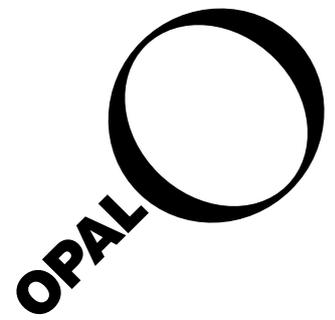


EXPLORE NATURE
OPAL ANNUAL UPDATE
2008/2009





EXPLORE NATURE OPAL ANNUAL UPDATE

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www.OPALexploreNature.org

Introduction

Linda Davies, OPAL Director

Welcome to OPAL's first Annual Update. This publication showcases our successes since the project began 18 months ago. So far, we have inspired over 100,000 people to take part in our activities, and with lots of new events planned for next year we look forward to involving many more.

OPAL was developed in response to the challenges posed by ecosystem degradation – the loss of England's biodiversity in particular. We all have a part to play in the work needed to protect our natural heritage, so OPAL wants to encourage and support anyone of any age, background or ability to get involved.

Our priority was to encourage adults and children to spend more time outside recording local wildlife. We want to learn more about what's living near people's homes, and also to find out about the conditions under which different species thrive or suffer. By helping people improve their identification skills, we can build a much more accurate picture of the flora and fauna that inhabit our towns, cities and countryside.

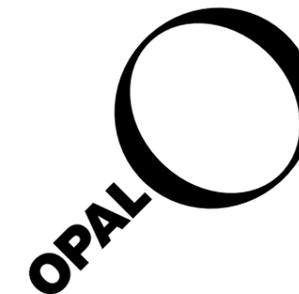
OPAL is committed to encouraging collaboration between scientists, the community, voluntary sector and government. Our university partners in each region are holding regular meetings with local and regional representatives. Together they have developed a programme of research that addresses local and national

environmental concerns. Loss of orchards in East Anglia, birds and bees in Birmingham, and heathlands in the Midlands are just a few examples of regional studies that involve communities.

This year we have also launched the first of five national surveys. Thousands of public records are pouring into the OPAL database helping us to understand more about soil types and earthworm distribution across England. Again, we are involving local people, particularly the young, with nearly 1,000 schools signed up to our programme of surveys.

Autumn 2009 saw the launch of several big initiatives including the OPAL Air Survey, a new course about local environments called Neighbourhood Nature and our programme linked to the International Year of Biodiversity. Our informal education programme is taking shape and will be online in 2010, providing a host of different ways to learn more about nature.

It has been an amazing first year and I would like to thank everyone who has participated in making it such a huge success: our partners, our associates, the Environment Agency, Defra and our regional representatives. Above all, special thanks go to the communities and the young people who are taking part in OPAL activities and helping us learn invaluable new information about the nature near them.



The OPAL network



The OPAL network, led by Imperial College London, consists of 15 core partners delivering 31 projects. Each has received funding from the Big Lottery Fund, which has provided OPAL with a total grant of £11.75 million.

By bringing together a range of partners, the project has drawn in skills and expertise from both the scientific and public engagement sectors. By working together, partners have built a programme that is not only scientifically relevant but also educational, inspirational and enjoyable.

Margaret Cooney, Deputy Director Policy & Partnerships, Big Lottery Fund, said 'The Big Lottery Fund is pleased to fund this programme, which encourages experts and communities to work alongside each other to help address the environmental challenges we face today. By bringing these two parties together, OPAL will promote a greater awareness of the environmental issues which affect us all.'

The regional programme is delivered by a network of universities, each working with local people to address issues of local

environmental concern. Each institution has employed an OPAL community scientist with skills in both ecology and communications. They are responsible for ensuring people in their area are able to access and participate in OPAL events, as well as making environmental science interesting and fun. Many of the regions are also supporting PhD students, some of whom are using OPAL outreach activities to study community engagement in environmental issues.

At the University of Nottingham, OPAL East Midlands is examining heathland

across the region. Community scientist Dr Amy Rogers and PhD student Ed Tripp are encouraging local schoolchildren and community groups to examine this unique natural environment on their doorstep. 'In Nottinghamshire we've lost 90 per cent of our heathlands since the 1920s,' said Amy. 'Heathland is now rarer than rainforest and it's in our back yard. OPAL is a great opportunity for local people to get involved in finding out more about this important habitat and help stop it disappearing completely.'

The national programme consists of OPAL's five national centres, which promote and research the five key OPAL areas of soil, air, water, biodiversity and climate. Each centre is also responsible for one of the five national surveys that invite anyone anywhere to explore and study the environment where they live. National activities are supported by the Natural History Museum (NHM), which has a strong record of engaging the public with its science, also by the Field Studies Council, which is developing pack materials for the national surveys, and by the Open University, whose iSpot website will help people develop their interest in nature.

OPAL's partnership extends beyond its funded partners. The project has received additional support from both the Environment Agency and Defra who are keen to support and help it achieve its goals. Then there are less formal partnerships with many, many organisations across England, who are involved not only by setting up their own OPAL events and activities, but also by sitting on our regional committees and helping to tailor the project's outputs to their needs. Their support is invaluable in ensuring OPAL achieves its objectives.

Supporting natural history societies and recording schemes

The Natural History Museum is co-ordinating a dedicated programme of support for natural history societies and recording schemes. Its work under OPAL is helping local and national organisations raise their public profile so they can gain new members and continue their important work of monitoring biodiversity right across the country. OPAL has committed to delivering a funding programme to societies, and to ensure they are able to benefit from outreach and publicity opportunities across the partnership.

In December 2008, the Museum commissioned an external consultant to gather data about nature groups in the UK. The results have helped identify barriers such organisations face in their work, which in turn has allowed OPAL develop a plan to help overcome these. Over 160 groups were involved in the consultation, the results of which have informed the development of the OPAL grants scheme for societies, launched in spring 2009. The grants scheme will involve three funding rounds between 2009 and 2011, each themed to address the issues raised in the consultation.

Natural history society members are also regularly invited to take part in OPAL events, for the opportunity to meet the public, share their expertise and raise the public profile of their society.

OPAL is also supporting the start-up of new groups, such as a Strandline Recording Scheme bringing together experts in seashore ecology, and the Earthworm Society of Britain inspired by the OPAL Soil and Earthworm Survey.

MAJOR LAUNCHES

The OPAL project launched to the media in November 2008. Journalists were invited to a press conference at the Natural History Museum where wildlife presenter Steve Leonard was on hand to talk about the importance of inspiring a new wave of nature enthusiasts.

Steve said, 'OPAL is a great way for people to find out more about the wildlife that exists right on their doorstep. By getting involved in these fun and free activities, people can help uncover new insights into the environment where they live.'

The press conference included talks from OPAL Director Linda Davies, John Tweddle

children were engaging both with OPAL scientists and with nature.

The press conference was a huge success with wide-reaching coverage appearing over the following days and weeks. Some of the outlets that ran the story include *The Telegraph*, *The Guardian Online*, *The Daily Mail*, *The Evening Standard*, *Radio 2* and *The Times*.

The media launch helped raise the profile of OPAL's first major public event, held in Kensington Gardens in December 2008. The Winter Wildlife Day invited people to come and discover more about the plants and wildlife that are abundant during the

Steve Leonard launches OPAL



from the Natural History Museum and Margaret Cooney from the Big Lottery Fund. Through the diverse perspectives of these spokespeople, the media were able to get a clear picture of how OPAL came about, why its work is so important and what it hopes to achieve between now and 2012.

The press conference included live link-ups to the Museum's Wildlife Garden and to the University of York. Children from St Michael's Primary School in Middlesex were invited to the Museum to take part in activities designed to help them understand more about England's plants and insects. In York, children from St Lawrence Primary School attended a spider workshop, which aimed to dispel some of the fears and myths surrounding arachnids. Both sessions were beamed back to the press launch so attendees could see how the

colder months of the year. It was attended by over 500 people and included stalls from local nature groups, arts and crafts activities for children, plus themed nature walks around the park itself. This flagship launch event was held to coincide with other events taking place across the regions. OPAL South West, Yorkshire and Humber and East Midlands all organised events for local residents that were well attended and which helped to establish their projects locally.

First national survey launch

OPAL's first national survey launched in March 2009 and encouraged people all over the country to go out and explore the soil in their neighbourhood and to look for some of the creatures that live in it.

The Soil and Earthworm Survey is led by scientists from Imperial College London and has been developed in close liaison with the Natural History Museum, the British Geological Survey and the Environment Agency. The team hope that data generated by the public will lead to insights into how soil quality is changing due to the impacts of environmental change, such as pollution levels. The presence of different types of earthworms

pack and supporting materials. They then worked with key local contacts to help instil confidence and encourage them to lead surveys of their own. Running alongside this programme, lead scientists from the Soil Centre attended regular third party events all over the country to help raise the profile of the survey and encourage even more people to get involved.

The soil survey received fantastic media attention when it launched in March 2009. A feature ran on *The One Show* and a series of regional radio interviews were held at BBC Television Centre. Photographers were invited to Kensington Gardens for a photocall with presenter Chris Packham



in different locations can also reveal information about the quality of the soil they inhabit. This is the first time both soil and earthworms have been mapped together giving a unique insight into soil ecosystems right across England.

The soils team developed materials with the Field Studies Council (FSC) to help people complete the survey. It includes a fold-out guide with an earthworm identification key and a work book for participants to record their answers. Packs also include an indicator strip to record the pH of the soil, along with mustard to be mixed with water that encourages deep-burrowing worms to the surface.

A programme of outreach events was developed by the soils team to help deliver the survey in every region. First, community scientists were trained to use the survey

and school children from St Albans School in Hertfordshire.

Chris Packham said, 'Earthworms are really undervalued and few people realise the important job they do keeping the soil under our feet nice and healthy. Surprisingly little is known about the different species or their habitats, so this research will be vital to help scientists understand how earthworms are affected by pollutants in the soil and by human activity.'

This first national survey also helped define how the OPAL web portal could be developed to accept results from the public on a large scale. The soil survey area of the website also carries additional information such as fun fact sheets, support packs and even a worm survey game.

OPAL Biodiversity Centre

One exciting development at the OPAL Biodiversity Centre, led by the Open University, is a new social networking site dedicated to observing Britain's biodiversity. Known as iSpot, it is billed as 'your place to share nature', and helps people identify the animals, plants and fungi they see around them. The site encourages interaction between scientists and nature enthusiasts, building expertise in identification skills.

www.iSpot.org.uk is open to anyone interested in wildlife and the environment. Users are invited to take pictures and upload them, or to log on and describe what was seen. The community of online iSpotters will then help to identify what it is. In addition to this, downloadable identification keys will help users match queries to the closest possible answer.

iSpot users can also join discussion groups and forums while learning from others willing to share their expertise and knowledge on the site. A team of biodiversity mentors, based across England, are also available to help the public learn more about the nature in their area.

For those who would like to take their interest in natural history a step further, the Open University has designed a new introductory-level course through OPAL called Neighbourhood Nature. The course is now open for enrolment and combines theory and practice, and also includes iSpot as a field-based activity.

OPAL Water Centre

The OPAL Water Centre has selected a lake or pond in each of the nine regions to develop a monitoring programme. The team are working closely with local communities who use the lakes or live nearby. Each lake is visited quarterly so that regular data can be collected. The team take physical measurements (such as oxygen levels and temperature) and samples of aquatic life (including diatoms and zooplankton), as well as collecting information on water chemistry. The latter include nutrients and major ions, as well as pollution indicators such as trace metals and persistent organic pollutants.

Data collected by the team so far has shown the presence of brominated flame retardants in all locations. These are the first reported water concentration data for these compounds in the UK. In addition, the mercury water concentration data have already indicated some interesting seasonal patterns. During summer 2008, fish samples and surface sediments were taken from each lake and analysed for the same pollutants. Fish are good pollution indicators as they sit at the top of the aquatic food chain. The toxicity tests on surface sediments can determine whether pollutants affect the reproduction and growth of aquatic invertebrates.

In addition to the monitoring programme, the water team has instigated its first annual aquatic plant and invertebrate surveys. They are collecting sediment cores from each lake to trace historical changes and to show how conditions are altering and at what rate.

OPAL Air Centre

Research at the OPAL Air Centre is focused around an open-top chamber facility, purpose-built and designed to expose plants to pollutants. In July 2008, an experiment was carried out to expose plants to four different ozone concentrations. The effects of ozone on plant growth, physiology and phenology were assessed for plants growing in single species pots and in mixed grassland communities. Following on from a successful first fumigation season, a new project is now underway, where model grassland communities are exposed to a range of ozone concentrations under differing levels of drought stress. In this way, the project will assess how climate

looking at the world through a microscope, exploring colour through chromatography, demonstrations of the principles and use of luminescence, and also guided nature trails.

In addition, OPAL Air and South East held a summer school in June 2008 at Silwood Park. Activities included a tour of the open-top chamber experimental facility and an air pollution practical, where pupils collected and analysed particulates from road side locations. Follow-up visits to participating schools have been carried out to extend pupils' interest and understanding of local air pollution issues. Imperial College's OPAL teams have also attended many other events throughout southern England,



change may modify plant response to ozone, and vice versa.

The OPAL Air Centre and South East teams have held many community outreach events. OPAL scientists have used these events to introduce members of the public to some of the questions and experimental approaches underpinning pollution impacts research. It is hoped people of all ages will be excited by the idea of environmental research and inspired to take part in the activities on offer at the Air Centre, through the South East project, and nationally.

Two science fun days have been held at the Air Centre and a local science education venue. These events were widely advertised, and more than 1,000 children and parents attended. Air pollution-related activities on offer during these days included making molecules out of marshmallows,

including the Chestnut Sunday event at Bushy Park and BioBlitz Bristol.

The air team are also leading OPAL's second national survey. Participants are encouraged to look at lichens, a special kind of organism that forms when a fungi and algae develop together. Some lichens are sensitive to air quality, making them good indicators of environmental change.

REGIONAL ACTIVITY

OPAL North East is based at Moorbank Botanic Garden, part of Newcastle University. The garden is open to the public on designated open days and holds diverse collections of tropical, desert and temperate flora.

During 2008, major OPAL events included a Summer Garden Party and Art Summer School. The garden party took place at Moorbank and was attended by over 150 visitors, including representatives from the local council, voluntary and statutory sectors, school teachers, university academics and local businesses.

The Art Summer School included a field visit to the County Durham coast for 120 local school pupils. The pupils were asked to record lichens, seaweeds and other biodiversity through sketches, notes and photography. After the field trip, participants worked up their observations in various media such as painting, sculpture and ceramics, plus they attended discussions with Newcastle University academics on lichen and seaweed biology and the impacts of air pollutants on vegetation. The art produced was exhibited to the public at Hartlepool English Martyrs School Art Gallery in September 2008, and was hosted at Moorbank in February 2009.

Since the launch of OPAL, school visits to Moorbank have increased significantly. Pupils from all backgrounds, abilities and ages have been taking part in a variety of educational activities. These have included a number of plant master classes and sessions entitled How to Use a Plant to Solve a Murder Mystery, which have

been designed to make taxonomy more appealing to teenagers. The educational resources developed through workshops such as these will reside at Moorbank and will be offered to interested school and community groups in the future.

The garden has seen improvements in access and health and safety, and links have been forged with the local community. OPAL North East has led visits from community groups and has also opened the garden for public family fun days.

The regional project has encouraged people throughout the north east to take part in the OPAL Soil and Earthworm Survey. Several training events were held at Moorbank, local Wildlife Trust offices and at community gardens. All were well attended and helped instil confidence in those leading sessions.

OPAL North East has assisted many school and community groups to conduct the survey, working with people of all ages from Year One students to community groups for retired allotment holders. The regional team has also attended events at venues including the Centre for Life, Alnwick Garden and the Wildlife Trusts where they have worked with families and passers-by to engage children and adults in earning together.

Over the past year, the project has developed links with the Great North Museum, Centre for Life and other botanic and community gardens, all of which the team plan to work with in the future.

OPAL South West, University of Plymouth

Since OPAL launched in the south west in March 2008, over 4,000 people have been involved with the project. Events have included woodland surveys, rustic crafts, the OPAL Soil and Earthworm Survey and nature festivals. Events have taken place across South Devon and in Plymouth and Dartmoor. The University of Plymouth has inspired some of its students to volunteer for OPAL on a regular basis following their initial involvement with the region's outreach programme. As well as getting enjoyment and learning out of their participation in the project, the students have gained valuable employment skills by learning to lead events and volunteer groups themselves.

The South West project is also starting to have an impact on hard to reach communities. OPAL South West works regularly with the British Trust for Conservation Volunteers youth programme, an initiative that attracts high numbers of people who have only recently arrived in the UK, such as refugees and economic migrants. The regional project has also organised a number of field days for people with special needs, including an event for adults with mental health needs and an event for children with learning difficulties.

At the request of Plymouth City Council, the South West team is training up volunteers as botanical surveyors to carry out surveys of Plymouth's grassland nature reserves. The council is keen to adapt its management regimes on these sites to cope with the changing climate and to

benefit biodiversity. OPAL South West will provide the council with the data it needs to adapt its strategies accordingly.

OPAL South West has also distributed 1,500 packs for the OPAL Soil and Earthworm Survey by forming partnerships with educational providers and community organisations. This has helped extend the team's reach far beyond the capacity of their dedicated staff. Organisations such as Dartmoor National Park Authority, Torbay Coast and Countryside Trust, and Exeter Play Rangers have welcomed the survey and used it extensively with their own audiences. OPAL has organised seven public Soil and Earthworm Survey events in partnership with local community groups, including Transition Town Newton Abbot and Kingsbridge Community Garden.

Working in close partnership with Moortrees, a local woodland charity, has brought south west scientists together with local nature enthusiasts. Forging this link early on has helped the project to build a network of OPAL volunteers and participants right across the region. Bethan Stagg from Moortrees has adopted the community scientist role for the regional project and has been heavily involved in promoting activities locally through the media.



OPAL North East, Newcastle University

REGIONAL ACTIVITY

In 2009, the University of York ran community events, such as a pond dipping family fun day at Chapman's Pond, a spider workshop in Museum Gardens and environmental activities and educational sessions with local schools. More in-depth work has recently started with young people on the City of York Council run Alternative Learning Programme.

In addition to these activities, a number of mapping exercises have been conducted with local residents, including a session with some of the older residents in the Tang Hall area of York. This location was chosen for the study as research shows several areas within Tang Hall are ranked within the 20

per cent most deprived parts of England. The estate has an interesting environmental history, including that of the largest area of green space in the area, St Nicholas Fields. It was a brickworks in the 1930s, then a tip, and in 2004 it became a local nature reserve.



per cent most deprived parts of England. The estate has an interesting environmental history, including that of the largest area of green space in the area, St Nicholas Fields. It was a brickworks in the 1930s, then a tip, and in 2004 it became a local nature reserve.

The aims of this project were to consider how green spaces in the Tang Hall area have changed over the past 50 years, how the spaces have been used by local people in the past and the present, and to map the species of plants and animals that have been seen during this period.

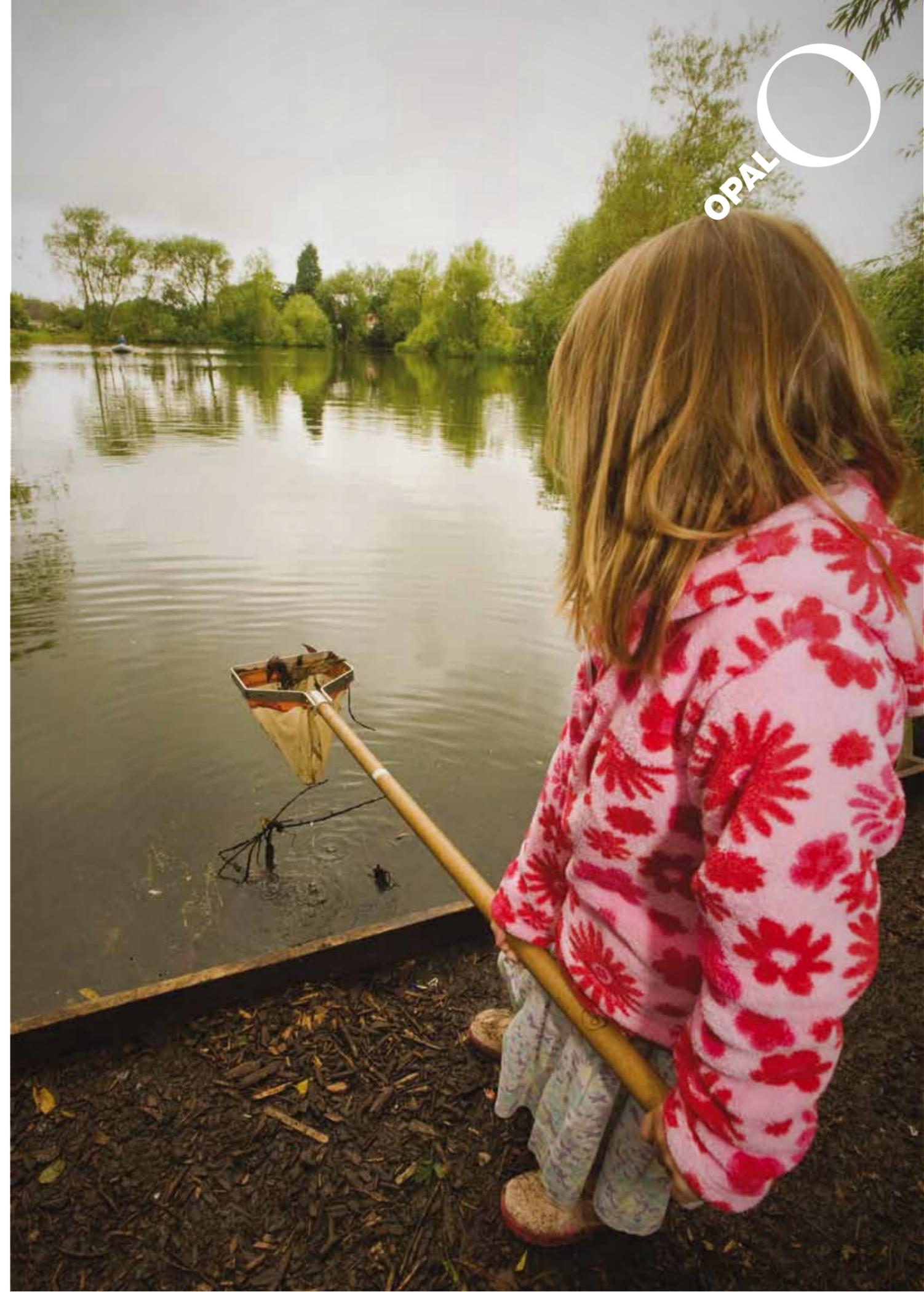
Residents were interviewed at a range of places, including church coffee mornings, a nursing home and at a meeting of the Tang Hall Local History Society. Using historic maps from 1938 to 1992 and recent aerial photographs, participants were asked to

identify areas where they used to play, places they go now, and whether they had seen any particular flower, amphibian or bird species there. The interviews were informal, lasting 10 minutes to over an hour, depending on the detail of the participant's knowledge.

The data from the maps were entered into a Geographic Information System. Each place mentioned by participants was added to the database. Comments associated with these places were also entered and divided into three types: I used to play there, I didn't play there, and I saw 'x' species there. There were many comments about places people used to play and the spaces they avoided.

Less information was gathered about the species people saw in the past, partly due to problems people had recalling this type of information.

The results from this work were presented to the local charity PLACE (People, Landscape and Cultural Environment of Yorkshire) at their annual conference, and we plan to present them back to the community via the Tang Hall Local History Group, local libraries and the St Nicholas Fields Environment Centre.



OPAL Yorkshire and Humber,
University of York

REGIONAL ACTIVITY

OPAL East Midlands, University of Nottingham

The University of Nottingham has a PhD student funded under OPAL, who is investigating how heathland soil fertility is affected by nitrogen pollution. By March 2009, Ed Tripp had identified 26 heathland sites from around the country that fell within a particular band of nitrogen deposition and had similar rainfall levels. Ed will carry out growth experiments in the laboratory using soil samples collected from each site. The research involves measuring how well heather plants grow in the different samples and analysing how much nitrogen is present in the heather grown in soils from different sites. Read more on Ed's blog at www.OPALexplorenature.org.

Community scientist Amy Rogers has developed resources for school pupils to help them understand Ed's work. In February 2009, she led a series of field trips with A-Level students from High Pavement School in Nottingham. The students compared vegetation diversity in managed and unmanaged heathland sites owned by the Nottinghamshire Wildlife Trust. Students will be carrying out studies in the same area over the next few years so the Wildlife Trust can see how effective their heathland regeneration management practices are. Amy has also organised workshops in local schools and at the university to promote the importance of heathlands and raise awareness of the reasons for their decline.

OPAL West Midlands, University of Birmingham

OPAL West Midlands are researching bees across the region to highlight their importance to regional biodiversity. They are running a range of different research and outreach projects over the next few years to raise awareness of the different species that live locally and draw attention to their plight.

Their first major project looked at the factors influencing the nesting success of bees. Adults build nests in a wide variety of locations and stock them with cakes of pollen and nectar on which they lay their eggs. With the help of local people, the university has placed a network of artificial nests (known as hotels) across the region so they can record the different species of bee that use them, the number of residents and the size of cocoons within them.

In addition to their bee research, OPAL West Midlands have also launched a bird-ringing scheme in Birmingham. Local residents are being asked to help researchers understand how some garden birds survive in Birmingham's urban jungle.

Working with the City Council, teams from the University of Birmingham's Schools of Geography and Biosciences have ringed 12 common garden bird species including blue tit, great tit and chaffinch. By launching the scheme through the local media, the project has asked people to spot the colour-ringed birds. This will give vital data about how far birds travel across the city.

Inspiring children

One of OPAL's primary objectives is to inspire the next generation of nature-lovers. This is a vital step towards ensuring our natural heritage is preserved for years to come. OPAL is working with children from all backgrounds with events and activities targeted at different age groups.

A key step towards delivering this aspiration has been in the development of OPAL's five national surveys. These have been designed in partnership with the Field Studies Council and experts in environmental education to ensure they are in line with Key Stages 3 and 4. Secondary schools across England receive 20,000 printed survey packs per survey to help pupils learn more about the

includes a variety of fascinating facts, games and other nature-related activities.

The Kids Zone has also been used to promote OPAL's media partnership with *National Geographic Kids* magazine. The publication supported OPAL activities during the launch of the soil survey and helped translate the science behind soil quality for a younger audience. OPAL provided branded magnifiers to the magazine for a special retail offer with Tesco outlets nationwide. In addition, OPAL ran a competition in the magazine and online with a cash prize and a VIP trip to the Natural History Museum. Over 180 entries were received and the



natural environment of nearby open spaces. Feedback from participating schools has been overwhelmingly positive. One teacher commented, 'Several of our pupils took part in the soil survey and they all seemed to thoroughly enjoy it. I think most of them were surprised to learn that there were so many different types of earthworm in England and they took a real interest in using the key to identify the ones they found.'

Survey packs can also be used by younger children with guidance from teachers or parents, and the OPAL Soil and Earthworm Survey has proved extremely popular with the under 12s. To maintain the interest of this group, OPAL has developed a special Kids Zone area on its website, which

competition was won by St Osmund's School in Salisbury.

As part of its Supporting Natural History Societies project, OPAL is helping nature groups around the country to attract new members, including more young people. It is providing a funding stream to help societies broaden their appeal through a wide range of events, activities and publicity. Callum Lyle, 14, from East Sussex is already a convert. 'There's a great deal of diversity in terms of the kinds of activities that some natural history societies run,' he said. 'Practical, outdoor activities like walks and surveys are brilliant for getting out there and looking at wildlife as it is, in its natural state, live and wild.'



The OPAL Annual Update has been written and compiled by

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This update is also available online at
www.OPALexplore.org

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Field Studies Council
Imperial College London
National Biodiversity Network
Open University
Royal Parks
The MET Office
The Natural History Museum
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University of Central Lancashire
University College London
University of Hertfordshire
University of Newcastle
University of Nottingham
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Also working with the Environment Agency
and Defra