial statements, including a summary of significant accounting policies. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice) including FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" (United Kingdom Generally Accepted Accounting Practice).

In our opinion the financial statements:

- give a true and fair view of the state of the group's and the parent charitable company's affairs as at 31 March 2022 and of the group's and the parent charitable company's incoming resources and application of resources, including its income and expenditure for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Companies Act 2006, the Charities and Trustee Investment (Scotland) Act 2005 and regulations 6 and 8 of the Charities Accounts (Scotland) Regulations 2006 (as amended).

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the Auditors' responsibilities for the audit of the financial statements section of our report. We are independent of the group and parent charitable company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Conclusions relating to going concern

In auditing the financial statements, we have concluded that the trustees' use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work we have performed, we have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the group or parent charitable company's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

Our responsibilities and the responsibilities of the trustees with respect to going concern are described in the relevant sections of this report.

Other information

The other information comprises the information included in the annual report other than the financial statements and our auditors' report thereon. The trustees are responsible for the other information contained within the annual report. Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon. Our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the course of the audit, or otherwise appears to be materially misstated. If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether this gives rise to a material misstatement in the financial statements themselves. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact

We have nothing to report in this regard.

Opinion on other matter prescribed by the Companies Act 2006

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the Strategic Report and the Board Report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- the Strategic Report and the Board Report have been prepared in accordance with applicable legal requirements.

Matters on which we are required to report by exception
In the light of our knowledge and understanding of the company and its environment obtained in the course of the audit, we have not identified material misstatements in the Strategic Report and the Board Report.

We have nothing to report in respect of the following matters where the Companies Act 2006 and the Charities Accounts (Scotland) Regulations 2006 (as amended) require us to report to you if, in our opinion:

- adequate accounting records have not been kept by the parent charitable company, or returns adequate for our audit have not been received from branches not visited by us; or
- the parent charitable company's financial statements are not in agreement with the accounting records or returns; or
- certain disclosure of trustees' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Responsibilities of Board Members
As explained more fully in the Statement of Board Members' Responsibilities set out on page B9, the trustees (who are also the directors of the British Trust for Ornithology for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the trustees determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the trustees are responsible for assessing the group's and parent charitable company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the trustees either intend to liquidate the group or the parent charitable company or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements
Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Irregularities, including fraud, are instances of non-compliance with laws and regulations. We design procedures in line with our responsibilities, outlined above, to detect material misstatements in respect of irregularities, including fraud. The extent to which our procedures are capable of detecting irregularities, including fraud, is detailed below.

Our audit was designed, after obtaining sufficient and appropriate knowledge and understanding of the group and parent charitable company, its charitable nature, its income streams and the industry operated within. We undertook an assessment of the control environment and the systems and procedures put in place by the senior management team, combined with our detailed audit testing and supportive analytical work, to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement due to fraud. Our work has included considering areas of higher risk of fraud, including transactions with related parties, revenue recognition and areas where there is a risk of management override of systems and controls.

To address the risk of fraud we performed the following audit procedures:

- Assessment of key accounting estimates within the financial statements in order to assess their reasonableness and determine whether there is any bias in management's estimates.

- All team members were informed of the relevant laws and regulations and potential fraud risks at the planning stage and reminded to remain alert to any indications of fraud or non-compliance.

- Enquiring of management whether there have been any alleged, suspected or actual instances of fraud during the year.

- Enquiring of management and those charged with governance whether there have been any actual or potential litigation or claims.

- Reviewing correspondence with relevant legal authorities.

- Reviewing legal expense accounts for any indicators of litigation or claims.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditors' report.

Use of our report
This report is made solely to the charitable company's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006 and to the charitable company's trustees, as a body, in accordance with section 44(1) (c) of the Charities and Trustee Investment (Scotland) Act 2005 and regulation 10 of the Charities Accounts (Scotland) Regulations 2006 (as amended). Our audit work has been undertaken so that we might state to the charitable company's members and its trustees those matters we are required to state to them in an auditors' report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the charitable company, the charitable company's members as a body and its trustees as a body, for our audit work, for this report, or for the opinions we have formed.

10 August 2022

Helen Rumsey, Senior Statutory Auditor
For and on behalf of
Ensors Accountants LLP
Connexions
159 Princes Street
Ipswich IP1 1QJ

The British Trust for Ornithology
Consolidated Statement of Financial Activities (Including Income and Expenditure Account)
for the Year Ended 31 March 2022

	Note	Unrestricted Funds £'000	Restricted Funds £'000	Total 2022 £'000	Total 2021 £'000
Income and endowments from:					
Donations and legacies	3	2,873	461	**3,334**	**2,539**
Charitable activities	3	3,501	26	**3,527**	**2,486**
Other trading activities	3	970	-	**970**	**956**
Investments	3	1	-	**1**	**3**
Coronavirus Job Retention Scheme grants		10	-	**10**	**203**
Total income and endowments		**7,355**	**487**	**7,842**	**6,187**
Expenditure on:					
Raising funds	4	1,159	8	**1,167**	**1,463**
Charitable activities	4	4,718	583	**5,301**	**4,544**
Other – Amounts recognised as expenditure on defined benefit pension scheme	22	104	-	**104**	**120**
Total expenditure	7	**5,981**	**591**	**6,572**	**6,127**
Net income/(expenditure) before net gain/(loss) on investments		**1,374**	**(104)**	**1,270**	**60**
Net gain/(loss) on investments	10	18	-	**18**	**95**
Net income/ (expenditure)	19	**1,392**	**(104)**	**1,288**	**155**
Transfers between funds	16,17	25	(25)	**-**	**-**
Other recognised gains/(losses): Gain on revaluation of fixed assets	9	550	-	**550**	-
Actuarial gain/(loss) on defined benefit pension scheme	22	986	**-**	**986**	**(519)**
Net movement in funds		**2,953**	**(129)**	**2,824**	**(364)**
Reconciliation of funds					
Total funds brought forward	16,17	(1,828)	1,094	(734)	(370)
Total funds carried forward	16,17	**1,125**	**965**	**2,090**	(734)

The Statement of Financial Activities includes all gains and losses recognised during the year.
All income and expenditure derives from continuing activities.

The notes on pages B17 to B36 form part of these financial statements.

The British Trust for Ornithology
Charity Statement of Financial Activities (Including Income and Expenditure Account)
for the Year Ended 31 March 2022

	Note	Unrestricted Funds £'000	Restricted Funds £'000	Total 2022 £'000	Total 2021 £'000
Income and endowments from:					
Donations and legacies	3	3,199	461	**3,660**	**2,766**
Charitable activities	3	3,501	26	**3,527**	**2,486**
Other trading activities	3	461	-	**461**	**447**
Investments	3	1	-	**1**	**3**
Coronavirus Job Retention Scheme grants		10		**10**	**203**
Total income and endowments		**7,172**	**487**	**7,659**	**5,905**
Expenditure on:					
Raising funds	4	976	8	**984**	**1,181**
Charitable activities	4	4,718	583	**5,301**	**4,544**
Other – Amounts recognised as expenditure on defined benefit pension scheme	22	104	-	**104**	**120**
Total expenditure		**5,798**	**591**	**6,389**	**5,845**
Net income/(expenditure) before net gain/(loss) on investments		**1,374**	**(104)**	**1,270**	**60**
Net gain/(loss) on investments	10	18	-	**18**	**95**
Net income/ (expenditure)	19	**1,392**	**(104)**	**1,288**	**155**
Transfers between funds	16,17	25	(25)	**-**	**-**
Other recognised gains/(losses):					
Gains on revaluation of fixed assets	9	550	**-**	**550**	**-**
Actuarial gain/(loss) on defined benefit pension scheme	22	986	-	**986**	**(519)**
Net movement in funds		**2,953**	**(129)**	**2,824**	**(364)**
Reconciliation of funds					
Total funds brought forward	16,17	(1,828)	1,094	(734)	(370)
Total funds carried forward	16,17	**1,125**	**965**	**2,090**	**(734)**

The Statement of Financial Activities includes all gains and losses recognised during the year.
All income and expenditure derives from continuing activities.

The notes on pages B17 to B36 form part of these financial statements.

The British Trust for Ornithology
Consolidated Group and Charity Balance Sheets
as at 31 March 2022

	Note	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Fixed assets					
Tangible assets	9	2,445	1,898	2,445	1,898
Investments	10	463	445	463	445
		2,908	2,343	2,908	2,343
Current assets					
Stocks	11	293	279	-	-
Debtors	12	1,346	1,558	1,582	1,774
Cash at bank and in hand		3,799	2,318	3,671	2,190
		5,438	4,155	5,253	3,964
Creditors:					
Amounts falling due within one year	13	(2,379)	(2,355)	(2,194)	(2,164)
Net current assets		3,059	1,800	3,059	1,800
Total assets less current liabilities		5,967	4,143	5,967	4,143
Creditors:					
Amounts falling due after one year	14	(100)	(83)	(100)	(83)
Net assets excluding defined benefit pension liability		5,867	4,060	5,867	4,060
Defined benefit pension liability	22	(3,777)	(4,794)	(3,777)	(4,794)
Net assets/(liabilities) including defined benefit pension liability	18	2,090	(734)	2,090	(734)
Represented by:					
Restricted funds	16	965	1,094	965	1,094
Unrestricted funds excluding Pension reserve	17	4,902	2,966	4,902	2,966
Pension reserve	17	(3,777)	(4,794)	(3,777)	(4,794)
Total funds	18	2,090	(734)	2,090	(734)

Approved by the Board and authorised for issue on 1 August 2022 and signed on its behalf by:

Chair  Prof J A Gill

Honorary Treasurer  I Packer FCA

Company registration number 00357284

The notes on pages B17 to B36 form part of these financial statements.

The British Trust for Ornithology
Consolidated Statement of Cash Flows
For the Year Ended 31 March 2022

	Note	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Net cash inflow / (outflow) from operating activities	19	1,506	391	1,506	369
Cash flow from investing activities					
Payments to acquire tangible fixed assets	9	(26)	(25)	(26)	(25)
Investment income received		1	3	1	3
Net cash flow from investing activities		(25)	(22)	(25)	(22)
Net increase in cash for the year		1,481	369	1,481	347
Cash at bank and in hand at 1 April		2,318	1,949	2,190	1,843
Cash at bank and in hand at 31 March		3,799	2,318	3,671	2,190

Analysis of Cash at Bank and in Hand This comprises:	**2022** £'000	**2021** £'000	**2022** £'000	**2021** £'000
Bank current accounts and cash in hand	164	370	36	242
Bank deposits	3,635	1,948	3,635	1,948
Cash at bank and in hand at 31 March	3,799	2,318	3,671	2,190

Bank deposits carry variable rates of interest.

The notes on pages B17 to B36 form part of these financial statements.

The British Trust for Ornithology
Notes to the Consolidated Financial Statements
For the Year Ended 31 March 2022

1. ACCOUNTING POLICIES

a) Accounting Convention

The charity constitutes a public benefit entity as defined by FRS 102. The financial statements have been prepared in accordance with *Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102)* (SORP (FRS102)) effective 1 January 2019, the Charities Act 2011, the Companies Act 2006 and UK Generally Accepted Practice as it applies from 1 January 2015.

The financial statements are prepared in pounds sterling (rounded to the nearest thousand) which is the functional currency of the charitable company and the group.

The charity operates on a weekly basis and the Financial Statements have been made up to 27 March 2022, being the last Sunday in March.

b) Going Concern

The trustees have prepared the financial statements on a going concern basis under the historical cost convention, modified to include certain items at fair value. In their opinion the pension scheme deficit does not give rise to material uncertainties that could cast doubt upon the appropriateness of this policy.

c) Group Financial Statements

These financial statements consolidate the results of the charity and its wholly owned trading subsidiary BTO Services Limited on a line by line basis.

d) Income

Income from donations, gifts and legacies is recognised immediately when received in cash and as receivable where there is entitlement, the amount can be measured reliably, and it is probable that the income will be received.

Income from charitable activities includes income receivable under contracts which is recognised as earned as the related work is performed. Income from grant funding supporting charitable activities is recognised where there is entitlement, certainty of receipt, and the amount can be measured with sufficient reliability.

Income is deferred when it is received in advance of the services it relates to. Life membership income is released to the Statement of Financial Activities in equal instalments over ten years.

Income from commercial activities of the trading subsidiary is recognised as earned as the related goods and services are provided.

Investment income, sponsorship and royalty income and membership subscription income are recognised on a receivable basis.

Income from Coronavirus Job Retention Scheme grants is recognised on a receivable basis.

e) Expenditure

Expenditure is recognised when a liability is incurred. Costs are allocated directly to activity cost categories. The cost of holiday pay not taken at the year end is accrued.

Costs of raising funds are those incurred in attracting voluntary income, including membership subscriptions, in carrying out trading activities, and in receiving royalties and sponsorship income.

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

Costs of charitable activities include those incurred on scientific research contracts, and on allocated and restricted fund research work. They also include volunteer surveyor support and science communication costs.

Governance costs include those incurred in the governance of the charity and the safeguarding of its assets, and are primarily associated with constitutional and statutory requirements.

Support costs include central functions and have been allocated to activity cost categories on a staff cost basis.

f) Expenditure (continued)

VAT is reclaimed on allowable expenses under the Business/Non-Business and the partial exemption rules. Where not reclaimable it is included within expenses.

g) Tangible Fixed Assets

Individual assets costing £1k or more are initially capitalised at cost. Tangible fixed assets (except freehold property and land) are depreciated on a straight line basis over their estimated useful lives as follows:

Asset Category	Annual Rate
Furniture and Equipment	25%
Computer Equipment	25%
Motor Vehicles	25%

The freehold property and land are stated at fair value under the revaluation model using sufficiently regular revaluations to ensure that the carrying amount does not differ materially from the fair value at the reporting date. Revaluations are performed every five years, or as the trustees consider necessary, by qualified external valuers. The increase or decrease on revaluation is credited or charged to the fund holding the asset.

At each reporting end date, the trustees review the carrying amounts of the tangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any).

h) Investments

Investments are recognised initially at fair value which is normally the transaction price excluding transaction costs. Subsequently, they are measured at fair value with changes recognised in 'Net gain/(loss) on investments' in the Statement of Financial Activities if the shares are publicly traded or their fair value can otherwise be measured reliably. Other investments are measured at cost less impairment.

i) Stock

Stock is valued at the lower of cost and net realisable value. Net realisable value is based on estimated selling price less further costs to completion and sale. Cost is calculated on a first in first out basis.

j) Debtors and creditors falling due within one year

Debtors and creditors with no stated interest rate and falling due within one year are recorded at transaction price. Any losses arising from impairment are recognised in expenditure.

k) Financial instruments

The group only has financial assets and liabilities that qualify as basic financial instruments, such as debtors and creditors with no stated interest rate and payable within one year, which are recorded at transaction price. Any losses arising from impairment are recognised as expenditure in the Statement of Financial Activities.

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

l) Foreign Currency Translation

Monetary assets and liabilities denominated in foreign currencies are translated into pounds sterling at the rates of exchange ruling at the balance sheet dates. Transactions in foreign currencies are recorded at the rate ruling at the transaction date. All exchange differences are taken to the Statement of Financial Activities.

m) Funds Structure

The Trust has a number of restricted funds to account for situations where funds have been raised for a specific purpose. All other funds are unrestricted funds. Where the trustees intend to use part of the unrestricted funds to provide longer-term funding for BTO projects and core activities, designated funds are set up to reflect this. A Pension reserve fund has been created so that movements and balances relating to the defined benefit pension scheme valuations can be separately identified. The funds in each of these categories are disclosed in Notes 17 and 18.

n) Retirement Benefits

The defined benefit pension scheme provides benefits for staff based on final pensionable salary. The scheme was closed to future accrual with effect from 1 April 2013. The assets of the scheme are held separately from those of the Trust, being invested with independent fund managers and are measured at fair value with changes recognised in the Statement of Financial Activities as set out in Note 21. Defined benefit pension liabilities are measured using the projected unit cost method and discounted at the current rate of return on a high quality corporate bond of equivalent term and currency to the liability. Under FRS 102, any net liability arising based on these valuations is the best estimate of the present value of the actual amounts to be paid out of the scheme, less the fair value of the scheme assets. The net of the interests on the scheme assets and liabilities is charged to the Statement of Financial Activities. Past service costs are recognised as expenditure when a liability is incurred and are charged to the Statement of Financial Activities. Actuarial gains and losses are recognised in the Statement of Financial Activities.

The Trust as employer also makes payments in respect of employees' own defined contribution schemes, through a group self-invested personal pension arrangement. For these schemes, the amount charged to the Statement of Financial Activities in respect of pension costs is the contributions payable in the year. Differences between contributions payable in the year and contributions actually paid are included as either accruals or prepayments in the balance sheet.

o) Judgements and key sources of estimation uncertainty

In the application of the group and parent charitable company's accounting policies, the trustees are required to make judgements, estimates and assumptions about the carrying amount of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the year in which the estimate is revised where the revision affects only that year, or in the year of the revision and future years where the revision affects both the current and future years.

Key sources of estimation uncertainty
The estimates and assumptions which have a significant risk of causing a material adjustment to the carrying amount of assets and liabilities are as follows:

Percentage completion on contracts
The degree of completion on the contracts is an estimate by the relevant project manager. This estimate relies on their professional opinion on the level of work completed in the whole contract, which impacts the level of income recognised, accrued and deferred. These estimates are reviewed by the Senior Leadership Team on a regular basis.

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

Defined benefit pension scheme

The group has a defined benefit pension scheme which is closed to future accrual. The valuation of the defined benefit pension obligation necessarily involves a calculation which depends on the expected future outflow of economic
benefits that the group expects to make to satisfy this obligation. The calculation depends on a number of factors such as the methodology, discount rate and mortality assumptions used. The group use a qualified independent actuary to assist in preparing the necessary calculation in accordance with the requirements of FRS102.

Property valuation
The Nunnery is valued at fair value by the directors with reference to recent property transactions and their knowledge of the site. The directors obtain third party valuations of property at regular intervals to ensure that the fair value of these properties is kept up to date.

p) Leases
Rentals payable under operating leases, including any lease incentives received, are charged to profit or loss on a straight line basis over the term of the relevant lease except where another more systematic basis is more representative of the time pattern in which economic benefits from the leased asset are consumed.

q) Employee benefits
The costs of short-term employee benefits are recognised as a liability and an expense unless those costs are required to be recognised as part of the cost of stock or fixed assets. The cost of any unused holiday entitlement is recognised in the year in which the employee's services are received. Termination benefits are recognised immediately as an expense when the charity is demonstrably committed to terminate the employment of an employee or to provide termination benefits.

r) Cash at bank and in hand
Cash at bank and in hand are basic financial assets and includes cash in hand, deposits with banks, other short-term liquid investments with original maturities of three months or less, and bank overdrafts.

2. MEMBERS' LIABILITY

Under the Memorandum of Association of the Trust, members are required to undertake to contribute to the assets of the Trust in the event of its being wound up while they are members, and within one year after they cease to be members, for payment of the debts and liabilities of the Trust contracted whilst they were still members, and of the costs, charges and expenses of winding up, such amount as may be required but not exceeding £1 each. This represents the limit of their guarantee to the company.

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

3. ANALYSIS OF INCOME

	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Donations and legacies				
Membership subscriptions & donations	1,094	960	1,094	960
Individual donations	584	438	584	438
Corporate & trust donations & grants	192	285	518	512
Legacies	1,464	856	1,464	856
	3,334	2,539	3,660	2,766
Charitable activities				
Core surveys - JNCC Partnership	837	804	837	804
Core surveys - Other	42	45	42	45
Other surveys & research - Voluntary funded	29	9	29	9
Other surveys & research - Contract funded	2,404	1,487	2,404	1,487
Research communication	76	76	76	76
General volunteer survey support	118	38	118	38
Nunnery Lakes Reserve	21	27	21	27
	3,527	2,486	3,527	2,486
Other trading activities				
Ringing & tagging sales	506	436	-	-
Publications & general sales	37	85	-	-
Corporate sponsorship & royalties	53	53	-	-
Consultancy	247	254	-	-
Data-related sales	125	121	-	-
Other	2	7	1	6
Income from charges to subsidiary	-	-	460	441
	970	956	461	447
Investment income				
Bank interest receivable	1	3	1	3

Analysis by fund type	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Donations and legacies				
Unrestricted	2,873	2,224	3,199	2,451
Restricted	461	315	461	315
	3,334	2,539	3,660	2,766
Charitable activities				
Unrestricted	3,501	2,483	3,501	2,483
Restricted	26	3	26	3
	3,527	2,486	3,527	2,486
Other trading activities				
Unrestricted	970	956	461	447
Restricted	-	-	-	-
	970	956	461	447

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

4. ANALYSIS OF EXPENDITURE

	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Raising funds				
Donations and legacies				
Membership subscriptions & donations	222	320	222	320
Individual donations	226	282	226	282
Corporate & trust donations & grants	33	53	33	53
Legacies	66	84	66	84
	547	739	547	739
Other trading activities				
Ringing & tagging costs	377	389	-	-
Publications & general costs	33	66	-	-
Corporate sponsorship & royalties	(4)	17	-	-
Consultancy	161	197	-	-
Data-related costs	53	55	-	-
Other	-	-	-	-
Costs recharged to subsidiary	-	-	437	442
	620	724	437	442
	1,167	1,463	984	1,181
Charitable activities				
Core surveys - JNCC Partnership	1,295	1,378	1,295	1,378
Core surveys - Other	297	394	297	394
Other surveys & research - Voluntary funded	757	479	757	479
Other surveys & research - Contract funded	2,302	1,594	2,302	1,594
Research communication	532	589	532	589
General volunteer survey support	103	72	103	72
Nunnery Lakes Reserve	15	38	15	38
	5,301	4,544	5,301	4,544

Analysis by fund type	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Raising funds				
Unrestricted	1,159	1,441	976	1,159
Restricted	8	22	8	22
	1,167	1,463	984	1,181
Charitable activities				
Unrestricted	4,718	4,284	4,718	4,284
Restricted	583	260	583	260
	5,301	4,544	5,301	4,544

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

5. NET INCOME / (EXPENDITURE)

	2022	2021
	£'000	£'000
Net income for the year is stated after (crediting)/charging:		
Auditors' remuneration:		
Audit of the charity's annual accounts	12	15
Audit of the trading subsidiary's annual accounts	4	6
Audit of the charity's defined benefit pension scheme	2	3
Depreciation (Note 9)	29	28

6. STAFF COSTS

	2022	2021
	£'000	£'000
Wages and salaries	3,782	3,655
Social security costs	326	318
Defined contribution pension plan costs (Note 22)	389	387
Expenditure recognised on defined benefit pension scheme (Note 22)	104	120
	4,601	4,480

The number of employees whose emoluments exceeded £60,000 fell within the following bands:	2022	2021
£70,001 - £80,000	1	-
£60,001 - £70,000	1	1

The emoluments of the CEO for the year were £75k (2021 £84k), with the same pension and other benefits as were applicable to all other staff. The total remuneration including social security costs and pension contributions of the Senior Leadership Team was £481k (2021: £475k). Trustees receive no remuneration. Trustees made donations totalling £5k during the year (2021 £5k).There were no other related party transactions requiring disclosure. Since they met remotely throughout the year, expenses were reimbursed to 0 (2021: 0) trustees as follows:

	2022	2021
	£'000	£'000
Travel & subsistence	-	-

Average numbers of staff and full time equivalents (FTE)

	2022		2021	
	No	FTE	No	FTE
Permanent posts	134	121.3	130	117.7
Seasonal fieldworkers	15	3.2	3	1.6
	149	124.5	133	119.3

7. TOTAL EXPENDITURE

	Direct costs	Support costs	2022 Total	2021 Total
	£'000	£'000	£'000	£'000
Raising funds	1,042	125	1,167	1,463
Charitable activities	4,735	566	5,301	4,544
Other – Amounts recognised as expenditure on defined benefit pension scheme	104	-	104	120
	5,881	691	6,572	6,127

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

8. SUPPORT COSTS

	Premises	IT & Office Services	People & OD	Manage-ment & Finance	Govern-ance	2022 Total	2021 Total
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
Raising funds	2	6	48	59	10	125	164
Charitable activities	10	26	218	268	44	566	510
	12	32	266	327	54	691	674

All support costs are apportioned on a staff cost basis.
Governance costs include auditors' remuneration, the meeting expenses of the Board and its committees, and the staff cost of servicing those meetings.

9. TANGIBLE FIXED ASSETS - GROUP

	Freehold Property and Land	Furniture and Equipment	Computer Equipment	Motor Vehicles	Total
	£'000	£'000	£'000	£'000	£'000
Cost or valuation at 1 April 2021	1,850	204	405	105	2,564
Additions	-	-	26	-	26
Disposals	-	-	-	-	-
Revaluation of fixed assets	550				550
At 31 March 2022	2,400	204	431	105	3,140
Depreciation at 1 April 2021	-	201	374	91	666
Depreciation charge	-	3	20	6	29
Disposals	-	-	-	-	-
At 31 March 2022	-	204	394	97	695
Net book value at 31 March 2022	2,400	-	37	8	2,445
Net book value at 1 April 2021	1,850	3	31	14	1,898

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

9. TANGIBLE FIXED ASSETS - CHARITY

	Freehold Property and Land	Furniture and Equipment	Computer Equipment	Motor Vehicles	Total
	£'000	£'000	£'000	£'000	£'000
Cost or valuation at 1 April 2021	1,850	200	405	105	2,560
Additions	-	-	26	-	26
Disposals	-	-	-	-	-
Revaluation of fixed assets	550				550
At 31 March 2022	2,400	200	431	105	3,136
Depreciation at 1 April 2021	-	198	373	91	662
Depreciation charge	-	2	21	6	29
Disposals	-	-	-	-	-
At 31 March 2022	-	200	394	97	691
Net book value at 31 March 2022	2,400	-	37	8	2,445
Net book value at 1 April 2021	1,850	2	32	14	1,898

The Nunnery and Nunnery Lakes Reserve, the freehold property and land owned and occupied by The British Trust for Ornithology, were valued by qualified external valuers, Fenn Wright Chartered Surveyors, on 31 March 2022 on the basis of fair value, at £2,400k.

On an historical cost basis, the freehold property and land would have been included at a cost and net book value of £2,284k (2021: £2,284k).

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

10. INVESTMENTS

The Group

Listed Investment Funds

	Market value 1 April 2021 £'000	Disposals £'000	Additions £'000	Gains £'000	Market value 31 March 2022 £'000
Birds in Trust Fund					
Dimensional Global Short Dated Bond	74	-	8	(5)	77
Dimensional Global Sustainability Core Equity	121	(9)	-	14	126
Wrap Cash	4	-	-	-	4
	199	(9)	8	9	207
General Funds					
Dimensional Global Short Dated Bond	90	-	10	(5)	95
Dimensional Global Sustainability Core Equity	151	(12)	-	17	156
Wrap Cash	5	-	-	-	5
	246	(12)	10	12	256
	445	(21)	18	21	463

On an historical cost basis, the investments would have been included at £298k (2021: £290k).

The Charity

	2022 £'000	2021 £'000
Listed Investment Funds as above	463	445
Fixed asset unlisted investments - BTO Services Ltd	-	-
	463	445

The Trust wholly owns its subsidiary undertaking, BTO Services Ltd, which is incorporated in England & Wales, company registration number 02907282. This company operates to promote the work of The British Trust for Ornithology by undertaking commercial activities to support such work. The aggregate value of the share capital and reserves at 31 March 2022 was £100 (2021: £100) and the company reported a £nil result after Gift Aid for the year (2021: £nil). £326k (2021: £228k) was paid to the Charity under Gift Aid. The value of the investment in the subsidiary undertaking is £100 (2021: £100) under the equity method of valuation.

The following is a summarised statement of income for the subsidiary for the financial year:

	2022 £'000	2021 £'000
Turnover	969	951
Cost of sales	(591)	(643)
Gross profit	378	308
Net administrative expenses	(52)	(80)
Net profit before payment under Gift Aid	326	228

Turnover of the subsidiary includes sales to overseas markets of £182k (2021: £246k).

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

11. STOCKS

	2022	2021
	£'000	£'000
The Group		
Finished goods, goods for resale and materials	293	279

The Charity

The charity holds no trading stock.

12. DEBTORS

	2022	2021
	£'000	£'000
The Group		
Trade and contract debtors	775	1,006
Taxes recoverable	7	21
Prepayments	96	90
Accrued income	468	441
	1,346	1,558

	2022	2021
	£'000	£'000
The Charity		
Trade and contract debtors	673	814
Amounts due from Group undertakings	446	488
Taxes recoverable	7	21
Prepayments	77	64
Accrued income	379	387
	1,582	1,774

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

13. CREDITORS – AMOUNTS FALLING DUE WITHIN ONE YEAR

	2022	2021
	£'000	£'000
The Group		
Trade creditors	572	249
Taxes and Social security costs	233	339
Other creditors	63	65
Accruals	103	161
Deferred income	1,408	1,541
	2,379	2,355

	2022	2021
	£'000	£'000
The Charity		
Trade creditors	533	201
Taxes and Social security costs	229	320
Other creditors	60	56
Accruals	93	150
Deferred income	1,279	1,437
	2,194	2,164

14. CREDITORS – AMOUNTS FALLING DUE AFTER ONE YEAR

	2022	2021
	£'000	£'000
The Group		
Deferred income	100	83

	2022	2021
	£'000	£'000
The Charity		
Deferred income	100	83

15. DEFERRED INCOME RECONCILIATION

	2022	2021
	£'000	£'000
The Group		
Opening balance at 1 April	1,624	1,196
Amount released to income	(2,331)	(1,012)
Amount deferred in year	2,215	1,440
Closing balance at 31 March	1,508	1,624

	2022	2021
	£'000	£'000
The Charity		
Opening balance at 1 April	1,520	1,026
Amount released to income	(2,165)	(907)
Amount deferred in year	2,024	1,401
Closing balance at 31 March	1,379	1,520

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

16. RESTRICTED FUNDS

The Group and the Charity

The funds of the group and the charity include restricted funds comprising the following balances of donations and appeal monies given for specific purposes. The opening and closing fund balances for the group and the charity are identical.

As at 31 March 2022

	Balance at 1 Apr 2021	Income	Expenditure	Transfers	Balance at 31 Mar 2022
	£'000	£'000	£'000	£'000	£'000
Atlas Beyond Maps Appeal	8	2	-	-	10
Northern Ireland Fund	1	-	-	-	1
Dilys Breese Fund	51	-	(7)	-	44
Boddy & Sparrow Fund	2	-	-	-	2
Migration Fund	34	39	(39)	13	47
Nightingale Appeal	30	1	(1)	-	30
Swallow Appeal	8	-	-	-	8
Young Scientists' Fund	26	5	(9)	-	22
Garden Research Fund	84	8	(13)	-	79
Out of Africa Fund	58	58	(56)	-	60
Thrush Fund	1	-	-	-	1
Curlew Appeal	-	28	(14)	-	14
Arctic Skua Fund	56	3	(38)	-	21
BTO Wales Fund	26	1	(2)	-	25
Sound Approach Fund	72	21	(11)	-	82
Tasso Leventis Fund	82	-	(3)	(36)	43
Spotted Flycatcher Appeal	49	-	(20)	-	29
Chaffinch	64	10	(18)	-	56
Seabird Appeal	23	117	(45)	-	95
Rhodes Training Fund	33	-	-	-	33
Migrant Swallows & Insect Feeding Paper	3	-	(1)	-	2
Postcode Lottery Grant	3	-	-	-	3
Cuckoos & Nightingales	22	1	(1)	-	22
EDF What's Under Your Feet	17	-	-	(17)	-
Bats Fund	21	10	(16)	-	15
Short Eared Owl	48	5	(8)	-	45
Wader Project Officer	100	26	(67)	-	59
Dulverton Trust	18	-	(16)	-	2
Insect Decline	20	16	(32)	-	4
Eddowes PhD	-	21	(21)	-	-
Ringers' Bursary Fund	-	2	(1)	-	1
Thorne Ringing Fund	1	-	-	(1)	-
Youth Engagement	80	95	(130)	14	59
Small Specific Donations	53	18	(22)	2	51
	1,094	487	(591)	(25)	965

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

16. RESTRICTED FUNDS (Continued)

The purposes of the funds are as follows:
The Atlas Beyond the Maps Appeal continues to support research into Atlas data.
The Northern Ireland Fund has been set up to support the BTO in Northern Ireland.
The Dilys Breese Fund is for projects relating to nesting birds.
The Boddy & Sparrow Fund is for awards to the best amateur contribution(s) to either or both of the *Bird Study* and *Ringing & Migration* publications.
The Migration Fund is for research into migrating birds. £13k was transferred into this fund from general funds for work on Scottish Songbirds.
The Nightingale Appeal is to fund work on Nightingales and woodland birds.
The Swallow Appeal is to fund work on Swallows and migration.
The Young Scientists' Fund is to support the career development of young scientists.
The Garden Research Fund is to support young scientists work on garden birds.
The Out of Africa Fund is to fund work on African migrants.
The Thrush Fund is to fund work on Thrushes.
The Farmland Birds Appeal is to support work on farmland ecology.
The Curlew Appeal is to fund projects on Curlews.
The Arctic Skua Fund is to support Arctic Skua work.
The BTO Wales Fund is to support the BTO in Wales.
The Sound Approach Fund is to support a number of specific projects.
The Tasso Leventis Fund is to support a number of specific projects. A transfer of £36k was made to general funds with the agreement of the funder to contribute to core work of the BTO.
The Spotted Flycatcher Appeal is to support work on Spotted Flycatcher.
The Chaffinch Appeal is to fund work on Chaffinches.
The Seabird Appeal has been raising funds for work on seabirds.
The Rhodes Training Fund is to support survey training courses.
The Migrant Swallows & Insect Feeding Paper donation is to fund a paper on Swallows.
The Postcode Lottery Grant is for the Nunnery Lakes Reserve.
The Cuckoos & Nightingales Fund is for research on Cuckoos and Nightingales.
The EDF What's Under Your Feet Fund is to support the What's Under Your Feet survey. The balance of £17k on the fund was transferred to general funds with the agreement of the funder as this work has been completed.
The Bats Fund was set up from specific donations to support work on Bats and the development of the BTO acoustic work.
The Short Eared Owl Fund is for work on Short Eared Owls in Scotland.
The Wader Project Officer Appeal Fund is for work on waders.
The Dulverton Trust Fund is to support a number of specific projects.
The Insect Decline Fund is to support work on the decline in insects.
The Eddowes PhD fund was established to support a specific PhD project.
The Ringers' Bursary Fund is to support ringing.
The Thorne Ringing Fund is to support ringing. The balance of £1k was transferred to Small Donations.
The Youth Engagement Fund has been set up to support our work with young people. £14k was transferred from General funds to support this work.
Small Specific Donations are small individual donations for specific purposes. Transfers of £1k from General funds in respect of donated ringers' rebates, and the balance of £1k on the Thorne Ringing Fund, were made to contribute to specific ringing projects.

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

16. RESTRICTED FUNDS (Continued)

As at 31 March 2021

	Balance at 1 Apr 2020	Income	Expenditure	Transfers	Balance at 31 Mar 2021
	£'000	£'000	£'000	£'000	£'000
Atlas Beyond the Maps Appeal	6	2	-	-	8
Northern Ireland Fund	1	-	-	-	1
Dilys Breese Fund	66	-	(15)	-	51
Boddy & Sparrow Fund	2	-	-	-	2
Migration Fund	15	36	(17)	-	34
Nightingale Appeal	30	1	(1)	-	30
Swallow Appeal	8	-	-	-	8
Young Scientists' Fund	19	19	(12)	-	26
Garden Research Fund	77	8	(1)	-	84
Out of Africa Fund	35	36	(13)	-	58
Thrush Fund	1	-	-	-	1
Farmland Birds Appeal	19	-	(19)	-	-
Curlew Appeal	25	3	(28)	-	-
Arctic Skua Fund	61	7	(12)	-	56
BTO Wales Fund	29	1	(4)	-	26
Sound Approach Fund	88	-	(6)	(10)	72
Tasso Leventis Fund	46	37	(1)	-	82
Spotted Flycatcher Appeal	37	3	(2)	11	49
Chaffinch	19	54	(14)	5	64
Seabird Appeal	-	42	(20)	1	23
Rhodes Training Fund	33	-	-	-	33
Migrant Swallows & Insect Feeding Paper	5	-	(2)	-	3
Postcode Lottery Grant	3	-	-	-	3
Cuckoos & Nightingales Appeal	21	1	-	-	22
EDF What's Under Your Feet	17	-	-	-	17
Bats Fund	11	8	-	2	21
Short Eared Owl Fund	34	16	(7)	5	48
Wader Project Officer Fund	105	6	(21)	10	100
Dulverton Trust Fund	17	25	(24)	-	18
Insect Decline Fund	29	10	(19)	-	20
Ringers' Bursary Fund	1	-	(1)	-	-
Thorne Ringing Fund	1	-	-	-	1
Youth Engagement Fund	-		(14)	94	80
Small Specific Donations	53	3	(29)	26	53
	914	318	(282)	144	1,094

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

17. UNRESTRICTED FUNDS

The Group and the Charity

The funds of the group and the charity include unrestricted funds comprising the following balances. The opening and closing fund balances for the group and the charity are identical.

As at 31 March 2022

	Balance at 1 Apr 2021	Income	Expend-iture	Other Gains/ (Losses)	Fund transfers	Pension reserve transfer	Balance at 31 Mar 2022
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
General funds:							
Birds in Trust fund	2,596	766	(263)	8	(439)	-	2,668
General fund	370	5,889	(5,522)	560	464	(135)	1,626
	2,966	6,655	(5,785)	568	25	(135)	4,294
Designated funds:							
Welch fund	-	700	(92)	-	-	-	608
Unrestricted funds excluding Pension reserve	2,966	7,355	(5,877)	568	25	(135)	4,902
Pension reserve	(4,794)	-	(104)	986	-	135	(3,777)
	(1,828)	7,355	(5,981)	1,554	25	-	1,125

The Birds in Trust fund is to provide long-term funding for BTO projects. Income from legacies is credited to this fund unless the wills provide otherwise. £438k was transferred in respect of the JNCC Partnership and £1k was transferred in respect of specific projects from Birds in Trust funds to the General fund. The Welch fund has been designated for migration related research in accordance with the expression of wish of the legator. £25k was transferred from various restricted funds in accordance with the donors' wishes. £135k was transferred from the General fund to the Pension reserve in respect of the pension deficit repair payment. Other pension reserve movements are disclosed in Note 22.

As at 31 March 2021

	Balance at 1 Apr 2020	Income	Expend-iture	Other Gains/ (Losses)	Fund transfers	Pension reserve transfer	Balance at 31 Mar 2021
	£'000	£'000	£'000	£'000	£'000	£'000	£'000
General funds:							
Birds in Trust fund	2,632	859	(352)	43	(586)	-	2,596
General fund	371	5,010	(5,373)	52	442	(132)	370
Unrestricted funds excluding Pension reserve	3,003	5,869	(5,725)	95	(144)	(132)	2,966
Pension reserve	(4,287)	-	(120)	(519)	-	132	(4,794)
	(1,284)	5,869	(5,845)	(424)	(144)	-	(1,828)

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

18. ANALYSIS OF GROUP FUNDS ACROSS NET ASSETS

As at 31 March 2022

	Fixed Assets	Investments	Current Assets less Total Liabilities	Defined Benefit Pension Liability	Total Net Assets
	£'000	£'000	£'000	£'000	£'000
Unrestricted Funds					
General funds:					
Birds in Trust fund	-	207	2,461	-	2,668
General fund	2,445	256	2,702	(3,777)	1,626
	2,445	463	5,163	(3,777)	4,294
Designated funds:					
Welch fund	-	-	608	-	608
Unrestricted funds excluding Pension reserve	2,445	463	5,771	(3,777)	4,902
Pension reserve	-	-	(3,777)	-	(3,777)
	2,445	463	1,994	(3,777)	1,125
Restricted Funds	-	-	965	-	965
Total	2,445	463	2,959	(3,777)	2,090

As at 31 March 2021

	Fixed Assets	Investments	Current Assets less Total Liabilities	Defined Benefit Pension Liability	Total Net Assets
	£'000	£'000	£'000	£'000	£'000
Unrestricted Funds					
General funds:					
Birds in Trust fund	-	199	2,397	-	2,596
General funds	1,898	246	3,020	(4,794)	370
Unrestricted funds excluding Pension reserve	1,898	445	5,417	(4,794)	2,966
Pension reserve	-	-	(4,794)	-	(4,794)
	1,898	445	623	(4,794)	(1,828)
Restricted Funds	-	-	1,094	-	1,094
Total	1,898	445	1,717	(4,794)	(734)

19. OPERATING LEASE COMMITMENTS

	2022	2021
	£'000	£'000
At the year end the group had outstanding lease commitments for future minimum lease payments under non-cancellable leases, as follows :		
Due within one year	46	46
Due within two to five years	28	73
	74	119

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Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

20. RECONCILIATION OF NET INCOME/(EXPENDITURE) TO NET CASHFLOW FROM OPERATING ACTIVITIES

	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Net income per Statement of Financial Activities	1,288	155	1,288	155
Adjustments for:				
Items representing cash movements				
(Increase)/decrease in stocks	(14)	54	-	-
(Increase)/decrease in debtors	212	(275)	192	(344)
Increase/(decrease) in creditors	41	539	47	641
Investment income	(1)	(3)	(1)	(3)
Items not representing cash movements				
Depreciation	29	28	29	27
(Gains)/losses on investments	(18)	(95)	(18)	(95)
Expenditure on defined benefit pension plan liability	104	120	104	120
	1,641	523	1,641	501
Cash movements not appearing in the Statement of Financial Activities				
Pension deficit repair contribution	(135)	(132)	(135)	(132)
Net cash inflow/(outflow) from operating activities	1,506	391	1,506	369

21. FINANCIAL INSTRUMENTS

The carrying amounts of the group's and the charity's financial instruments are as follows:

	Group 2022 £'000	Group 2021 £'000	Charity 2022 £'000	Charity 2021 £'000
Financial assets				
Measured at fair value through net income/expenditure:				
Fixed asset listed investments (Note 10)	463	445	463	445
Equity instruments measured at cost less impairments:				
Fixed asset unlisted investments (Note 10)			-	-
Debt investments measured at amortised cost:				
Trade and contract debtors (Note 12)	775	1,006	673	814
Amounts due from Group undertakings (Note 12)	-	-	446	488
Accrued income (Note 12)	468	441	379	387
	1,243	1,447	1,498	1,689
Financial liabilities				
Measured at amortised cost:				
Trade creditors (Note 13)	572	249	533	201
Other creditors (Note 13)	63	65	60	56
Accruals (Note 13)	103	161	93	150
	738	475	686	407

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Notes to the Consolidated Financial Statements - Continued
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22. PENSIONS

The Group and the Charity

Defined contribution pension plan

The Trust operates a Group Self-invested Personal Pension Scheme run by Aegon. Staff contribute to this defined contribution scheme at a minimum rate of 5% of salary, and the BTO contributes at a flat rate of 11%. The Trust made contributions of £389k during the year (2021: £387k).

Defined benefit pension scheme

The Trust's defined benefit pension scheme, a 'final salary' scheme, is closed. The last triennial actuarial valuation of the scheme was carried out as at 1 April 2021. At that date the assets were valued at £11,722k and the liabilities at £18,104k, giving a net deficit of £6,382k and a funding level of 65%. A deficit recovery plan was subsequently agreed between the Board and the pension fund trustees, by which the shortfall would be made good by annual lump sum deficit repair payments spread over the years to 2044.

For the purposes of the group financial statements a separate valuation is carried out at the balance sheet date by a qualified independent actuary in accordance with Financial Reporting Standard 102 (FRS 102). The amounts recognised in the statements of financial activities for the year and the balance sheets were as follows:

Recognised in the statements of financial activities:	**2022**	**2021**
	£'000	£'000
Expenditure:		
Interest income	255	262
Interest cost on liabilities	(359)	(372)
Net interest on net defined benefit liability	(104)	(110)
Past service cost in respect of Guaranteed Minimum Pension (GMP) equalisation	-	(10)
	(104)	(120)
Other recognised gains/(losses):		
Actual return on scheme assets (excluding interest income)	372	1,436
Actuarial gain/(loss) on liabilities	614	(1,955)
	986	(519)

Recognised in the balance sheets:

	2022	**2021**
	£'000	£'000
Fair value of scheme assets	12,108	11,689
Present value of defined benefit obligations	(15,885)	(16,483)
Defined benefit pension scheme liability at 31 March	(3,777)	(4,794)

Reconciliation of funded status:

	2022	**2021**
	£'000	£'000
(Deficit) at 1 April	(4,794)	(4,287)
Employer pension deficit repair payment	135	132
Net interest on net defined benefit liability	(104)	(110)
Past service cost in respect of GMP equalisation	-	(10)
Remeasurement (loss)	986	(519)
(Deficit) at 31 March	(3,777)	(4,794)

The British Trust for Ornithology
Notes to the Consolidated Financial Statements - Continued
For the Year Ended 31 March 2022

22. PENSIONS (Continued)

Changes in the fair value of the pension scheme assets were as follows:

	2022	2021
	£'000	£'000
Fair value of scheme assets at 1 April	11,689	10,174
Interest income	255	262
Actual return on scheme assets (excluding interest income)	372	1,436
Employer pension deficit repair payment	135	132
Benefits paid to members	(343)	(315)
Fair value of scheme assets at 31 March	12,108	11,689

Changes in the defined benefit obligations were as follows:

	2022	2021
	£'000	£'000
Present value of defined benefit obligations at 1 April	(16,483)	(14,461)
Interest cost on liabilities	(359)	(372)
Benefits paid	343	315
Past service cost	-	(10)
Actuarial gain/(loss)	614	(1,955)
Present value of defined benefit obligations at 31 March	(15,885)	(16,483)

The amount of each major class of pension scheme assets within the total fair value of the scheme assets was as follows:

	2022	2021
	£'000	£'000
Equities	6,298	6,219
Bonds	4,889	4,628
Annuities	201	206
Cash	720	636
	12,108	11,689

The total return on scheme assets was as follows:

	2022	2021
	£'000	£'000
Interest income	255	262
Actual return on scheme assets (excluding interest income)	372	1,436
Total return on scheme assets	627	1,698

The principal actuarial assumptions used were as follows:

	2022	2021
Discount rate	2.95%	2.20%
Inflation assumption (RPI)	3.95%	3.35%
Inflation assumption (CPI)	3.35%	2.70%
Rate of increase for non-GMP pensions in deferment	3.35%	2.70%
Rate of increase for pensions in payment (RPI, min 3% max 5%)	3.95%	3.70%

Expected future lifetime from age 65:	2022	2021
	No of years	No of years
Male – currently aged 65	22.1	21.8
Female – currently aged 65	24.1	23.4
Male – currently aged 45	23.7	23.4
Female – currently aged 45	25.3	24.7

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