20 YEARS OF SCOTTISH
BIODIVERSITY
PARTNERSHIPS

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Back cover photography: Top: The Magic of Moths, awareness event © Nick Littlewood, Left: Green Team working at Cammo Estate, Edinburgh © David Kyles, Right: Visit by Lairhillock Primary School, Aberdeenshire to Red Moss of Netherley © Nick Littlewood. Inside back cover: Wood Ant nest in Speyside © Nick Littlewood.

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Introduction

The network of Local Biodiversity Action Plan Partnerships (LBAPs) across Scotland has much to celebrate.

For 20 years the staff and volunteers of the Biodiversity Partnerships have been at the cutting edge of promoting the preservation and enhancement of biodiversity throughout Scotland's environment at the local level. And it is at the local level that this work is vitally important.

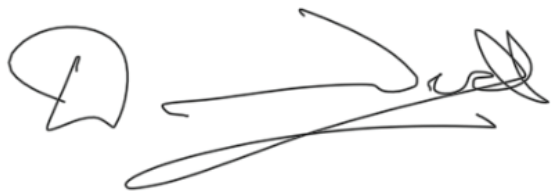
Politicians and their officials can draw up exciting Biodiversity Strategies, but these are to no avail unless there is dedicated work at the local level across the country to publicise and carry out the actions needed.

The members of the LBAP network are involved in many outstanding projects to improve Scotland's environment. In this booklet, produced for a celebratory event at Scotland's Parliament in October 2016, are some excellent examples of these projects from different parts of Scotland.

Of course the LBAP officers do not work alone. They engage with volunteers, citizen science enthusiasts, charity non-governmental organisations (small and big), government agencies, local Council officials and many others from the local communities.

Biodiversity Partnerships inspire local communities to get involved in protecting the environment around them.

It is with much praise and thanks I commend to you the work of these dedicated people, assisted by a whole range of volunteers and other professionals. All of us in Scotland are most grateful for the fantastic work the Scottish Biodiversity Partnerships carry out.



Dennis Dick MBE
Former Chair of Scottish Wildlife Trust, member of the Scottish Biodiversity Committee and Adviser to Tayside Biodiversity Partnership.

October 2016

Make the Link with your Sink

© Marina Curran-Colthart

Extended ditch accommodating a reed bed

The Argyll and Bute Local Biodiversity Partnership was established in 1997 by Argyll and Bute Council as one of four pilot Local Biodiversity Action Partnerships. It was established with the following mission statement: *The Argyll and Bute Biodiversity Partnership exists to promote local biodiversity in its geographic locale, whilst at the same time making a valued contribution to national and international biodiversity, to sustainable development and Local Agenda 21.*

Tranche 1 of the Argyll and Bute Local Biodiversity Action Plan was launched on 10 September 2001, the second tranche on 30 November 2010 and tranche 3 is currently being refreshed.

'Make the Link with your Sink' began with a publication; the Community Catchment Management Guidelines for Euchar Catchment, Scammadale, south of Oban. These guidelines, produced by the Partnership, were provided as a tool to help in the development of local catchment management plans in Argyll and Bute. The plans are seen as a way of focusing on the relationship with, and influences of, catchment management on biodiversity and habitats in a local area.

A subsequent phase of 'Make the Link with your Sink' involved further community engagement initiatives such as design and production of a T-towel celebrating some of the area's important species.

The Freshwater Demonstration Group (FDG) developed this project using the Catchment Management Guidelines (published 2005) to engage with the local community in the Euchar Catchment, south of Oban in Glen Scammadale. The FDG developed a community survey, called the 'Sink Link', focused on households and the local school in the catchment. The survey included questions on the community's understanding of biodiversity, what is distinctive in their local area and, on a more practical note, what they poured down their sinks in terms of detergents etc. Thus the T-Towel idea and concept were born. The second part of the project focussed on improving water quality. This involved the FDG working in partnership with community representatives to develop and implement a ditch improvement project which included a reedbed to act as a natural filtration system. These practical approaches allowed the FDG to demonstrate how this resource can assist with improving water quality and, in addition, create a habitat for a number of species. The community were kept informed by means of a workshop and liaison through the Community Council.

The 'Make the Link with your Sink' project was placed second in the Observer 'Ethical Awards' in 2009. A presentation to the Landkreise (Administration) in Amberg-Sulzbach in Germany was well received, as they were keen to learn about using different types of engagement with their local communities in delivering biodiversity projects. The 'Make the Link with your Sink' T-towel idea and concept have been used by the Tayside Biodiversity Partnership and SEPA to promote positive catchment management with kind permission from the Argyll and Bute Local Biodiversity Partnership.

The Community Action for Biodiversity Phase I and Phase II were supported by Argyll and Bute Council, Scottish Natural Heritage, Highland and Islands Enterprise, Scottish Power and the European Rural Development Fund.

© Marina Curran-Colthart

'Make the Link with your Sink' T-Towel

Argyll & Bute COUNCIL

ARGYLL AND BUTE BIODIVERSITY PARTNERSHIP

PROJECT PART-FINANCED BY THE EUROPEAN UNION

Europe and Scotland
Making it **work together**

Capercaillie Framework – Targeting Future Management at a Landscape-Scale

The Capercaillie is one of Scotland's iconic species. It represents much of what attracts people to visit, live and work in the Highlands and is seen by many as a flagship for Scotland's outstanding nature and landscapes. It is also critically endangered. Without collaboration and action at a landscape-scale, there's a very real chance it will become extinct in Scotland.

The forests of the Cairngorms National Park are their last remaining stronghold. Meeting the international obligations to protect Capercaillie, while also delivering high quality visitor experience and rural development for the area's communities, is one of the central challenges in the National Park.

In 2013 the Cairngorms National Park Authority brought together stakeholders to develop a Capercaillie Framework. This provides a practical way to address some of the challenges and tensions between conservation, tourism and development-issues that go right to the heart of why the Cairngorms National Park exists.

The Framework brings together spatial data and knowledge about the Capercaillie population, pressures and management measures in the Cairngorms in order to better co-ordinate resources at an effective scale. Getting agreement from a wide range of stakeholders on the conclusions reached in the Framework needed a pragmatic, consensus-building approach that found common ground at a strategic level.

Three key areas of management were identified:

- Ecosystem restoration
- Sustainable recreation
- Development management

The Framework provides an overview of how these three areas of management action interact and can be co-ordinated, and how resources can be targeted to best effect. For example, it shows where woodland could be expanded to support Capercaillie population expansion and where the focus for recreation management should be. It also encourages a wide range of people to get involved in protecting the species.

In spring 2015 work started on implementing recommendations in the Framework. There is now a 12.5% premium on woodland creation grants in strategic areas, targeted through the Scottish Rural Development Programme. There is a programme of deer fence removal underway, to reduce the incidence of Capercaillie colliding with them, and a plan to increase predator control measures in certain places. The data and conclusions in the Framework have allowed us to analyse the effects of proposed developments and create bespoke mitigation packages, such as path screening and interpretation. Innovative social science and communications work is planned to identify recreation needs and aspirations around communities and then work with residents to minimise disturbance.

Public awareness and engagement with communities and visitors is crucial. Before we engage communities in planning to reduce the impacts of disturbance and to integrate new development, we need to foster a greater sense of connection and 'ownership' for local actions to help support the Capercaillie population. The aim of the project is to build a bond between people and place, to address some of the disconnection with nature in our communities. We want people to value Capercaillie and the forests they live in, whether for economic, environmental or emotional reasons, and to support and play a part in their conservation.

Cairngorms NATIONAL PARK

CAIRNGORMS NATURE

Clackmannanshire Council Countryside Ranger Service Otter Surveys 2004–2016

© Lorne Gil

The Otter was widespread in the UK before it dramatically declined from the mid 1950s to 1970s, particularly in industrial areas. It is designated in Schedule 5 of the Wildlife and Countryside Act 1981 and given special protection under Annex II and IV of the EC Habitats Directive.

In 1978, concern about its decline led the Vincent Wildlife Trust to carry out a series of surveys. Of 146 sites visited in the former Central Region, 49% were occupied. They found that "the local population appears to be holding but these eastern remnants remain isolated and under threat". By 1985 Otter numbers had increased so that 66% of sites were occupied and in their final survey, from 1991–94, a further expansion of range was discovered such that 81% of the 146 sites were occupied. The vulnerable populations on the Devon and Black Devon were isolated no longer.

In 2002 a team from the Clackmannanshire Biodiversity Partnership produced a Species Action Plan (SAP) for the Otter which was included in the 2003 Clackmannanshire Biodiversity Action Plan. The first objective of the SAP was to monitor the distribution of Otters on an annual basis and identify population trends.

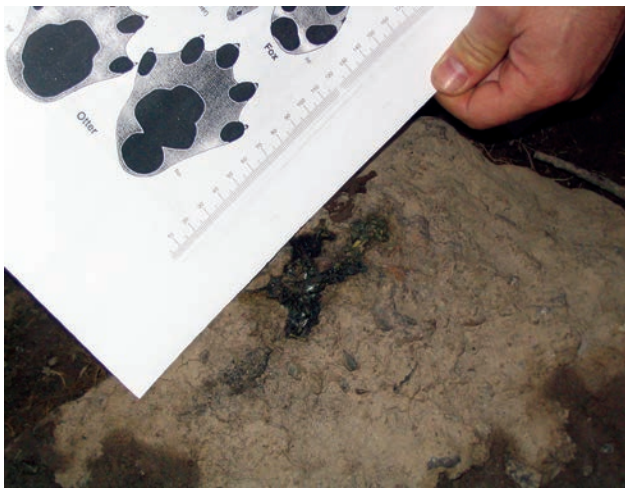
The Clackmannanshire Council Countryside Ranger Service, supported by volunteers, has surveyed for signs of Otters every autumn and most springs since 2004. Following a baseline survey in 2004, a total of 15 annual freshwater sample points were selected for annual autumn surveys. The sites span the length of the Devon from Cambus to the Yetts o'Muckhart, including the main feeder burns running down the Ochil Glens. There are also two sampling points on the Black Devon and two at Gartmorn North and Gartmorn Lade. Nearly all the survey stations are near to bridges, because the rivers are canalised at these points and Otters tend to leave spraints (Otter droppings) in these areas. For more information, see

biodiversity@clacks.gov.uk

Between 2004 and 2008, Otter activity was only found at between six and eight of the 15 sites. By spring 2016, activity was detected at 13 of the 15 stations. Although Otter presence has always been found in some areas, the increase in occupied sites has been predominately due to spread up the other main burns of the Ochil Glens, as well as up the Black Devon from Clackmannan to Forest Mill. The anomalous absence of Otters at two of the survey stations is most likely due to the lack of suitable sprainting sites, since they are found both upstream and downstream of this station.

In addition to indicating the health of the Otter population, the increase in Otter numbers points to improving water quality in the county's water bodies.

The Otter survey remains a committed action in the current 2012–17 Clackmannanshire BAP, which has been extended to run to 2020 in line with the updated Scottish Biodiversity Strategy.



Otter spraint

Clackmannanshire Biodiversity Partnership

Clackmannanshire Council

Wildlife Recording – Good for biodiversity, good for your health, good for the economy and simply good fun!

BioBlitz at Brighouse Bay Holiday Park

The Dumfries and Galloway Environmental Resources Centre (DGERC) was officially opened on 13th September 2004, a key action of the first edition of the Dumfries and Galloway Local Biodiversity Action Plan (LBAP), published in 1999. The LBAP identified, as one of its seven central actions, the need to collect, store and make available information relating to biodiversity. It stated that establishment of a biological records centre would ensure "all actions are founded on sound scientific knowledge, but could also become a focus for the public's involvement in biodiversity".

Creation of the Centre followed extensive discussion amongst LBAP partners, and the very first record was entered by the Scottish Environment Minister. Twelve years later, the Centre's expanding information database is used, amongst other things, to inform proposed developments, guide strategic planning, co-ordinate invasive species management and support the actions contained in the current LBAP. But the Centre's strength is not simply based on the collection and dissemination of existing data; through its work with the public, it has played a vital role in generating a significant volume of new biodiversity information, at the same time as raising awareness of the environment and equipping volunteers with life-enhancing skills.

Much of the public involvement has come through targeted projects, notably Mammal Guardians (2005–2006), Neighbourhood Nature Watch (2006–2007), Woodland Guardians (2008–2009), and Bugs in Gardens (2010–2013). Each has provided volunteers with training in biological surveying and digital technology, as well as active outdoor participation, thereby delivering health and education, as well as biodiversity benefits. Many volunteers continue to contribute after the projects have finished – approximately 400 people have sent records direct to DGERC in the last 3 years, and a few volunteer with the Centre on a long-term basis. In total, over 650,000 records have been collated from over 3,500 different volunteer wildlife recorders since the Centre was set up.

Funding for the Centre comes from a Scottish Natural Heritage grant, a Service Level Agreement with Dumfries and Galloway Council, income from commercial enquiries and project work, and project-specific grants from bodies such as the Heritage Lottery Fund, LEADER and LBAP Partners.

DGERC is the local node in a wider network, the National Biodiversity Network. In this way, data collected locally contribute to Scotland and UK-wide surveys and monitoring, and a citizen science programme that is the envy of the rest of the World. DGERC is now expanding its coverage into Ayrshire with a new project called 'Where's Wildlife in Ayrshire?' As a result, the Centre will be undergoing a name change, but will continue to play an important role in all Six Big Steps for Nature from Scotland's Biodiversity Route Map to 2020.

Reptile Ramble at Kirkconnell Flow NNR

Dumfries and Galloway BIODIVERSITY Partnership

Biodiversity and Climate Change Adaptation: Colquhoun Park Flood Alleviation Scheme

Biodiversity enhancements at the former skating pond

Climate change is a serious and global threat to biodiversity, including people. One of the expected impacts of climate change is more frequent flooding. Winters are predicted to become wetter with more regular heavy rainfall and floods considered extreme today could become more common in the future.

Some residents of the Colquhoun Park area within Bearsden were experiencing the impacts of flooding first hand and this was only expected to get worse with the impacts of climate change. Numerous historic flooding events have occurred in Colquhoun Park since the 1980s, with significant flooding experienced in 2006, 2012 and 2013.

In order to tackle the problem, East Dunbartonshire Council took a holistic and sustainable approach to find a solution. The Colquhoun Park Flood Alleviation Scheme is based on the water attenuation properties of biodiversity and seeks to provide flood protection via habitat creation and enhancement. The design included:

- Creation of a large wetland area
- Re-instatement and enhancement of a former skating pond
- De-culverting a section of the Ledcameroch Burn through the wetland
- Wildflower meadows
- Removal of invasive non-native species
- Access improvements
- Relocation and upgrading of play facilities.

Native species of Scottish provenance were used throughout. The scheme was completed in November 2014 with landscaping works finalised in summer 2015. The project cost £700,000, including both design and construction, and this was funded mainly by East Dunbartonshire Council capital budgets for Flood Prevention.

The wetland and pond provide additional storage during high rainfall events, easing the capacity pressure on the existing underground drainage system. These features also provide an excellent habitat for local wildlife and an amenity asset for local residents. The islands created within the pond provide nesting sites for waterbirds and Mute Swan cygnets have been seen this summer (2016).

It is hoped Common Frogs and Common Toads will move into the area to breed and the wetland should attract colourful dragonflies and damselflies. The wildflower meadows also benefit pollinating insects such as bumblebees, butterflies and hoverflies.

Freshwater and wetland habitats, such as those created and enhanced at Colquhoun Park, are hugely important for wildlife. These habitat types cover just 3% of the UK land surface, yet are known to support about 10% of UK species. The number of natural ponds has declined significantly over the last century, largely through urban expansion and drainage for agriculture. Ponds are a Priority Habitat within the East Dunbartonshire Local Biodiversity Action Plan.

The project also has a value in terms of public amenity with improved access at the park incorporated into the work. The scheme offers opportunities for exercise and recreation in an attractive setting and enables people to experience a little bit of nature on their doorstep.

Colquhoun Park Flood Alleviation Scheme is an excellent example of managing surface water and enhancing urban biodiversity. The scheme is a sustainable, biodiverse solution delivering climate change resilience for the future.

Work in progress: Construction of pond and wetland area, 2014

sustainable thriving achieving
East Dunbartonshire Council
www.eastdunbarton.gov.uk

East Lothian

Grey Partridge Project

Partridge margins

The Grey Partridge is a barometer species of arable farmland. If Partridge are faring well, then other species will be doing well also. Numbers of Partridge have fallen by over 95% since the last World War, so the species is a priority of farmland conservation. The Partridge is also a nostalgic farmer's friend, and a noble looking bird, so was an appropriate figurehead for the project.

The project asked farms to sow a mix of different crops on set-aside land. This is often called wild bird cover and it provides shelter, food and undisturbed nesting space for ground nesting birds such as Partridge. Farmers know how to sow crops, so this was an easy project for them to be part of.

We also asked farmers to count pairs of Partridge in their fields in early spring. Partridge are big birds, so this was also easy for the farmer. These counts helped us monitor the success of the project.

Some seed was provided. Advice and support was given by way of farm visits and annual breakfast meetings, where the allure of locally produced bacon rolls was too strong to resist. A trophy was awarded to the farmer who achieved most in the previous year. Fifty farms in East Lothian were involved in the project, covering a significant portion of the county.

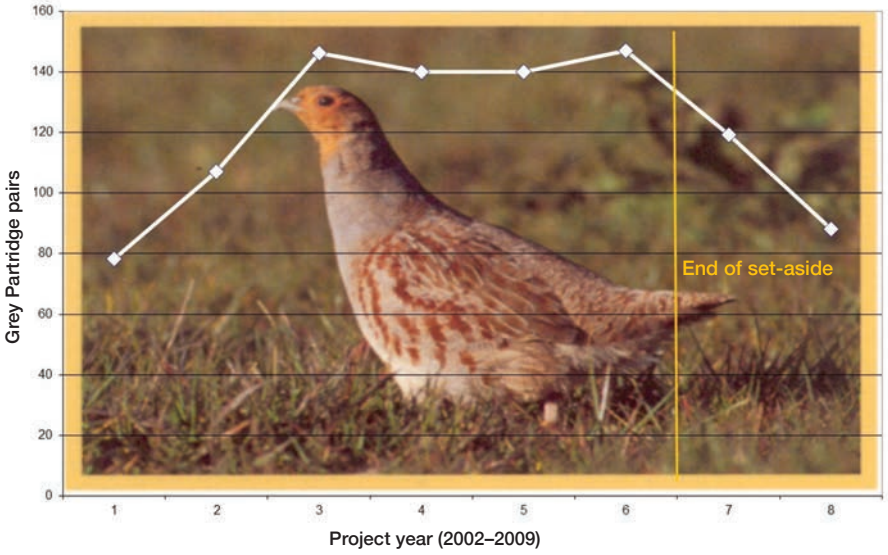
Partridge numbers doubled after two years. This was in line with expectations, based on research by the Game & Wildlife Conservation Trust (GWCT). Also in line with GWCT research was an increase in other farm wildlife over that time. Surveys showed that bird numbers were 50 times greater in wild bird cover compared with a bare winter field. Food and shelter is essential for all species at all times of year.

The project sustained this expanded bird population on project farms for a further three years; then set-aside was abolished. The loss of set-aside from fields meant a loss of habitat from farms. Within two years Partridge numbers had dropped to pre-project levels. It can be assumed that other wild species also suffered significant population declines.

Farmers can be conservation-minded. Even the most hard-bitten, commercial-minded farmer was involved in the Grey Partridge Project because it was designed with the farmer in mind.

Projects can be very effective, but deliver only so much. Loss of set-aside meant the loss of the project and the benefits it had delivered. Good policies will bring long-lasting benefits, if they are practical and easy to deliver.

The Project Partners were East Lothian Council, Game & Wildlife Conservation Trust, Farm & Wildlife Advisory Group, National Farmers' Union of Scotland, RSPB Scotland and individual farmers. The project was sponsored by Dods of Haddington and Scottish Power.



East Lothian Council

Edinburgh Biodiversity Partnership Expanding Edinburgh's woodland habitat network

© G. Gainey

Salisbury Crags from Warrender Park Crescent

The Edinburgh Biodiversity Partnership has produced Local Biodiversity Action Plans (LBAPs) for the city since 2000. The Partnership is thriving, with a new LBAP launched in May 2016 containing over 250 actions to improve our biodiversity in the next 3 years. We are very fortunate in Edinburgh to have a wealth of committed and engaged stakeholders, from statutory agencies and NGOs, to research bodies and local volunteer-led conservation groups. Underpinning much of the work we do is the invaluable data collected by a network of expert volunteer wildlife recorders.

There are several examples of long term conservation programmes carried out through the Edinburgh LBAP, including our Rare Plants project and ongoing work to increase nesting sites for Swifts. However, to highlight the value of partnership working, we have chosen to focus here on the successful increase in the woodland habitat network across Edinburgh.

Over 130 hectares of new native woodland across Edinburgh have been planted in a range of projects delivered by members of the Edinburgh Biodiversity Partnership in the last twenty years. This habitat creation contributes at a local level to national objectives including delivery of a Central Scotland Green Network and the Scottish Forestry Strategy target to increase woodland cover.

In the late 1990s, the cumulative impact of trees lost to Dutch Elm Disease, industrial and residential development and a lack of diversity in the age structure of Edinburgh's trees and woodlands were leading to declines in the quality and extent of woodland habitat. It was recognised that investment in the future of Edinburgh's trees and woodlands was needed. A key objective was to have a greater species mix, connectivity and structural diversity to improve the resilience of the urban forest.

The first landscape-scale habitat creation work was carried out through the Edinburgh Urban Forest Project. City of Edinburgh Council, Forestry Commission Scotland and Edinburgh and Lothian Greenspace Trust were key partners. Over 100 hectares of new native woodland were planted, mainly on Council land in parks, schools and other areas.

Further partnership projects for woodland enhancement were undertaken in the mid-2000s. These were funded by the Scottish Government's innovative Biodiversity Action Grant Scheme, launched to mark the publication of the first Scottish Biodiversity Strategy in 2004. A ground flora enhancement project and a local provenance native trees replacement project were carried out.

More recently, following the publication of the Edinburgh and Lothians Forestry and Woodland Strategy, a multiple partner, multiple landowner project has created 28 new hectares of native woodland network on the north east slopes of the Pentland Hills on the outskirts of Edinburgh. This includes planting in Bonaly Country Park, owned by City of Edinburgh Council, private land at Swanston Farm and more planting is planned for Defence Estates land. Key partners in delivering this project are the landowners mentioned, Edinburgh and Lothian Greenspace Trust, Lothian and Fife Green Network Partnership, Woodland Trust Scotland and Forestry Commission Scotland.

© CEC

Aerial image of Edinburgh urban forest

Edinburgh Biodiversity Partnership

Falkirk

Boosting Brownfield Biodiversity

© Yvette Wilson

The Falkirk Council area, sitting within the Central Belt, is a relatively urban environment. This makes for a fascinating range of biodiversity, with its own distinct opportunities and challenges.

Brownfield sites are previously developed areas like derelict sites, quarries or bings. Where such disturbed sites begin to return to nature, the mix of habitats including bare ground, grassland, wetland and scrub provides unique and important places for wildlife. At least 12% of our nationally rare or scarce invertebrates are recorded from brownfield sites.

The Falkirk area includes some fantastic brownfield sites. They support a wide array of plants and animals including unique orchid populations, legally protected Great Crested Newts and rare invertebrates. Often these sites also provide great opportunities for people to discover and enjoy nature right on their doorsteps.

Ecologically-rich brownfield sites face a variety of pressures including pollution, redevelopment, negative public perceptions, habitat isolation and natural succession.

The Falkirk Area Biodiversity Action Plan (FABAP) recognises the value of brownfield sites, the specialist biodiversity they support and the threats they face. Numerous FABAP partners, particularly Buglife and Falkirk Council, have been working to protect, enhance and promote local brownfield biodiversity. The work has included assessing sites on the vacant and derelict land register to identify those brownfield sites likely to be important for biodiversity. Subsequently, invertebrate surveys at key sites were carried out by Buglife, which uncovered some species that are found at only a handful of sites across Scotland.

Following surveys, a small number of key “stepping stone” sites (i.e. brownfield sites which form a vital network of habitat for specialist plants and animals) have been identified. Four of these will be protected by Falkirk Council as locally designated Wildlife Sites. To conserve wider brownfield biodiversity, this habitat has been included in Falkirk Council’s Supplementary Planning Guidance on “Biodiversity & Development” to help developers identify and safeguard brownfield biodiversity.

Additionally, Falkirk Council staff, including planning and development management officers, have been given training on brownfield biodiversity.

Practical management and enhancement work has been undertaken at four key brownfield sites. This includes scrub control, ground disturbance, habitat creation, pond enhancement, litter clearance, invasive species control, and grassland management.

Community involvement has been key to the project. Volunteer groups have helped to do much of the practical management, enhancement and monitoring work. Larbert High School pupils have assisted with management at Forge Dam and are working on interpretation and art features reflecting the site’s biodiversity. Local management groups guide the management and enhancement of several sites and guided walks, talks, educational events and training workshops have been held at key sites with interpretation panels now highlighting the wildlife present.

Not only is existing brownfield habitat being protected, but new brownfield “stepping stone” habitat has been created by Buglife through the installation of a green roof at Calachem, Grangemouth.

Work to protect, enhance and promote the wonderful brownfield biodiversity of the Falkirk Council area continues with input from numerous LBAP partners, local communities and volunteers.

© Steven Falk, Suzanne Burgess & Falkirk Council

Falkirk Council

The Falkirk Area Biodiversity Partnership

Fife's Buzzing – Bringing Colour and Life to our Parks

Ravenscraig Park meadows, Kirkcaldy

The Fife Biodiversity Partnership published the fourth edition of its Local Biodiversity Action Plan in 2013. It featured a suite of exciting projects involving over 40 partner organisations working together to protect and enhance biodiversity for its intrinsic value as well as the health, wellbeing and enjoyment of the people of Fife.

One action aimed to enhance the biodiversity of greenspace whilst creating new areas of wildflower meadow. Since WWII, the UK has lost 97% of its flower-rich grassland, with a resultant decline of around two thirds of pollinating insects. Fife is the most heavily cultivated region in Scotland, so urban greenspace presented an opportunity to address these declines whilst involving communities and raising awareness.

The ambitious Fife's Buzzing project was developed by Buglife and Fife Council. It has brought together schoolchildren and community groups across Fife to create wildflower meadows that bring colour and life to our parks and make them happier and healthier places for people and wildlife to use and enjoy. The three-year project was awarded £86,000 from Heritage Lottery Fund and Fife Environment Trust.

Fife's Buzzing aims to create 12 ha of flower-rich grassland at 16 locations. These were carefully chosen to bring the greatest possible benefits to people, as well as wildlife, by looking at positioning within the wider grassland habitat network, distribution across the Kingdom and accessibility to schools and community groups.

So far we have:

- Created 10 ha of flower-rich grassland at 20 parks through plug planting, seed sowing and long grass management
- Worked with landowners including Woodland Trust Scotland, Fife Golf Trust, St Andrews Botanic Gardens, Commscope and Dalbeath Farm
- Involved over 1,400 people – mostly schoolchildren from 24 schools – at 56 meadow creation and management events
- Engaged with 3,000 people at talks and events
- Received significant support from Community Payback by Offenders Scheme
- Annual monitoring has shown almost instant benefits to pollinators. Baseline surveys of amenity grassland in 2014 found a total of 8 invertebrate species. At our new meadows in 2015, 101 species were recorded including 56 types of pollinator. Only four species were recorded on the control surveys of adjacent cut grass in the same year.

The project contributes to the Fife LBAP, Fife Greenspace Strategy, health and wellbeing agenda, 2020 Challenge for Scotland's Biodiversity, Buglife's Get Britain Buzzing campaign and the Wildlife & Natural Environment Act by:

- Improving the quality of Fife's parks and greenspaces for people by making them more diverse, interesting and attractive places to visit and use
- Protecting and enhancing biodiversity
- Involving local people in conservation actions and thereby raising awareness and enjoyment of our environment
- Meeting Fife Council's obligations under Scotland's 'biodiversity duty' to further biodiversity in its functions

We have had a very enthusiastic response from everyone involved in Fife's Buzzing so far. Wildflower meadows are beautiful spaces, and by adding these to our parks we hope to create a richer environment for all.

Seed sowing with Sinclairtown Primary School

Fife Council

buglife

Fife Biodiversity Partnership – Linking People with Nature

Glasgow's Exceptional Urban Water Voles

© Stef Scott

Monitoring Glasgow's Water Voles under licence

Water Voles are considered to be one of Britain's fastest declining mammal species and concern for this has resulted in legal protection. They have been present in Glasgow for hundreds of years and they have been recorded in wetlands including ditches, marshes, ponds, burns and canals.

As the name suggests, Water Voles traditionally live in and around water. However, Water Voles were recently discovered in Glasgow living away from water and since then, large populations have been recorded in the east end of the city living in long grassland. These terrestrial Water Voles are termed fossorial which means adapted for digging and they spend more time underground like a Mole.

A partnership project was set up with Glasgow City Council (GCC), University of Glasgow, Glasgow Natural History Society and Scottish Natural Heritage (SNH) to carry out vital scientific research.

The key project results include:

- A significant number of fossorial Water Vole populations were recorded in the east end of Glasgow, through systematic survey. This is the first time that a large number of fossorial Water Voles have been recorded in an urban area.
- The density of these populations was high in comparison to other studies in the UK. In fact density at one site was the highest recorded in the UK.
- Habitat research revealed that certain grass species were strongly associated with fossorial Water Vole presence. The survey results also demonstrated a strong correlation with road verges, parks, greenspace and vacant & derelict land (brownfield).

A direct outcome of this project is that Scottish Natural Heritage now considers these urban fossorial populations to be of national significance.

The scientific research is currently being used to develop fossorial Water Vole guidelines regarding land management, development and mitigation to complement the existing guidelines for riparian Water Voles, as well as for updating Glasgow's Local Biodiversity Action Plan. There is, however, still concern that these fragmented populations are more vulnerable to extinction. The next steps for protecting these important populations in the long-term are to develop planning policies and to implement green network and green infrastructure projects.

The council is currently working with the University of Glasgow and SNH on a Water Vole Ambassador Project, and with RSPB Scotland and the Seven Lochs Wetland Park to raise awareness and to create and manage habitat to protect this nationally significant population of Water Voles. The annual Glasgow Wildfest, co-ordinated by RSPB Scotland, featured a whole week of Water Vole events in September this year.

GCC is also at the forefront of developing integrated green network projects to incorporate economic development with habitat creation and management.

www.glasgow.gov.uk/watervoles

© Les Foster

Water Vole in wetland

University of Glasgow

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland
Nàdar air fad airson Alba air fad

Glasgow City Council

Glasgow Natural History Society

The Highland Seashore Project

© James Merryweather

The Highland Seashore Project was funded by the Highland Council, the Heritage Lottery Fund, the Crown Estate Marine Stewardship Fund and Scottish Natural Heritage. Launched in February 2013, the project ran until March 2016. Its aim was to bring Highland communities and visitors into greater contact with their coast and increase their feeling of ownership of it. There was a huge range of different activities to facilitate "discovering your shore" and to celebrate the shore's heritage and nature. The project worked in partnership with local community groups to provide seashore field trips, skill development in surveying, workshops, roadshows and festivals. The total funding from partners in cash and in-kind ran to almost £200,000!

Over three years the project delivered 12 Seashore Life Identification and Survey Workshops all around the Highlands, led by a local seashore expert with the support of local groups and their partner organisations. Workshops were accessible to novices and the amateur specialist. The main outcomes were to build confidence, increase knowledge and link people together. The project web site has a live survey submission page at http://www.highlandbiodiversity.com/seashore-life-survey.asp to allow records to be added. One record is valued as much as twenty.

By the end of January 2016, the Highland Seashore Biodiversity Project had completed its brief of three years of project activities and greatly exceeded its targets. With close to 8,000 beneficiaries, 90 surveyors trained and over 100 Project Partners, it was regarded as the best biodiversity project run in Highland in terms of community engagement.

The project was also keen to provide a legacy; a collection of publications, a seashore surveyor network and training workshops with project partners. All have been left in place and are available to encourage people to work together and share what they have learnt about the wildlife of the coast, how that rich diversity can be preserved for future generations and how to become more involved in the surveying and recording of coastal wildlife.

However this is just the start of something bigger. In some small way the project has contributed to communities taking to their shore and "owning" it, caring for it and becoming an advocate for it. There is now a web page for Highland Seashore Project resources for education and outdoor pursuits, see www.highlandbiodiversity.com/seashore.asp. The Highland Council Countryside Ranger Service has new kit and equipment to help them to support local community groups who want to run their own mini-seashore roadshows or beach combing events. Have a look at the websites of CoCoast, Moray Firth Partnership, Living Seas Project, Coigach and Assynt Living Landscapes Project and Wild Lochaber to see what they can offer.

The natural beauty and diversity of the Highland coast stimulated the underlying drive of communities to protect and enjoy their shores. The project just captured that passion and the results were clear; Highlanders and their coast are entwined mind and heart.

© James Merryweather

Highland
BIODIVERSITY
THE VARIETY OF LIFE

Strathard – A landscape to live work and play

Loch Ard

Wild Park 2020, the Biodiversity Action Plan for the Loch Lomond & The Trossachs National Park, includes over 100 partner biodiversity projects. One of these, the Strathard Project, is delivering against the Scottish Biodiversity Strategy Route Map Big Step 5 – Sustainable Management of Land and Freshwater.

The Strathard Project takes an ecosystem approach to action at a landscape scale. The project partners include Scottish Environment Protection Agency (lead), Loch Lomond & The Trossachs National Park Authority, Scottish Natural Heritage, Forest Enterprise, Stirling Council, Forest Research, the Community Partnership and landowners. This partnership approach is at the heart of Wild Park 2020 and a great example of the benefits of pooling resources and expertise to deliver for biodiversity.

There are four project objectives:

- To apply an ecosystem services assessment framework to identify integrated land management solutions to deliver for ecosystem health and flood risk management.
- To engage with the community and land managers to identify local priorities, opportunities and solutions to deliver multiple benefits for environment and society.
- To foster a joined up partnership approach to support delivery of these objectives.
- To identify and trial sustainable and resilient land and water management, including natural flood management measures.

Community engagement is central to this project. It was launched in February 2016 through a series of consultation events and activities aimed at reaching residents, visitors, landowners and local businesses. These events aimed to engage the community as part of the decision making process, to raise awareness of local ecosystem services and identify issues which are influenced by land and water management.

Alongside this community engagement, partners have been working together to collate baseline data on ecosystem condition. Together with an assessment of the ecosystem services, these will be used to produce opportunity maps for potential land and water management actions that can benefit the area.

The next stage in the project is to collate the results of the assessment and report on opportunities as part of the Community Action Plan, identifying key stakeholders who can take these forward. This action plan will be key to building consensus on the priorities, managing expectations and balancing aspirations.

One priority already identified is the flooding in Strathard during spate events. Community engagement has enabled expectations of a trial of natural flood management (NFM) techniques to be managed. There is now a greater understanding of the extent of the flood risk benefits of NFM (small but positive), but also the other ecosystem benefits which could be gained from the NFM trial such as biodiversity, landscape and water quality improvements.

Key outcomes for this project are: better working relationships between agencies, landowners and the community; a greater understanding amongst stakeholders of the ecosystem benefits of the area; identification of opportunities to improve the ecosystem health and resilience of its services and more effective joined up delivery on these priorities. For more information on this project visit www.thecommunitypartnership.org.uk/project/strathard-a-place-to-live-work-play and about Wild Park 2020 visit www.lochlomond-trossachs.org/park-authority/publications/biodiversity-action-plan-2008-2011.

Strathard Project Area

Large Scale Community-led Invasive Species Management Success

Invasiive non-native Mink, responsible for a decline in Scottish Water Vole populations.

North East Scotland Biodiversity Partnership has facilitated the world's largest community-led invasive species management project, bringing multiple benefits for biodiversity. This article outlines how this outstanding project developed and what has been achieved.

Managing the impact of invasive non-native species on native biodiversity is often problematic because of the scale of the impact. It is essential to deliver action across a large area to overcome the potential for recolonisation from unmanaged areas. Partnership working, involving many stakeholders and citizen conservationists, is particularly suited for delivering such large-scale co-ordinated action. This work secured a reversal of the decline of Water Voles in waterside habitats in Aberdeenshire. Furthermore, it has facilitated an innovative conservation approach that, for nearly 20 years, has delivered the largest mainland invasive species eradication effort worldwide.

The North East Scotland Water Vole conservation project was initiated and led by scientists from the University of Aberdeen with facilitation from North East Scotland Biodiversity Partnership and support from Scottish Natural Heritage. Initially focussed in Aberdeenshire, the project has expanded to several fisheries trusts and other partners and funders and has been led by Rivers and Fisheries Trusts of Scotland (RAFTS) since 2009.

American Mink is an invasive species that is responsible for the decline of Water Voles and other waterside fauna. This project optimised the efforts of an existing local and skilled workforce to deliver co-ordinated, systematic sub-catchment by sub-catchment eradication and monitoring of Mink. This has achieved conservation benefit on a scale not previously attempted anywhere worldwide.

A key component was to promote the systematic use of Mink rafts; floating platforms with a footprint-recording plate made of moist clay and sand under a wooden tunnel. Rafts were built by Wood RecyclAbility, a local charity that trains young adults with special needs in constructing products from recycled wood. The rafts act both as a monitoring device and as a Mink trapping site. Traps are placed in the tunnel of the raft subsequent to Mink footprints being recorded. Rafts thus provide a targeted, highly effective method of trapping. Many volunteers who adopted a raft upgraded their involvement and became trained in trapping and humanely dispatching Mink.

After the first six years, Mink control expanded from an initial 30 km^2 area with a residual Water Vole metapopulation, to 6,000 km^2, encompassing the Cairngorms National Park. Subsequently, an enormous 29,000 km^2, a third of Scotland, was protected from the influence of Mink. Throughout, the project used adaptive management to refine understanding and best practice, focussing on the impact of control on Mink demography and volunteer motivation and retention. The resultant reduction in Mink numbers enabled an ongoing spectacular recovery of Water Voles, the focal native species, with hints of recovery by other affected species.

It is essential that this project continues to receive support going forward. Without this, the Water Vole recovery will be reversed, re-colonisation of Mink will occur and the legacy of 20 years of grass root conservation efforts will be lost.

Water Vole

NORTH-EAST SCOTLAND BIODIVERSITY

North Lanarkshire

Beautiful Bogs

Terminal drain before

Terminal drain after

The Scottish Government, between 2012 and 2015, funded a programme of peatland restoration (Peatland Action) to mitigate against climate change. Co-ordinated by Scottish Natural Heritage, the project aimed to;

- Restore and manage peatlands to maintain carbon stores and encourage carbon sequestration and to restore peatland ecosystem functions;
- Enhance ecosystem resilience to climate change;
- Build peatland restoration capacity and understanding amongst land managers, contractors, advisors and the public.

The UK is of international importance for peatland habitats and more than 20% of Scotland's land is covered in peatland. A notable coverage of lowland raised bog is found within North Lanarkshire. Unfortunately, the extent and quality of this important habitat mirrors national trends and it is much reduced and degraded. Lowland raised bogs support a number of unique species such as *Sphagnum* mosses, which play a key role in the development of peat bogs by retaining water long after the surrounding soil has dried out. In doing so, this moss provides oxygen-free conditions and thus slows the decay of dead plant material, which gets compressed over hundreds of years to form peat.

Healthy peatlands keep carbon locked up, and continue to accumulate and store increasing quantities. Degraded bogs emit carbon dioxide and other greenhouse gasses, which contribute to climate change. Restoring peat-forming habitat ensures that a bog remains as a long-term carbon sink rather than a greenhouse gas source.

The Biodiversity Team at North Lanarkshire Council secured over £130,000 from Peatland Action to deliver habitat restoration at six sites in North Lanarkshire. Additional funds from North Lanarkshire Council covered scrub removal at one site and project management, carried out by the Biodiversity Team. Bog restoration works were undertaken at:

- Broadwood, Cumbernauld
- Cathburn, Wishaw
- Drumpellier Country Park, Coatbridge
- Fannyside Muir, Cumbernauld
- Greenhead Moss, Wishaw
- North Shotts Moss, Shotts

Restoration works took the form of blocking drainage channels with dams to increase the water table at each of the sites, earth works, peat bunding, and scrub removal. One of the many benefits of this funding scheme was the flexibility in the method of restoration. This allowed innovative solutions to peatland restoration to be developed, and provided an opportunity for contactors to learn new skills and techniques in restoration works.

The delivery of these projects directly contributes to the Scottish Government targets on Climate Change Mitigation and meets targets identified in The North Lanarkshire Biodiversity Action Plan 2015–2020. The North Lanarkshire Biodiversity Partnership is continuing to work on North Lanarkshire's bogs, with a current emphasis on education, community engagement and survey.

The accompanying photographs show bog Restoration at Fannyside Muir. Here, a 10 ha site was identified on North Lanarkshire Council land, which would benefit from bog restoration work in the form of ditch blocking. Approximately 26 plastic pile dams were installed and over 300 peat plugs created within the grips to raise the water table. The pictures clearly show how the water table has risen from damming up the drainage ditches.

North Lanarkshire Council

Local Provenance Woodland and Wildflower Projects

Tree planting at Happy Valley

Local, genetically-based variation is an important element of biodiversity, particularly so in an island context. The use of species grown from locally sourced seed or cuttings has, therefore, been actively promoted over the lifetime of the Orkney Local Biodiversity Action Plan.

Orkney has the most northerly native woodland in Britain, at Berriedale in Hoy. Here, the native trees have adapted over thousands of years to cope with the local conditions; the strong salt-laden winds, short growing seasons and extremes of day length.

For 15 years the 'Orkney Woodland Project' promoted the planting of trees of local Orkney provenance, recognising the importance of developing new woodlands that are able to survive the challenges of the Orkney climate. The project was supported by a wide range of partners: Scottish Natural Heritage (SNH), Forestry Commission Scotland, Orkney Islands Council, Royal Society for the Protection of Birds (RSPB), Scottish Government Rural Payments and Inspections Directorate (SGRPID), Orkney Field Club, Hoy Trust, local tree growers and the Heritage Lottery Fund. Using seed and cuttings collected from Berriedale and other remnant native woodlands, over 300 acres of trees have been planted. These new woodlands contain species such as Downy Birch, Rowan and Aspen – all descended from a long line of native Orkney trees. Mostly small in area, the new plantings are spread throughout the islands; some are on private land, while others are in public locations such as community school grounds and parks.

This project engaged with a broad spectrum of the local community, greatly raising the profile of native trees and woodlands and helping communities to become actively involved in their establishment and management in Orkney.

In 2008, a group formed with the aim of establishing a sustainable supply of wildflower seed, sourced from local plant species, for use in habitat enhancement projects to benefit the Great Yellow Bumblebee. Once widespread throughout the UK, this bumblebee is now found only in the Western Isles, coastal areas of Sutherland and Caithness, and Orkney.

The project involved Orkney Islands Council, RSPB, Bumblebee Conservation Trust, SGRPID, SNH, Scottish Environment Protection Agency and the local recorder for Hymenoptera and Vascular Plants. Starting with tiny quantities of seed, Red Clover, Bird's-foot Trefoil, Tufted Vetch and Meadow Vetchling were grown in plots at the Orkney College's Agronomy Institute, allowing stocks to be bulked up over two growing seasons. Plots containing a wider range of species were then established at the Council-owned property known as Happy Valley. In the early years, volunteers collected seed to get the project underway and members of the Orkney Rotary Club helped with plug planting.

More recently, seed harvested annually has been used to create colourful meadows and wetland areas in a number of development projects. The grounds of new schools in Kirkwall and Stromness were first to benefit from enhancement and, during spring 2016, areas of flower-rich meadow and wetland were sown as part of the Sustainable Drainage Scheme for a new road. These wildflower areas will provide convenient sources of seed for similar projects in the future.

Wildflower embankment at Pickaquoy Leisure Centre

ORKNEY ISLANDS COUNCIL

ORKNEY'S LIVING LEGACY

Juniper Scrub Restoration at the Cample Burn, Clyde Muirshiel Regional Park

Fenceline and planting at Cample Burn

Juniper walk

The Cample Burn Juniper Scrub Project is situated within Clyde Muirshiel Regional Park, to the west of Paisley. The Regional Park covers 281 square kilometres of heather moorland, grassland and lochs, with much of the land being farmed for sheep and cattle. It is well-used for walking, fishing, sailing and canoeing. One third of the Regional Park is designated as a Special Protection Area for its population of Hen Harriers.

Juniper is found in two main areas of the UK: the Scottish Highlands and the chalk downs of southern England. Since the 1960s, the amount of Juniper in Britain has declined by more than half and it is now a species of conservation concern. Juniper has been greatly reduced through muirburn and by over- grazing of sheep. In the Regional Park, before the project, there were only six Juniper plants remaining, two of which were female. One of the aims of the restoration project is to naturally regenerate the Juniper within a 17 ha exclusion area on the grounds of Hunterston Estate.

Juniper cuttings have been propagated and grown on for three years, then planted out at the Cample Burn. In addition to stock grown by staff at the Regional Park a local group, the Lochwinnoch Community Garden has also grown on cuttings that have been planted out by volunteers.

Berries are a rare occurrence for our Juniper bushes and they are usually eaten by thrushes before staff can collect them. Cuttings have been very difficult to propagate with a success rate of around ten percent. The Forestry Commission recommends that cuttings are taken from areas with similar environmental conditions, and so some of the Juniper for our project has been collected from the low moorland hills near Peebles. Around one hundred small Juniper are now in the Cample Burn and it is planned to continue planting over the next few years.

To interest people in the importance of Juniper woodland, the Regional Park has led a series of events. A guided walk to one of the Juniper sites was followed by a BBQ, with locally produced venison burgers and sausages flavoured with Juniper. Sponsorship of the event and interpretation banners were provided by Hendrick's Gin.

The Cample Burn project has been funded by the Heritage Lottery Fund (HLF), Scottish Natural Heritage and Hunterston Estates. The Juniper restoration is part of the Action for Mountain Woodlands (AMWood) project funded by the HLF.

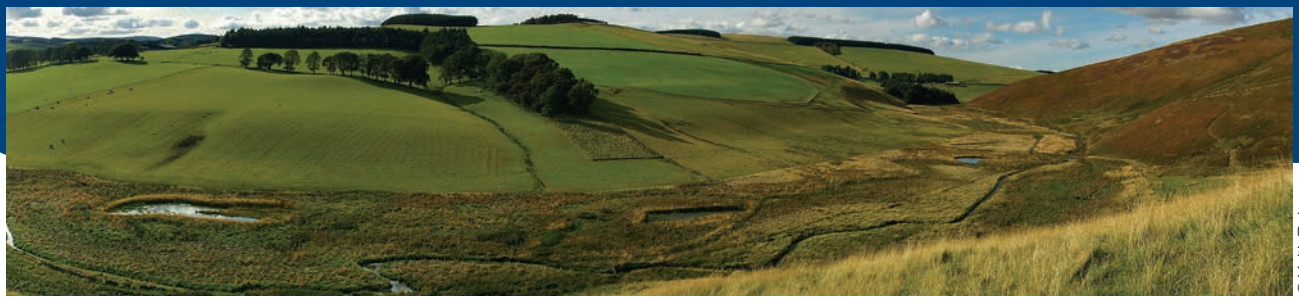
The Local Biodiversity Action Plan (LBAP) has also highlighted Juniper as a priority species. Another benefit of the project work at the Cample Burn will be to encourage areas of deeper heather cover for the internationally important population of Hen Harriers.

This partnership with landowners, private business, LBAP, funding bodies, community groups and promotion through the Regional Park is securing and increasing the Juniper resource in Clyde Muirshiel Regional Park and additionally benefiting Hen Harriers.

Further information, see www.clydemuirshiel.co.uk.

Inverclyde
Renfrewshire
East Renfrewshire
LBAP

Borders Biodiversity Offset Schemes



Natural Flood Management at Crookston Farm

The Scottish Borders Local Biodiversity Action Plan (LBAP) was launched in 2001. The partnership builds upon a strong local environmental NGO presence, delivering for catchment management (Tweed Forum), native and community woodland and ecological restoration (Borders Forest Trust) and sustainability in the uplands (Southern Uplands Partnership).

Scottish Borders Council has developed a strong planning policy framework to ensure that there is no net loss of biodiversity within the region. This has been applied within major projects, such as renewable energy schemes. An approach to delivering biodiversity offsets to compensate for the residual impacts of developments was first developed for an offsite habitat compensation scheme for Black Grouse at Langhope Rig windfarm, commencing in 2009.

This approach has been implemented at seven further wind farm and mineral development schemes to compensate for residual impacts on Black Grouse, blanket bog and other upland habitats. Biodiversity benefits are delivered at a landscape scale in the catchments of the Tweed, including in the Lammermuir Hills and Central Southern Uplands. Furthermore, ecosystems services including flood protection, water quality improvements and carbon storage are enhanced.

The Council worked with partners such as Borders Forest Trust, Tweed Forum, Southern Uplands Partnership and the Game & Wildlife Conservation Trust to deliver these schemes. Their experience as trusted intermediaries with farmers and landowners has enabled habitat improvements to be delivered, whilst being integrated with the needs of working farms and estates. Opportunities have also been provided for local contractors in fencing, planting and wetland management.

The offset approach has helped to mainstream biodiversity into the planning process, enabling important renewable developments in the region. The developer contribution funding of over £600,000 has drawn in additional resources of over £3 million, through the Scottish Rural Development Program and over 30,000 ha has been put under positive management for Black Grouse.

Managing sites under the schemes has raised awareness that integrated approaches to land use can deliver multiple benefits. Flood plain and hillslope woodland and wetland scrapes created for natural flood management have become demonstration sites for visits by government, statutory agencies, universities and international audiences.

The Biodiversity Offset Scheme received a commendation in the Scottish Awards for Quality in Planning in 2012 www.gov.scot/Resource/0040/00401139.pdf, and features as a case study in the Royal Society for the Protection of Birds, Royal Town Planning Institute and Chartered Institute of Ecology and Environmental Management publication, *Planning Naturally* www.rspb.org.uk/Images/planningnaturally_tcm9-349413.pdf.

The approach is now being applied to the Council's Penmanshiel Compensatory Replanting Scheme, to compensate for loss of woodland at the wind farm. Facilitated by the Scottish Agricultural College, 110 ha of new woodland will deliver multiple benefits for communities. A further scheme from Langhope Rig will be initiated in autumn 2016 to deliver natural flood management benefits in catchments above Hawick. These schemes will utilise the pilot Regional Land Use Framework developed under the Scottish Borders Land Use Strategy pilot project.

Project partners include Scottish Borders Council, Borders Forest Trust, Southern Uplands Partnership, Tweed Forum, The Game & Wildlife Conservation Trust, RSPB, East Lothian Council, Scottish Agricultural College, Scottish & Southern Energy, Scottish Power Renewables, Fred Olsen Renewables/Natural Power, Inifis, North British Windpower/Wind Prospect and Banks Renewables.

Langhope Rig black grouse steering group, Southern Uplands

Scottish Borders COUNCIL

Grouped Species Action Plan for Hawkweeds

Hawkweeds in cultivation by Shetland Amenity Trust

Hawkweeds (*Hieracium*) are perennial herbs and members of the Daisy family (Asteraceae). Shetland is host to some 26 species, 18 of which are endemic (they only naturally grow here). Hawkweed species may look very much alike, but there are significant differences in flower and leaf structure. Hawkweeds reproduce without fertilisation, and each species (actually micro-species) comprises a distinct clone.

Hawkweeds in Shetland are all considered to be in decline, mostly because of overgrazing by sheep and, because of this, occur only in locations that are inaccessible to sheep or in areas where stock have been regularly excluded during the summer. Some species are relatively common and widespread but others are represented by only a few plants at a single location. Since 1999, Shetland Amenity Trust's Woodlands Team and Shetland Biological Records Centre have been partaking in a national Grouped Species Action Plan (SAP) for Shetland's endemic Hawkweeds, in partnership with Scottish Natural Heritage (SNH) and Shetland Conservation Volunteers. Shetland botanist, Walter Scott, has also contributed advice and material for the success of the project.

Several species have now been propagated and are faring well; some have also been planted out in the wild. The main aims of the SAP were to establish at least two viable populations in Shetland and to maintain an ex-situ collection of them in cultivation. Seeds of some species have also been deposited with the Millennium Seed Bank at Kew.

The local Team continues to sow seeds and 50 or so plants of each species are kept. Seed is collected from pots after flowering, and sown as "plugs" in trays; some of these have been transplanted into the wild. Any surplus seed is kept refrigerated in seed banks for future use. The Team decides annually whether seeds of each species are dispersed among the native populations, or introduced, as either seed or germinated plants, at 'new' sites that look suitable for Hawkweeds where there are none already. Seed has now been planted or sown at several carefully chosen, stock free sites. The transplants have enjoyed mixed fortunes, some sites doing okay, but some plantings have failed completely. We do not yet know why, though each species may have habitat and environmental requirements that are beyond our current understanding of the species' ecology.

A key achievement to date is that the *Hieracium hethlandiae*, which was extinct in the wild, is still growing in artificial cultivation and has been reintroduced into the wild, with some success; a few plants survive at the transplant site.

Dr Tim Rich, head of vascular plants at the National Museum of Wales, is a Hawkweed specialist who, with Walter Scott, published a book on Shetland Hawkweeds in 2011. He "...was very impressed by the understanding of their importance and how to grow Hawkweeds. This is the best example of cultivation of these plants for conservation I have seen (and) ... is of clear importance.

Planting Hawkweeds at a new site

Living Shetland
Action for Shetland's Biodiversity

Restoration of Langlands Moss Local Nature Reserve

© Erik Paterson

Round-leaved Sundew

© Erik Paterson

Common Lizard

Langlands Moss is a small, relatively intact area of lowland raised bog on the southern edge of East Kilbride, which was officially designated as a Local Nature Reserve in 1996. South Lanarkshire is an internationally important area for lowland raised bogs; the habitat is recognised in South Lanarkshire's Biodiversity Strategy as a resource to protect and restore as part of our wetland ecosystem and as a contribution to mitigating the effects of climate change.

There is a good history of biological recording on the site, with over 200 plant and animal species noted. The plant assemblage is typical of raised bogs with *Sphagnum* species, Ling Heather, Cross-leaved Heath, Bog Asphodel, Round-leaved Sundew, Cottongrasses and Cranberry. Old tree stumps and the peaty ground support a variety of lichens, including fruiting bodies of *Cladonia* species and the nationally rare *Vulpicida pinastri*. Other species of interest include Barn Owl, Skylark, Otter, Common and Soprano Pipistrelle bats, Common Lizards and Dark Green Fritillary and Large Heath butterflies.

The Friends of Langlands Moss (FOLM) were constituted in 2006 to work in partnership with South Lanarkshire Council to enhance and conserve the reserve for the benefit of all. The chairperson has delivered many awareness raising presentations to groups, libraries and universities. The work of the FOLM received a special mention at the Scottish Natural Heritage (SNH) Environmental Volunteering event at the Scottish Parliament. The volunteer group has received interest from MSPs, the Justice Minister and the Minister for the Environment.

In 2013, the Friends raised £100,000 to replace the old 374 m long wooden boardwalk with a new recycled plastic walkway. This project was funded by the Heritage Lottery Fund, Renewable Energy Fund and Viridor Credits.

Over the years the group has received grants from various sources for many projects; improving path networks, building and installing bird nest boxes, creating a wildflower meadow, and installing interpretation and signage. The FOLM run a busy programme of events including practical conservation days. They worked with the 'Bog Squad' in 2014–16 to install dams and remove scrub. This volunteer task force was created by Butterfly Conservation Scotland to carry out rehabilitation works on peat bogs across central Scotland, with funding from SNH's Peatland Action project.

The effectiveness of the dams (purchased with funding from SNH and the Big Lottery Fund) has been quickly demonstrated with large pools of water helping to re-wet the surrounding peat, and provide breeding habitat for Common Hawker dragonflies. In total, 70 dams have been installed by the Friends and various volunteer groups over 10 years. In 2015, three ponds were created at the edge of the site as part of Froglife's Living Waters project. Over the long term, the aim is to continue to restore the natural hydrology of the bog by installing more dams and creating a lagg zone in place of the existing conifer plantation.

To view South Lanarkshire Biodiversity Strategy documents, search for "Biodiversity" on www.southlanarkshire.gov.uk

For more information on the FOLM visit their Facebook page: www.facebook.com/FriendsOfLanglandsMoss/

© FOLM

Launch of the Bog Squad with Aileen Campbell MSP

SOUTH LANARKSHIRE COUNCIL

South Lanarkshire BIODIVERSITY PARTNERSHIP

Citizen Science in Stirling – Volunteer involvement in species monitoring

Giant Hogweed, Allan Water at Cornton, Stirling, 2013

The Stirling Council Area Biodiversity Action Plan (SBAP) was developed in 1998 by a Steering Group of environmental organisations and Stirling Council. The SBAP contained hundreds of actions which Steering Group members, in partnership with others, have worked to deliver.

Stirling is fortunate in the quality of its natural environment. While this is most evident in our landscapes, it is also revealed in the impressive range and quality of habitats and associated biodiversity. Volunteers have played a key role, over many years, monitoring, conserving and enhancing this biodiversity.

The Sticky Catchfly is nationally rare in Britain and is listed as a Red Data 'Near Threatened' plant. In 2005, a survey of sites within the Ochils was carried out to map the distribution of the plant. Since then, the Scottish Wildlife Trust Stirling & Clackmannanshire Local Group and Stirling University Nature Society (SUNS) have been monitoring the Sticky Catchfly population round the base of Dumyat where, contrary to the nationwide trend, the number of flowering plants has been increasing. The volunteers have researched all other sites in the UK and found the Stirling colonies, which support 3,000 flowering spikes, are by far the biggest. Monitoring of other species soon followed and, since 2006, local volunteers have conducted annual surveys of the Lesser Butterfly-orchid at all known sites within Stirling.

The Large Heath is our only bog specialist butterfly. Away from the blanket bogs of north and west Scotland, it is confined to lowland bogs or 'mosses'. Sites like Wester Moss, near Fallin, are now a rare and important feature of our landscape. The Stirling Council Ranger Service has been training volunteers to undertake butterfly transects at the site to monitor this important population of Large Heath. SUNS has also surveyed all lowland bogs in Stirlingshire to determine if the butterfly was present. While it was sadly absent at many sites, it was present in unexpectedly large numbers at others, particularly where bog restoration is being undertaken.

To celebrate the contribution of our citizen scientists, the Forth Naturalist & Historian (FNH) received funding from Scottish Natural Heritage to undertake their 'What's Changed' project. Linked to the Year of Natural Scotland, this project enabled volunteers to repeat some of the surveys from early FNH Journals and compare the results. Eight surveys from the 1970s and 1980s were repeated, including monitoring of butterflies, Sticky Catchfly, and Giant Hogweed along the River Allan and part of the River Forth. The project results were presented at the 2013 FNH Conference on 'The Changing Biodiversity of Central Scotland' and also reported in subsequent FNH Journals.

The survey of Giant Hogweed along the River Allan aided the River Forth Fisheries Trust's efforts to monitor and systematically clear the river of this invasive non-native species. Teams of volunteers undertake annual surveys and hold regular work parties. On just one three-mile stretch of the river, no fewer than 50,000 Giant Hogweed plants were identified and around 47,000 of these have now been sprayed by volunteers and Stirling Council staff.

Butterfly-orchid count at Plean Country Park, 2013

Safeguarding our Swifts

Common Swift © Martin Ridley

Partnership working can be a challenge - and a delight. It changes with its audience and something as simple as a small-scale survey can ultimately lead to major projects that contribute to local Biodiversity Action Plan targets. In Tayside this has happened with orchard surveys (leading to extensive replanting) and amphibian surveys (leading to the invention of gullypot amphibian ladders that are now commercially available). Something similar has also happened with the Tayside Swifts Project.

In 2005 the Perth & Kinross Ranger Service designed a town Swift survey. With the baton passed to the Tayside Biodiversity Partnership, the Angus Alive Rangers undertook coastal town surveys and encouraged research into the Angus Glens where Swifts had been sighted. A Tayside 'Dots on the Map' Project brought volunteer surveyors together to share data. Records are now passed on to the local authorities, highlighting Priority Swift Zones which help with handling of planning applications.

Swift nestboxes were provided, on occasion, to public buildings, the first being the council offices and community hospital in Crieff. Hillcrest Housing Association has long championed Swifts in its construction work, including integral nestboxes in new-builds; it donates funds to help raise awareness of Tayside's Swifts.

The Biodiversity Co-ordinator recommended the addition of Swift nest boxes to many projects funded through the SITA Tayside Biodiversity Action Fund, and Landfill Tax monies helped launch a pilot project across the Carse of Gowrie to install 80 Swift nest boxes. The Schools Swift Twinning Project made links between schools in Tayside and Africa. The experience gained in this community project led to an ambitious initiative with the Kirriemuir Conservation Area Regeneration Scheme. Existing nest sites have been safeguarded prior to building work and a hundred nestboxes provided, some painted to match the red sandstone buildings.

In Perthshire, a guided walk resulted in the local community setting up its own Stanley Swift Project – locating nest sites and installing nest boxes. Another community and school-led project, Earn Valley Swift Conservation, ran competitions for their project logo and the best Swift-shaped biscuit! As part of its Buildings for Biodiversity Project, the Tay Landscape Partnership provided the group with free nestboxes and the hire of a cherrypicker to help install Swift nest boxes.

With so many local communities on board, Tayside's next challenge is to engage builders and contractors in checking sites for breeding Swifts before erecting scaffolding. The birds return to their birthplace at the beginning of May and stay for just 12 weeks so there is an urgent need to raise awareness of the law regarding disturbance of breeding birds in building works. Swifts are Amber listed in the UK's Birds of Conservation Concern and their population is decreasing faster in Scotland than elsewhere in the UK. If they are prevented from nesting, their population inexorably declines.

Local Biodiversity Partnerships are in an ideal position to engage the diverse audiences involved to raise awareness of these charismatic birds. They evolved over 35 million years ago - we owe it to them to continue welcoming them home where they will be cherished and safeguarded.

Swifts in Flight © Martin Ridley, Wildlife Artist, Comrie

Tayside Swifts

Tayside Biodiversity Partnership

BIODIVERSITY
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The Uist Wader Research

Hedgehog eating eggs in a Dunlin nest

The international importance of the islands of North Uist, Benbecula and South Uist as a home to populations of ground-nesting wading birds which nest on the machair, a unique species-rich coastal grassland, has long been recognised. Wader populations are declining and the project aims are to understand and mitigate the decline with the long term aim of bringing about a recovery of populations on the islands. Although the wader decline is a multi-faceted problem, the populations are under serious pressure from non-native Hedgehogs. Introduced to South Uist in 1974, the Hedgehogs have spread across the islands and research in the 1980s and 1990s showed that the wader decline was largely due to predation of eggs by Hedgehogs. They eat the eggs and young chicks and are responsible for up to half of all breeding failures among Lapwing, Dunlin, Ringed Plover, Redshank and Snipe in South Uist.

The Uist Wader project was established in 2000 in response to concerns about these declines. The project has gained a wealth of experience in the art of catching Hedgehogs. The combination of live cage traps and trained sniffer dogs has been shown to be a very effective means of finding these secretive animals. The caught animals are passed into the care of Uist Hedgehog Rescue and trans-located to the Scottish mainland. Payment is made for this service.

Welfare of the captured Hedgehogs has always governed methods of Hedgehog management. Live cage traps are checked daily when in operation, whilst sniffer dogs are trained to locate and indicate a Hedgehog which is then picked up by the dog handler.

In 2011, a new phase of the project started: a four-year research program into the islands' breeding wader populations. The project monitored the outcome of over 1000 nests, gathering information on the factors affecting breeding success. This confirmed that Hedgehog predation is a significant factor in the decline of wading birds in Uist. Alongside the research, efforts continued to prevent Hedgehogs from re-colonising areas already cleared - animals found on North Uist continue to be trans-located to mainland Scotland.

We continue to collect comprehensive information on Hedgehogs and capture techniques during day-to-day operation. This information is used to further improve the efficiency and effectiveness of Hedgehog management. We are now considering a larger project looking at the eradication of Hedgehogs from South Uist and are currently seeking funding.

This initiative is managed by Scottish Natural Heritage in co-operation with RSPB Scotland, The Scottish Government, Comhairle nan Eilean Siar, Scottish SPCA, Hessilhead Wildlife Rescue, Grazing Clerks and Crofters.

Sam, the trained sniffer dog, finds a Hedgehog

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