

Wood Wise

EU-EXIT IMPACTS

Tree & woodland conservation • Summer 2018



WOODLAND
TRUST

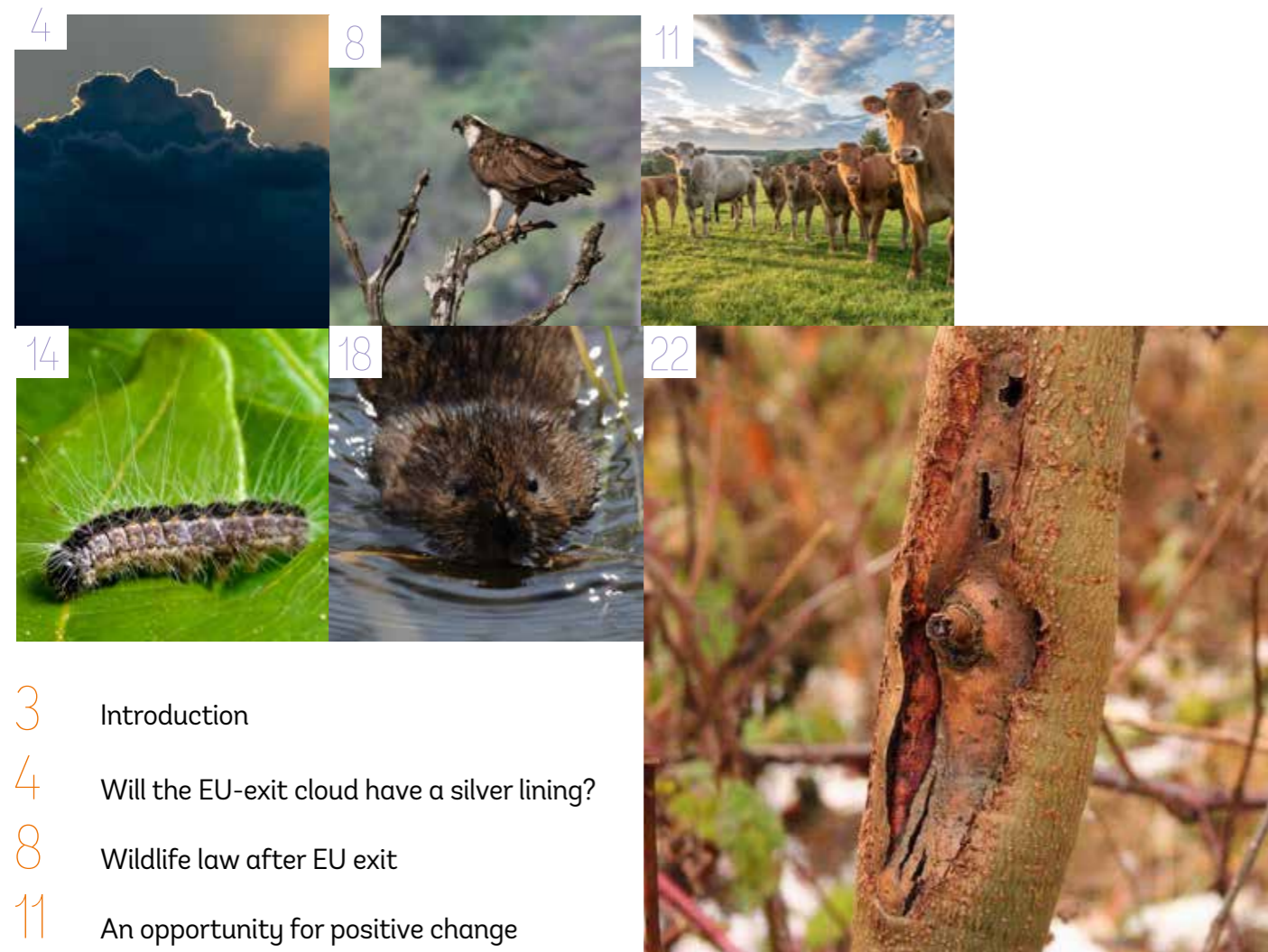
HIGHLIGHTING
EU EXIT'S
SILVER
LINING

STRONGER
PROTECTION
FOR UK'S
WILDLIFE?

POTENTIAL
FOR NEW
AGRICULTURE
POLICY

REDUCING
THE THREAT
FROM PESTS
& DISEASES

CONTENTS



- 3 Introduction
- 4 Will the EU-exit cloud have a silver lining?
- 8 Wildlife law after EU exit
- 11 An opportunity for positive change
- 14 EU exit: an opportunity to improve biosecurity
- 18 Water and woodland pre- and post- exit
- 22 Tree health update
- 25 Woodland Trust research update

Editors: Kay Haw and Karen Hornigold

Contributors: Mike Townsend, Wyn Jones, Frances Winder, Helen Chesshire, Matt Elliot, Stephen Marsh-Smith, Christine Tansey

Designer: Kate Fivash

Cover photo: Jacques Descloitres

Subscribe to Wood Wise by emailing
conservation@woodlandtrust.org.uk
 We will keep your details safe and never
 sell them: woodlandtrust.org.uk/privacy-policy
 explains all. You can change the way
 you hear from us at any time – just email
supporters@woodlandtrust.org.uk
 or call 0330 333 3300.

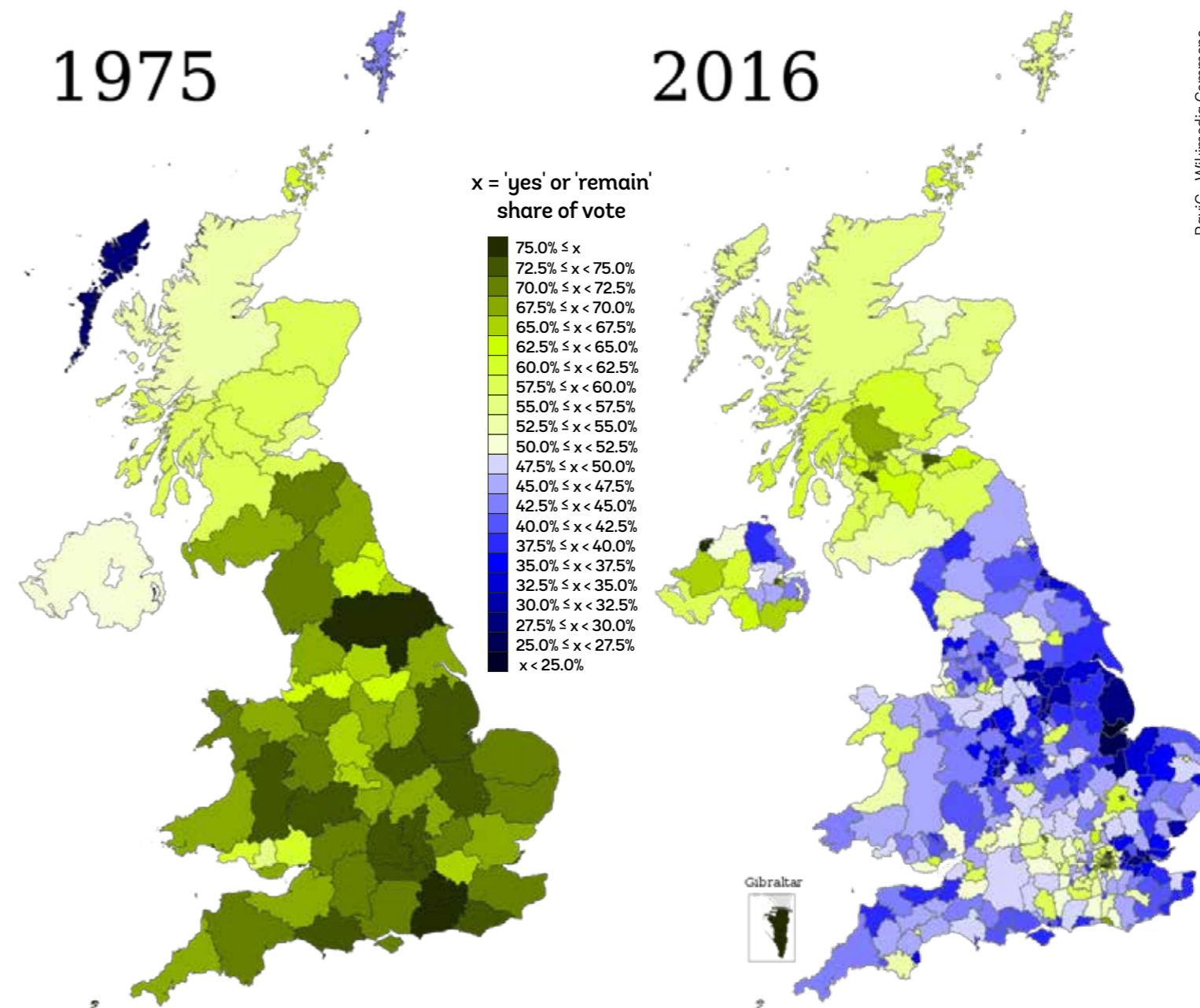


Figure 1 shows the voting results for the UK referendums of 1975 (EEC membership) and 2016 (EU membership). Green shows the different UK constituencies voting to remain in the EC or EU, while blue shows those wanting to leave.

Introduction

On 23 June 2016 72.2% of the UK's citizens turned out to vote on the nation's political future. By the end of the day, 51.9% of voters had voted us out of the European Union (EU) and into a period of uncertainty that offers both opportunities and risks.

In 1973, when we first joined the European Economic Community (EEC) common market (the UK's EEC membership referendum did not take place until 5 June 1975), the UK was called the 'dirty man of Europe'. Our exploits had resulted in a nation belching clouds of smoke from coal-fired power stations across rivers flowing with toxic, industrial chemicals and beaches teeming with raw sewage.

Since then, many improvements have been made in the health of the UK's natural environment as a direct result of legislation enforced by the EU. The EU was established in 1993, following the Treaty of European Union, and incorporated the EEC, officially established in 1957, which was renamed the European Community until its absorption into the EU in 2009.

This issue looks at key areas of environmental legislation and protection that will be affected by leaving the EU, highlights environmental improvement or deterioration made because of it, and discusses what might happen following our exit from the EU.

Will the EU-exit cloud have a silver lining?

Mike Townsend



Mike Townsend OBE is principal conservation advisor for the Woodland Trust. He has a BSc in forestry and an MA in Environment, Policy and Society. Areas of interest include landscape scale conservation, rewilding and species reintroductions, post-exit agricultural landscapes and the integration of trees into farming systems. He was awarded the OBE in 2003 for services to forest conservation.

The UK's decision to leave the European Union (EU) will have significant repercussions for our land use.

With the uncertainty comes the threat that changes will be accompanied by a weakening of protection for nature and a withdrawal of investment in conservation and restoration of the natural world. However, there are also opportunities. In particular, the end of the Common Agricultural Policy (CAP) promises the opportunity to reframe land use to protect nature and deliver genuine public benefits, something that Environment Secretary Michael Gove has been enthusiastic to champion.

A new era for the natural environment?

If the rhetoric of the Government's 25-year plan to improve the environment is taken at face value, we are headed into an era in which the natural environment is not only maintained but enhanced and improved. The plan boldly promises to deliver clean air, clean and plentiful water, thriving plants and wildlife, sustainable and efficient use of natural resources, and enhanced beauty, heritage and engagement with the natural environment.

The clock is ticking and the exact nature of our departure from the EU remains unclear, possibly even uncertain. The impacts on nature conservation depend on a number of factors which remain undetermined, including the chosen exit model and the trading relationship with the EU and other nations, the treatment of enacted UK legislation based on EU directives, treatment of agricultural and rural payments

following the loss of the CAP, and the general state of the economy.

Options for exit

The Government's Brexit sub-committee is in discussions about the exact nature of a customs agreement with the EU. In addition to leaving the CAP, under any scenario the UK will fall out of a range of EU directives relating to the natural environment, including the Habitats Directive, Birds Directive and the Floods Directive.

The UK would of course remain party to international agreements such as rules of the General Agreement on Tariffs and Trade (GATT), and international commitments under the Convention on Biological Diversity, the United Nations Framework on Climate Change, UN Sustainable Development Goals 2030, Bonn Convention 1979 on the conservation of migratory species of wild animals, and the Bern Convention 1979 on the Conservation of European Wildlife and Natural Habitats. Not everything disappears with exit from the EU.

Enduring problems

The protection of species, habitats and sites provided by the Birds and Habitats Directives is threatened by leaving the EU. Sites under Natura 2000 (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) will no longer meet the definition of European Sites and will in effect disappear as a designation. However, all Natura sites are also

Emerald sites under the Bern Convention, which will persist, and this may be a mechanism by which protection could be maintained. All SACs and SPAs are also Sites of Special Scientific Interest (SSSIs) and so will continue to be covered by UK legislation.

Protection for nature conservation through the planning system and in relation to infrastructure development is not affected by leaving the EU, so while the familiar problems persist, they are not changed for better or worse.

While alterations to trading relationships may affect movement of plant material, leaving the EU will not have any additional impact on pests and pathogens or invasive species entering the UK unless we improve national biosecurity. Measures to improve biosecurity for a range of potential disease and pest pathways will remain critical under any future trading arrangement with both Europe and the rest of the world.

Failure of the CAP

Across Europe, the CAP was intended to maintain farmers on the land and retain rural communities through direct support for production and wider support for rural development. Nonetheless, in most of Europe the CAP has failed to halt rural depopulation and large areas have seen land 'abandonment'. In the UK, while rural populations have not been significantly depleted in absolute terms, there has been a marked shift in demographics. The average age of farmers

has increased, particularly in less favoured areas such as the uplands.

Those farmers and farms outside the most productive lowland areas are reliant on farm subsidies. In most upland areas farm subsidies represent over half of farm income and farming businesses would be unlikely to survive in their current form without continued direct support.

It is apparent that agri-environment and other payments under the CAP have had limited impact on stemming the loss of biodiversity. Overall they have often supported management practices that work against the interest of wildlife and the environment.

There has been growing debate around the need for land use to support public benefits. This includes discussion of natural flood risk management, rewilding, increased woodland cover, recreational benefits, and carbon storage. Reports to Government from the Natural Capital Committee have highlighted the value of other uses for less favourable areas of land and the importance of the natural environment to the national economy. Discussion of payment for ecosystem services has suggested other approaches to paying for land use change and the benefits it might bring.

In general the loss of the CAP, whilst creating uncertainty, also creates the greatest possibilities to expand management for nature conservation and for a more imaginative and strategic approach to land use.



WTML/John Bridges

Red squirrel, *Sciurus vulgaris*, is protected under Annex III of the Bern Convention



“In more productive lowland areas, food production is likely to remain a priority and agri-environment payments should be targeted to ensure that wildlife can thrive even within intensively farmed landscapes”

Repurposing land use

In most cases, current direct farm support generates little demonstrable public benefit and can produce disbenefits. There is an opportunity to move away from direct payments based on area farmed, in favour of payments which clearly reflect the delivery of a range of public benefits.

In agriculturally marginal areas, including most of the uplands, payments could be used to overcome market barriers for an increase in the contribution of land to biodiversity, access, water and carbon benefits. This might include an expansion in native tree and woodland cover and creation and restoration of open habitats. It could also include adoption of rewilding or greater use of natural processes in marginally productive areas as a cost effective form of land management.

In the longer term, some of these changes may result in income streams which make them largely or wholly self-funding. In other cases continued public funding could nonetheless provide measurable overall public benefit.

In more productive lowland areas, food production is likely to remain a priority and agri-environment payments should be targeted to ensure that wildlife can thrive even within intensively farmed landscapes. This is critical both to mitigate environmental impacts of agriculture and to



“The clock is ticking and the exact nature of our departure from the EU remains unclear, possibly even uncertain.”

support productive farming through the provision of shelter and shade, support for pollination services, reduction of soil erosion and so on.

Both less productive land repurposed around wider public benefits and productive agricultural land managed sustainably for food production should be part of a wider strategic view of land use. This view should ensure that those goods and services that require consideration at a landscape scale are fully recognised. This includes making the whole landscape amenable to the movement of species in order for them to survive and adapt to climate change and other environmental pressures.

Seize the day

Were we starting from a place where nature was fully protected and thriving, dismantling the structures and support provided by the EU would be a more worrying prospect. But while the EU provides many environmental benefits, particularly at a pan-European level, the state of the natural environment remains woeful. We are faced with the reality of exit from the EU, and notwithstanding the need to avoid losing ground on protection, we should focus on seizing opportunity from the necessity of change.

¹ DEFRA (2018) Green Brexit: a new era for farming, fishing and the environment. Speech by Rt Hon Michael Gove MP to Prospect UK published 15 March 2018. Available online: <https://www.gov.uk/government/speeches/green-brexit-a-new-era-for-farming-fishing-and-the-environment>

² DEFRA (2018) A Green Future: Our 25 Year Plan to Improve the Environment. Published 11 January 2018. Available online: <https://www.gov.uk/government/publications/25-year-environment-plan>

³ HM Government (2015) The Natural Choice: Securing the value of nature. TSO publishing. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf



WTML/EJAENS

Wildlife law after EU exit

Wyn Jones

It is difficult to foresee the future of wildlife law in the UK following exit from the European Union (EU). It does provide an opportunity for a comprehensive review and strengthening of the law and policies, but is this likely?



Wyn Jones is previous head of habitats advice at the Joint Nature Conservation Committee and UK representative on the EC Habitats Committee scientific working group 1999-2009. Convenor of the UK Environmental Law Association's nature conservation working party from 2010-2018.

From a conservationist's perspective, the best scenario would be the retention of EU-derived wildlife legislation, the strengthening of supporting policies and establishing powers and duties to secure their independent scrutiny and policing.

Government views the UK's exit as an opportunity to improve the management and protection of wildlife in meeting its ambition to 'be the first generation to leave the environment in a better state than we found it.' However, the implementation of wildlife directives has received criticism over the years, with accusations of 'gold plating'.

The Department for Environment, Food and Rural Affairs (Defra) undertook a review of the implementation of the directives in England in 2011, which concluded that the legislation did not place unnecessary burdens on businesses and that measures were proportionate and effective. However, this has not prevented some government ministers from making statements advocating a weakening or removal of the laws.

Retaining current legislation and policies

Government has given assurances that EU-derived legislation will be substantively retained. There are only a few specific references to the European Commission in the Habitats Regulations, which makes the transfer of functions to the UK easier. While there will be no requirement to report on the implementation of the directives, all other elements, including the various tests to protect and manage habitats and species of European importance, will be retained.

EU-derived policies for and affecting wildlife are likely to remain in place until at least 2020. The schemes that replace the EU Common Agriculture and Common Fisheries Policies are critically important.

In the short term, designations made in meeting the UK's obligations under the directives, namely Special Protection Areas and Special Areas of Conservation, will be retained. In the future it appears likely that these sites will be relabelled as Areas of Special Conservation Interest under the Council of Europe's Emerald network. This contributes to obligations under the Bern Convention on the Conservation of European Wildlife and Natural Habitats, to which the UK is a signatory.

The interpretation of retained EU-derived legislation will be determined by UK courts in accordance with the relevant pre-Brexit case law judgements made by the European Court of Justice (ECJ). Future judgements by the ECJ can inform those made by UK courts.

At some future date EU-derived wildlife legislation will be reviewed. Although the scope has yet to be determined, it is likely to include existing national legislation. A consolidation of wildlife legislation is much needed.

The Withdrawal Act

The European Union (Withdrawal) Act 2018 received Royal Assent on 26 June. It repeals the European Communities Act 1972 and requires Parliamentary approval of the withdrawal agreement being negotiated between Government and the European Union. The repeal also affects all secondary legislation derived from the 1972 Act. However, it is not feasible to replace all EU-derived legislation by national law by the exit date of 29 March 2019. Therefore, to ensure a measure of continuity, relevant EU-derived national legislation is being retained. The Withdrawal Act gives Minister's time-limited powers to amend national legislation, including retained EU law, to address 'deficiencies' arising from the UK's exit from the EU.

EU-derived wildlife law

The Council Directive on the conservation of wild birds (79/409/EEC) (Birds Directive) and the Council Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) (Habitats Directive) have made considerable positive impacts on the national framework for the protection and management of habitats and species in the UK.

Obligations under the Birds Directive are met by the Wildlife and Countryside Act 1981 as amended and the equivalent legislation in Northern Ireland and Scotland. This legislation also meets the UK's obligations as a signatory to the Bern Convention 1979, the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar) 1975 and the Convention on Migratory Species (Bonn) 1979. The Habitats Directive is transposed by the Conservation (Natural Habitats & c.) Regulations 2017 in England and Wales, by the Conservation (Natural Habitats & c.) Regulations 1995 as amended in Northern Ireland, and by a combination of the Conservation (Natural Habitats & c.) Regulations 1994 and 2010 in Scotland.

Devolved powers

The responsibility for environmental issues is devolved to the Governments of Northern Ireland, Scotland and Wales. However, for the purposes of the European Union Withdrawal Bill, EU-derived legislation has been returned to the UK Parliament. Once the Bill becomes law, the UK Government has given assurances to the devolved governments that the responsibilities will be returned. But when, and in doing so, will conditions be imposed?

Differences between the laws and policies for and affecting nature conservation already exist, reflecting each country's differing needs and priorities. This is currently within the EU-derived framework but following the UK's exit, greater flexibility will occur and in time, changes will take place. Each country will undertake formal reviews of the relevant legislation and policies, but much thought is already being given to the options for

the future. The timing of the review and any subsequent changes will probably vary from country to country. Devolved governments can make or repeal legislation in a much quicker timeframe than at Westminster.

Scrutiny and policing legislation

A key concern in leaving the EU is the loss of independent scrutiny and policing of the implementation and application of wildlife directives by the European Commission supported by the European Court of Justice (ECJ). On leaving the EU, it is difficult to envisage that the UK or devolved governments will introduce as robust an independent body or bodies to hold them to account in the application and implementation of wildlife laws.

The future

In the short term, little difference will be seen in the implementation of EU-derived wildlife legislation and supporting policies. Changes are likely to be triggered as and when responsibilities for environmental issues are returned to the devolved governments.

A review of wildlife and landscape legislation and policies is timely. The aims and objectives set out in the 1947 White Papers, which resulted in the National Parks and Access to the Countryside Act 1949, much of which remains in force today, needs to be revisited. There is also an urgent need to have clear aims and objectives for the marine environment. Currently we have the most robust legislation and policy framework for nature conservation, but they have still failed to arrest the rapid decline in biodiversity in the UK. Additional measures and approaches are needed.

The Welsh Government is likely to extend its existing environmental philosophy and framework based upon principles set out in the Convention for Biological Diversity and the delivery of ecosystem services. A holistic approach based upon sustainability is already enshrined in law by means of the Planning (Wales) Act 2014, the Well-being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016. The 2015

“

The next 10 years will be challenging and interesting as the different country frameworks are established. Whether or not the changes will reverse the decline in biodiversity in the longer term remains to be seen.

Act created the role of Commissioner whose duty is to hold public bodies, including Government, to account in exercising their duties under the Act. It is possible that a similar approach could be adopted to address duties under any new wildlife legislation.

In England, Defra stated that post-exit agricultural subsidies will be made for positive works to maintain and enhance the environment. It is also reviewing landscape designations within England with a view to expand the network of National Parks and Areas of Outstanding Natural Beauty. Defra is also proposing an Environment Principles and Governance Bill, which includes the creation of a new independent environmental watchdog. While this is an England-only initiative, the devolved governments are encouraged to be party to the proposals.

Scottish Government has published a report on environmental governance concerning the UK's withdrawal from the EU produced by its expert group, the Roundtable on the Environment and Climate Change. Its findings are being considered by the Scottish Parliament's Environment, Climate Change and Land Reform Committee. More generally, following exit from the EU, the Scottish Government is likely to adopt a community-led rural policy rather than on ecosystem services.

Northern Ireland's power-sharing government has not met since January 2017. Therefore, little is known of future policies and legislation for and affecting nature conservation that are likely to be adopted following exit from the EU.

The next 10 years will be challenging and interesting as the different country frameworks are established. Whether or not the changes will reverse the decline in biodiversity in the longer term remains to be seen.



The following threatened, woodland and/or tree nesting birds found in the UK are listed in Annex I of the EU Birds Directive:



Osprey, *Pandion haliaetus*

WTML/David Whitaker



Red kite, *Milvus milvus*

WTML/Amy Lewis



Capercaillie, *Tetrao urogallus*

WTML/Rosey Norton



WTML

An opportunity for positive change

Frances Winder and Helen Chesshire



Frances Winder is Woodland Trust's senior conservation adviser for policy, focusing on environment and agriculture post EU exit.

Helen Chesshire is Woodland Trust's senior conservation adviser for farming and chair of Wildlife and Countryside Link's agriculture group.

Leaving the European Union is the biggest change in the support and regulation of land use and management in the UK for 40 years. This presents a unique opportunity to develop a new sustainable land management policy that delivers a viable future for our landscapes and countryside.

For too long, our approach to woods and trees has been fragmented. The operation of the Common Agricultural Policy, and its complex regulatory and support framework, has effectively split the countryside away from our towns and cities. It has separated land managers into farmers and non-farmers, and often excluded trees and woods from any prospect of being part of an integrated approach to land management. This at a time when there is more and more evidence that trees and woods can be a heavyweight contributor to solving many of the issues we face, from enhancing farming output to boosting environmental performance. For a truly sustainable future land management policy we need to hang on to what we have and add to it sustainably.

A new integrated approach

A new integrated approach to land use should deliver support for positive land management practices that deliver public goods. Trees provide many of these public goods: clean air, water, soil, food, fuel and building materials. Trees offer huge benefits for wildlife and help to improve the biodiversity and habitat connectivity of the natural landscape. These cherished landscapes in turn contribute to our cultural heritage and sense of identity as places to exercise or unwind, or for recreation and tourism.

To reflect the value of trees and woods in the UK, the Woodland Trust believes the following key principles should underpin any future sustainable land-use policy and the regulations and incentives that support it:

Fully integrate woods and trees into land management systems

There should be a single, overarching policy which provides support for all rural land management, whether you are planting trees or growing wheat. Tree and wood management should be seen as an everyday activity within sustainable and fully integrated land management.

Be consistent in paying public money only for public goods

Public goods are those which everyone can access (in theory) and from which no-one can be excluded. It can be difficult, therefore, to create markets for them. However, economic activity can also directly threaten the delivery of public goods, for precisely the reason that there is no direct benefit to the provider. Public money should not be used to prop up failing markets.

Introduce action and outcome-based payments

Previous payments have relied heavily on prescriptions as a means to identify what a land manager should do, but also as a means of assessing compliance. However, set at a national level these can be a very blunt tool which do not allow for geographical or climatic variations. An outcome-based approach would identify what needs to be produced and allow the land manager to decide the best method to get there given their individual situation.

Establish overarching principles supported by local design and local delivery

There are national commitments to conserve biodiversity but the biodiversity that needs conserving varies across habitats and geographically, and the management to deliver also varies. The national target should set the overarching principle, but outcomes should be designed at a more local level which enables effective management and oversight. Catchment based schemes of specific national park delivery would be good examples.

Deliver opportunities for landscape scale action

Professor Lawton's 2010 Making Space for Nature report was a review of existing species and habitat management in England which identified the pressing need to create a more coherent and resilient ecological network. It focused on the need for more, bigger, better and joined up habitats in order to create more connected landscapes. Leaving the EU and reforming agricultural policy provides a clear opportunity to achieve these landscape scale outcomes and the step change identified as necessary by Professor Lawton in his foreword to the report.

To deliver an effective, sustainable land management policy, we need:

- 1** Core regulatory requirements, including protection of the basic resources of soil, water, air quality and existing natural assets, such as trees and woods;
- 2** Comprehensive, simple incentives to deliver well defined public benefits with widespread environmental interventions, including the management and restoration of hedgerows, small scale tree planting and shelterbelts;
- 3** More targeted incentive mechanisms to address specific issues associated with priority species and habitats, for example new native woodland adjoining ancient woods to buffer and extend them, or restoration of planted ancient woodland; and
- 4** Support for advice and training to develop resource efficiency and innovation, such as agroforestry systems which might offer both economic and environmental gains compared to some existing activities.

Production of a sustainable land management plan should be a precursor to any decision on support for action.

In summary, to achieve a fully resilient landscape that delivers for people and for wildlife, we must include support for actions that will protect and enhance the role of trees, woods and forests in ecosystems, as part of habitat networks and as a component of productive land management for both agriculture and forestry. This means we must buffer and connect remaining semi-natural habitats, restore damaged habitats, create new woodland and plant trees. This will result in a wide range of benefits that will capture the public imagination and leave the land in a better state for future generations.

Agroforestry: an age-old integrated approach

Agroforestry describes farming systems which combine trees and shrubs with agricultural crops or livestock in a land management approach that balances productive and protective functions of ecosystems. This can be designed in a way that avoids the potential trade-offs between food provision and other ecosystem services that occur in modern farming systems.

Trees on farms is not a new practice, having traditionally provided important sources of fruit and nuts, fodder for livestock and wood or fuel for timber, as well as shade and shelter. Typical agroforestry features still present in many landscapes include wood pastures, hedgerows, windbreaks and riparian buffer strips on farmland, and intercropped and grazed orchards and

forests. The technological advancement of agriculture has resulted in the loss of many of these features and contributed to reduced soil and water quality, to a loss of biodiversity, and to increased greenhouse gas emissions.

Integrated into farming systems, trees protect our valuable natural resources by helping to manage water and air pollution, prevent soil erosion and boost soil sustainability through support of microorganisms and addition of nutrients. They help with shelter for livestock, crop pollination, integrated pest management and product diversification.

EU exit: an opportunity to improve biosecurity

Matt Elliot

Can the UK's exit from the EU reduce the threat posed to our trees and woods by plant imports?



Dr Matt Elliot is Woodland Trust's conservation adviser for tree health.

Trees decline as part of a wood's natural process. This decline provides habitat for many species of insects, fungi and bacteria that rely on weakened, ageing and dead trees to survive. Their activity returns crucial nutrients back to the soil for the growth and survival of the next generation of trees. This process has been ongoing for millennia and is finely balanced. The UK's native trees, plants, fungi, insects and bacteria evolved together over long time spans and found a way of living together, where one organism does not dominate to the detriment of others and they keep each other's numbers in check.

Imports threaten biodiversity

Unfortunately this balance has been lost in recent years because non-native pests and diseases have been imported into the UK from other parts of the world. These organisms may be in balance in a wood in their native range, but when moved to a new area without the co-evolved predators and natural tree defences that kept them in check in their native range, they pose serious problems. Recent examples include ash dieback, *Hymenoscyphus fraxineus*, Asian longhorn beetle, *Anoplophora glabripennis*, oak processionary moth, *Thaumetopoea processionea*, sweet chestnut blight, *Cryphonectria parasitica*, and numerous *Phytophthora* pathogens that infect oak, *Quercus* species, juniper, *Juniperus communis*, alder, *Alnus glutinosa*, and other tree species.

Pests and pathogens can arrive on or in timber and other wood products, but the most significant pathway is the importation of live plants. Fungi, bacteria, insect eggs and larvae not only hitch a ride on the leaves and stems of plants, but also within the plant tissue and compost. The bigger the plant, the bigger the pot and the more opportunity there is for the pest or disease to go undetected. Many diseases are also symptomless during the early stages of infection so go largely unnoticed. With these risks in mind, the Woodland Trust set up an assurance scheme to ensure all the trees it uses or offers for sale are UK sourced and grown (UKSG), not imported stock.

Biosecurity and the risk register

Current EU biosecurity systems to keep pests and diseases out have proved to be largely ineffective. They use a risk-based approach that involves creating a list of potential new pests and diseases, assessing the risk posed by each organism and giving it a relative risk score. Those organisms with the highest impact get the highest risk scores. The UK has created a Plant Health Risk Register to prioritise the pests and diseases that pose the greatest threat and take preventative action; this register contains almost 1,000 species.

Emerald ash borer, *Agrilus planipennis*, is a prime example of a high risk pest. This bark boring insect has caused devastation in the United States and Canada after its introduction 20 to 30 years ago. At the other end of the scale, a low risk pest might be a tropical species that is unable to survive and establish itself in the UK due to the unsuitability of the climate.

However, the register inevitably excludes pests and diseases that are currently unknown to science.

Many current tree health problems are due to diseases that were unknown before their negative impacts started to be observed, such as *Phytophthora ramorum*, ash dieback and Dutch elm disease, *Ophiostoma ulmi*. As only 7-10% of all fungal species are thought to be identified, it is a certainty that many more pathogenic species are out there.

Phytophthora species are perhaps the most deadly plant pathogens, as well as the most

The Plant Health Risk Register contains almost 1,000 pests and diseases.



Oak processionary moth, *Thaumetopoea processionea*

easily spread through the plant trade. Around 200 species have been recorded, but scientists believe there may be more than 500 species.

The current plant health system relies on visual inspection of a small sample of plants in each checked consignment, but a very low percentage of containers being imported into the UK are actually checked. These checks only focus on high risk hosts and products, as there is a lack of capacity across the small number of plant health imports inspectors to check everything. However, most diseased plants show no symptoms early on in the infection process, so inevitably they are unlikely to be picked up by visual checks.

An opportunity for greater investment

The Woodland Trust believes the UK's exit from the EU is an important opportunity to increase investment in biosecurity at our borders and dramatically reduce the risk of further destructive species entering the UK. Investment would need to be significant, both in infrastructure at the points of entry and in trained personnel to check plants and wood products as they cross our borders. Instead of using a risk-based approach, all imports should be treated as high risk as they could contain unknown organisms. Significantly increasing control over species entering the UK would greatly improve attempts to protect our trees and native biodiversity.

In addition to stronger border controls, the horticultural industry is investigating ways to increase biosecurity throughout the industry, such as introducing UK-grown assurance schemes similar to the model established by the Woodland Trust for tree nurseries. It would go a long way to minimising risk if a wider range of plant species could be domestically grown to reduce reliance on imported plants.

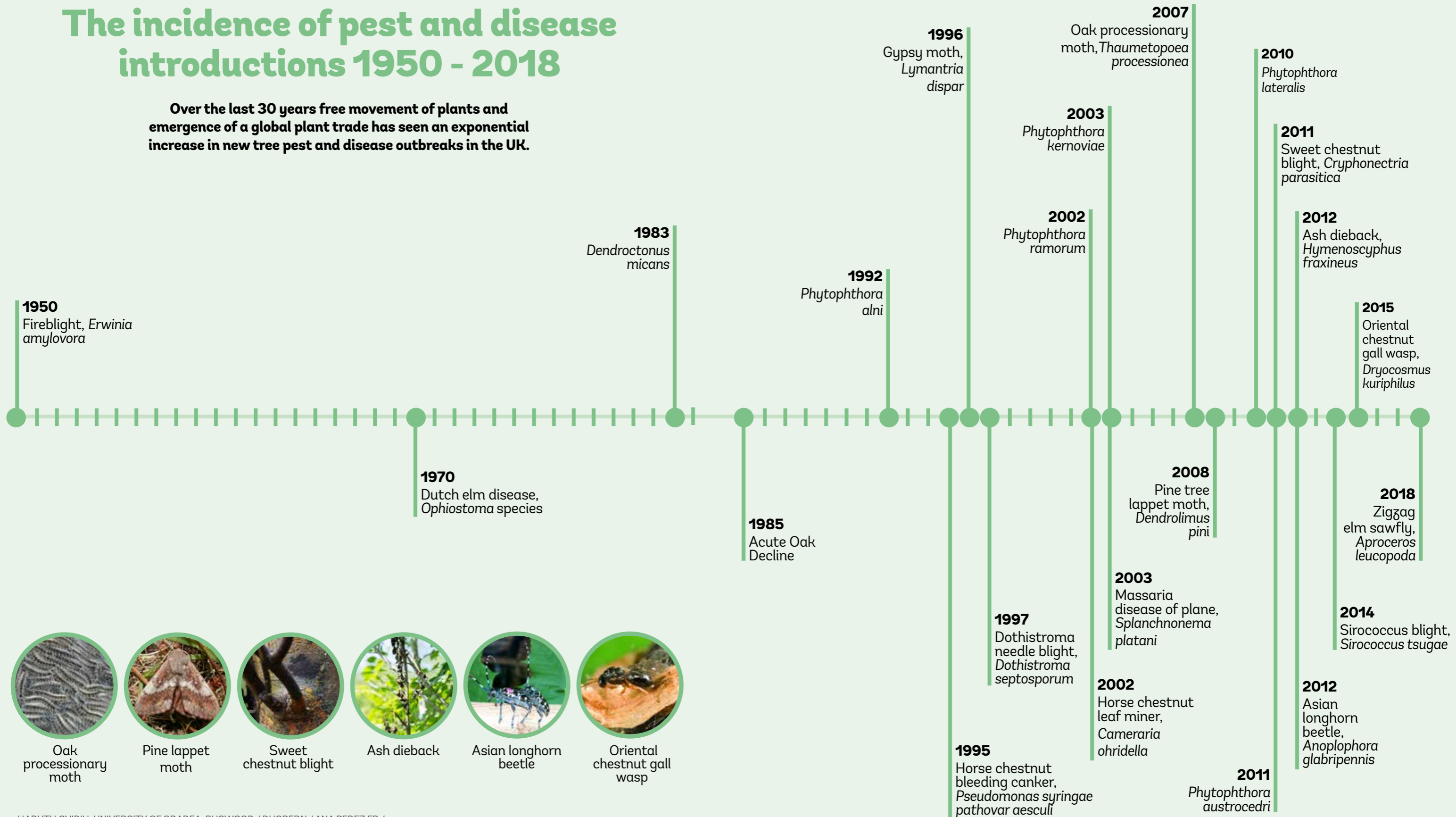
You can help too

The UK's trees are under threat from various issues, including climate change, land-use change and pressure from development. It is vitally important that we do not add to these problems by introducing further destructive pests or diseases that our trees have little or no defence against. Yet it is not just down to government, industry and organisations. Every individual can play their part to reduce this risk. If everyone chose to only buy plants, of any species, sourced and grown in the UK, responsible buying and consumer demand would massively reduce imports and increase pressure to make important changes in the plant trade sector. It is down to all of us to protect our trees and the wider natural environment.

“
Instead of using a risk-based approach, all imports should be treated as high risk as they could contain unknown organisms. Significantly increasing control over species entering the UK would greatly improve attempts to protect our trees and native biodiversity.”

The incidence of pest and disease introductions 1950 - 2018

Over the last 30 years free movement of plants and emergence of a global plant trade has seen an exponential increase in new tree pest and disease outbreaks in the UK.



HARUTU OVIDIU, UNIVERSITY OF ORADEA, BUGWOOD / DHOBERN / ANA PEREZ FR / WTML / DEAN MOREWOOD, HEALTH CANADA, BUGWOOD / GYORGY CSOKA

Water and woodland pre- and post- exit

Stephen Marsh-Smith

Many land managers, anglers and wildlife enthusiasts have considerable concerns about water in the future. Measuring water quality is like taking a blood sample, as it gives us an overview of the state of our environment and how we are caring for it.



Dr Stephen Marsh-Smith OBE is the founder of the Wye and Usk Foundation, which he ran for 21 years, and is now CEO of Afonydd Cymru, the umbrella group for the Rivers Trusts of Wales.



Water vole, *Arvicola amphibius*

Given the twin spectres of the UK's exit from the European Union (EU) and climate change, the management and regulation of water quality and quantity could change significantly, and not necessarily in a good way. Our natural sources of water, whether from lakes, reservoirs, rivers, springs or groundwater, are heavily dependent on current land use practices or, to be technically correct, land misuse.

Across the UK, we currently have enough water overall from rainfall and storage, either in reservoirs or groundwater. However, rising demand, population and changes to climate are expected to compromise this, especially in the South East of England. Damaging flood events are also increasing. The nation may be working slowly towards mitigating these issues, but how might the UK's exit from the EU affect the future?

Water and the EU

A number of EU directives have a direct bearing on water quality and the health of waterbodies. The Water Framework Directive (WFD) and the Drinking Water Directive (DWD) are the most obvious, but the Habitats Directive (HD) sets conditions on licenced abstraction and levels of pollutants, such as phosphates in rivers that are designated as Special Areas of Conservation. What is less well understood is that, in general, these directives set out goals rather than being actual regulations themselves.

It is up to each country (EU member state) to put in place regulations or legislation to achieve these targets. In the case of the WFD, rivers, lakes and groundwater sources are categorised into manageable units termed waterbodies. These waterbodies are required to achieve good chemical standards and certain biological criteria are also measured, including fish, invertebrates and phytobenthos – the microorganisms used to indicate the health of a waterbody. The overall aim of the monitoring is to avoid any deterioration in quality and mitigate any issues that arise.

It is a 'one out, all out' system: if any one of the parameters fails, that entire waterbody fails – somewhat regimented perhaps. The requirement is to have all sites achieving 'good' status by 2027. Exiting the EU will not bring that aspiration to an abrupt end, as the directives have already been incorporated into our legal system. What may be lost is an overarching, independent body – currently the European Commission (EC) – to enforce EU law and hold governments to account if they fail to implement the required rules and monitoring.

At present, any citizen can bring a complaint to the attention of the EC and it can take appropriate action, including bringing a case against the relevant government to the European Court of Justice (ECJ). In March 2018, Afonydd Cymru raised a complaint against the Welsh Government for breaching the WFD by allowing water quality to deteriorate over large areas of Wales. ECJ rulings can therefore protect the rights of EU citizens against governments.

Proposals for a new environmental watchdog, which aims to replace the ECJ, have come under fire for lacking any real power to hold ministers to account. A number of cases have been brought against the UK by the ECJ for failure to adhere to EU law to protect the environment. Many fear that without this strength, the UK's citizens and organisations will lack the ability to ensure governments deliver on their promises, which could be detrimental to our already beleaguered natural environment.

Following the exit from the EU, the UK will still have these directives in place. But what opportunities – and of course funding – will there be to manage our natural water supplies and what part might woods play in this?

Woods benefit water

Native woods, rather than plantations, have a remarkable ability to assist with the transfer and storage of water and offer some control and assistance to the aquatic supply. They are vital to the good health of aquatic ecosystems. Riparian trees provide shade and structure for rivers and streams, their leaves provide a key source of nutrients and, in the right quantity and place, dead wood brings structure and creates essential habitat.

Planted as shelterbelts across the slope, trees can steady the rush of water down hills whose soils and grassland have been compacted by years of trampling and grazing. These shelterbelts also offer essential refuges for wildlife, in what might otherwise be a green desert. Work has been done to demonstrate this at Pontbren in Montgomeryshire, mid Wales, a project well documented in the *Trees and woodland in water management* issue of *Wood Wise*.

At Pontbren, a group of hill farmers got together to replace woodland shelters and hedges, driven by the need to reduce inputs to and costs of sheep farming. However, one of the observed outputs was a significant reduction in runoff and overland flow. While looking at these results, the Wye and Usk Foundation deployed Scimap, a mapping programme that predicts the effects of changes in land use on overland flow. At Pontbren, the predictions made on overland flow before and after changes were made tallied exactly with the actual results (see maps on page 20).

We now have a tool that can be applied in any scenario to drive positive change. It has already been used by advisers to press the case for woodland shelterbelts, as well as modifying plantations in a catchment. Without this, original wetland areas were too difficult to be found. To

date, over 1,000 holdings, including forest sites, have been visited.

Even commercial plantations, which can seriously impair water quality and quantity through the draining of peatlands, enhanced acidification and fast runoffs, could be adapted to mitigate some of these problems. When clearfelled, former wetlands within planted forests can be restored by blocking off forest drains and not replanting trees in those areas. These restored wetland areas have their own ecological benefits and are quickly repopulated with amphibians and water voles, *Arvicola amphibius*.

The benefits to flow were equally significant. More water retention results in a reduction in flood peaks and more sustained flows in dry weather.

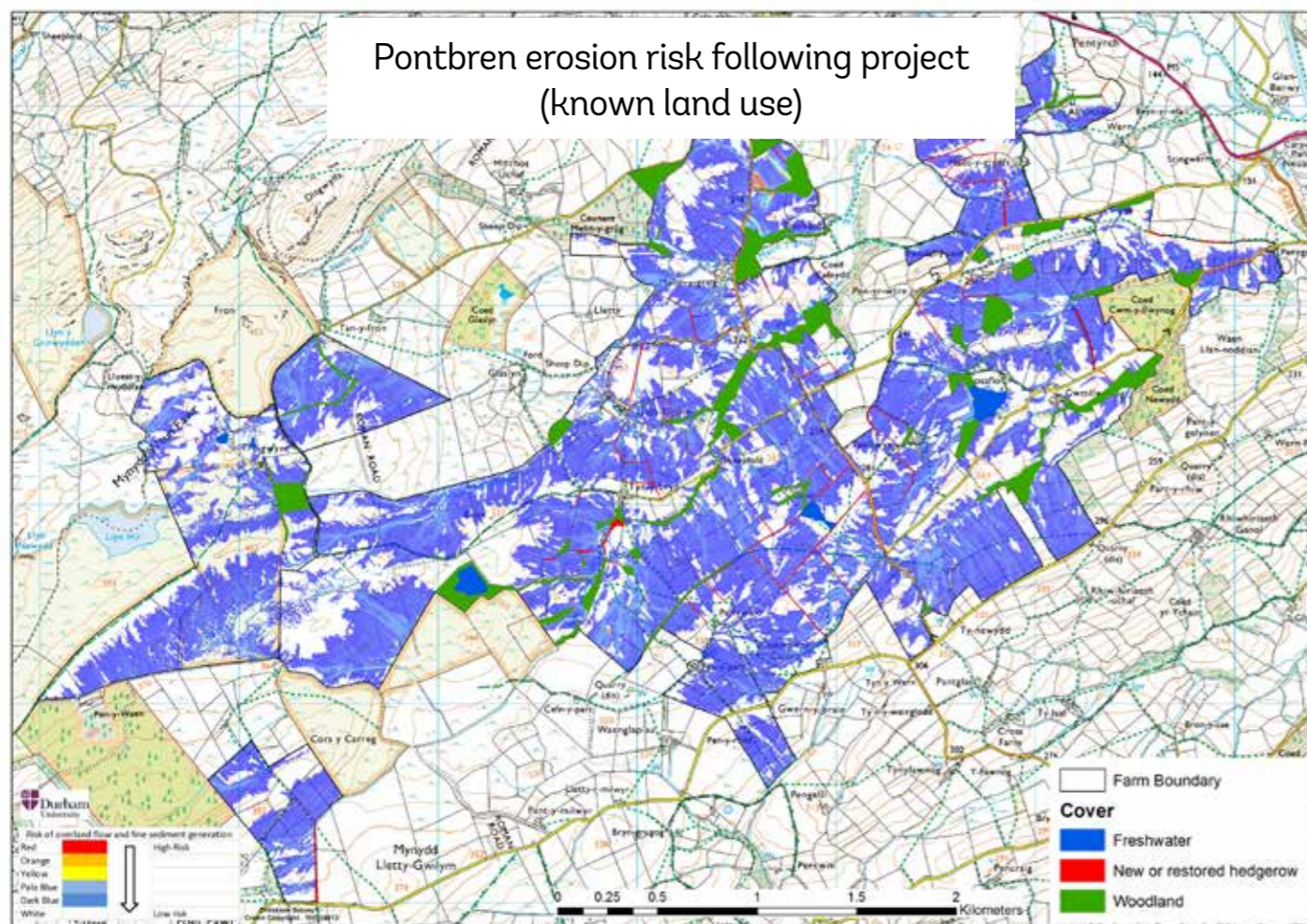
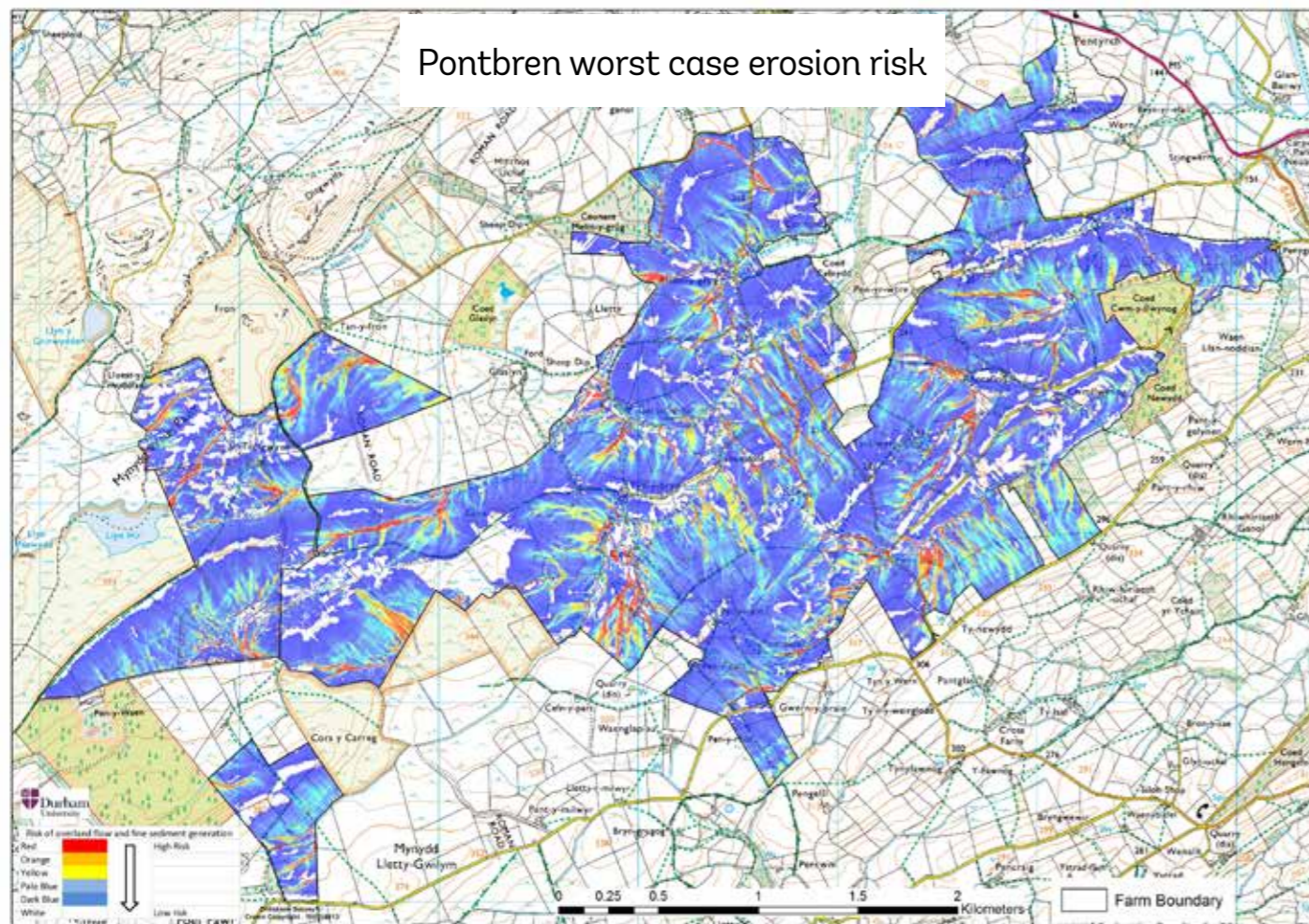


Before habitat restoration



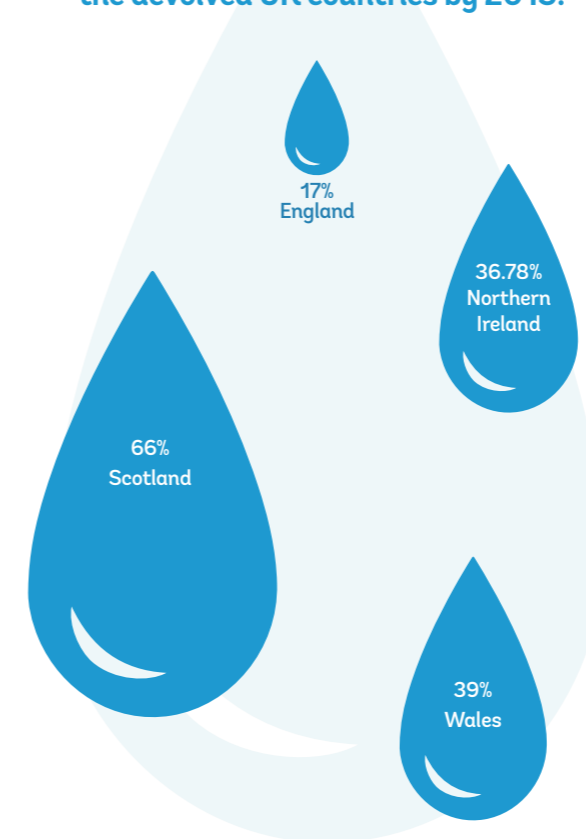
After habitat restoration

The Wye & Usk Foundation



WTML/Ben Lee

The aim of the EU Water Framework Directive was for all water bodies to achieve 'good' ecological status by 2015. Here are the actual percentages achieved by each of the devolved UK countries by 2015:



The overall percentage achieving good status across the EU by 2015 was 41%.

Future water opportunities

Discussions for water after the UK's exit from the EU have focused on how future payments will be made to land managers (mainly farmers and foresters). General agreement shifts the focus towards the provision of public goods or ecosystem services, such as additional carbon storage, improvements in flood water regulation, and improved soil, air and water quality. These are all benefits that well-managed woodland and trees outside woods can provide.

If payments are only made where public goods are successfully provided by land managers, there may be some interesting possibilities for enhancing the UK with additional woods, shelterbelts and other treed areas. So, for example, the farmers of Pontbren could financially benefit from the wider public benefits their tree planting created, which could encourage and support them to do more. If similar activities took place across the length and breadth of the country, instead of smaller, less-connected pockets, the benefit to the natural environment would be substantial. However, the devil will be in the detail and converting ideas for public good payments into actions that will deliver them will be the real challenge.

¹ <http://afonyddcymru.org/correspondence-with-european-commission>

² Woodland Trust (2013) Wood Wise – trees and woodland in water management. Available: <http://www.woodlandtrust.org.uk/publications/2013/11/wood-wise-winter-2013/>

³ <http://www.scimap.org.uk/>

Tree health update

Matt Elliot

Management of biosecurity once the UK has left the EU is currently a subject of much discussion in the plant health world (see page 14). A House of Lords Sub-committee, Brexit: Plant and Animal Health, has been set up and the Woodland Trust has been involved in giving evidence, along with the RSPB and the British Veterinary Association. The future of biosecurity is still under debate, but the evidence is clear that it needs to be stronger and better resourced to stop the next pest or disease epidemic being imported into the UK.

The Woodland Trust is leading by example, having set up a UK Sourced and Grown Assurance Scheme (UKSG) which assures that trees have been raised from seed sourced and grown solely in the UK. The horticultural sector now seems to be following this example as a plant health assurance scheme is currently under development. This very welcome initiative will aim to lessen the risk of pest and disease transmission between nurseries, and has largely been brought about by the threat that bacterial disease *Xylella fastidiosa* poses if it enters the UK. Findings of this disease in a plant nursery would result in severe trading restrictions being imposed upon it and its neighbours, so the industry is collaborating on focused efforts to prevent this.

The Woodland Trust hopes a combined effort by Government to invest in biosecurity at points of entry, coupled with less reliance on imported plants by facilitating a more home-grown plant production model, will result in fewer pests and diseases being imported. This will hopefully take some of the pressure off the UK's trees and woods.



Ash dieback lesion

Ash dieback

Recent scientific studies have shown that ash dieback, a disease caused by the fungus *Hymenoscyphus fraxineus*, may have been here much longer than previously thought, perhaps since the early 1990s. This is over 20 years before the disease was formally discovered in the wider environment in October 2012.

Ash dieback is continuing to cause the decline and death of ash trees across the UK. The symptoms of this disease are being increasingly noticed with a rise in prevalence in the North of England through 2017. It will be many years before the full impact of this disease is realised, but current estimates suggest at least 80% of ash trees will be lost from the landscape. With an estimated 126 million ash trees in woods and 27-60 million outside woods, the results could be devastating.

“

Current estimates suggest at least 80% of ash trees (of which there are an estimated 126 million in woodlands and 27-60 million outside woodlands) will be lost from the landscape.



Dr Matt Elliot is Woodland Trust's conservation adviser for tree health.

Zigzag elm sawfly

Scientists at the Royal Botanic Garden Edinburgh (RBGE) have confirmed the presence of the zigzag elm sawfly, *Aproceros leucopoda*, in the UK. The larvae of this sawfly make tell-tale zigzag feeding trails on elm leaves, a distinctive pattern that was spotted on leaves collected in Surrey during autumn 2017.

The non-native zigzag elm sawfly comes from East Asia. It was identified as a new pest of elms in Poland and Hungary in 2003 and has since spread to many other European countries. It can reproduce asexually which means that a population can build up very quickly because females don't have to find a mate. While this pest won't kill a healthy tree, it could leave the tree in a weakened state because the larvae can quickly strip it of leaves. This process can also leave a tree weakened and vulnerable to decline. In addition it deprives native caterpillars of their food source. The endangered white letter hairstreak butterfly, for example, depends completely on elm as a food source for its caterpillars.



Zigzag elm sawfly, *Aproceros leucopoda*



Distinctive feeding trail of zigzag elm sawfly

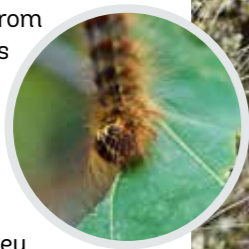
Gypsy moth

Forest Research monitors population trends in the gypsy moth, *Lymantria dispar*, as their numbers peak periodically and outbreaks result in serious damage to trees and shrubs. Increasing reports of this pest indicate that another outbreak is occurring in England. Advice on how to identify the gypsy moth is given below.

It is native to Europe and was present in Britain in the eastern fens until it died out in the early 1900s. In 1995, a small population was discovered in north-east London. From there it has spread across South East England and has been recorded in Buckinghamshire, Dorset, Essex, Berkshire and Hampshire. It is thought to have re-entered Britain through eggs laid on vehicles, wooden packaging or imported timber. The larva is a defoliator of many species of trees and shrubs.

How to identify the gypsy moth:

Overwintered eggs hatch from April and young caterpillars are dispersed by the wind on silken threads. As they age they develop yellow heads with five pairs of blue and six pairs of red spots along their backs. They can reach 70mm in length.



Adult female moths are white with dark lines across their wings and a maximum wingspan of 70mm. Their heavy bodies make them poor fliers – limiting natural expansion.



Adult males are smaller, wingspan up to 40mm, grey-brown with dark lines and are regular migrants.



Gypsy moth larva, *Lymantria dispar*

Ryan Hodnet/Wikimedia, Roundels: John Ghent, Karla Salp, eentomart

Woodland Trust research update

Christine Tansey

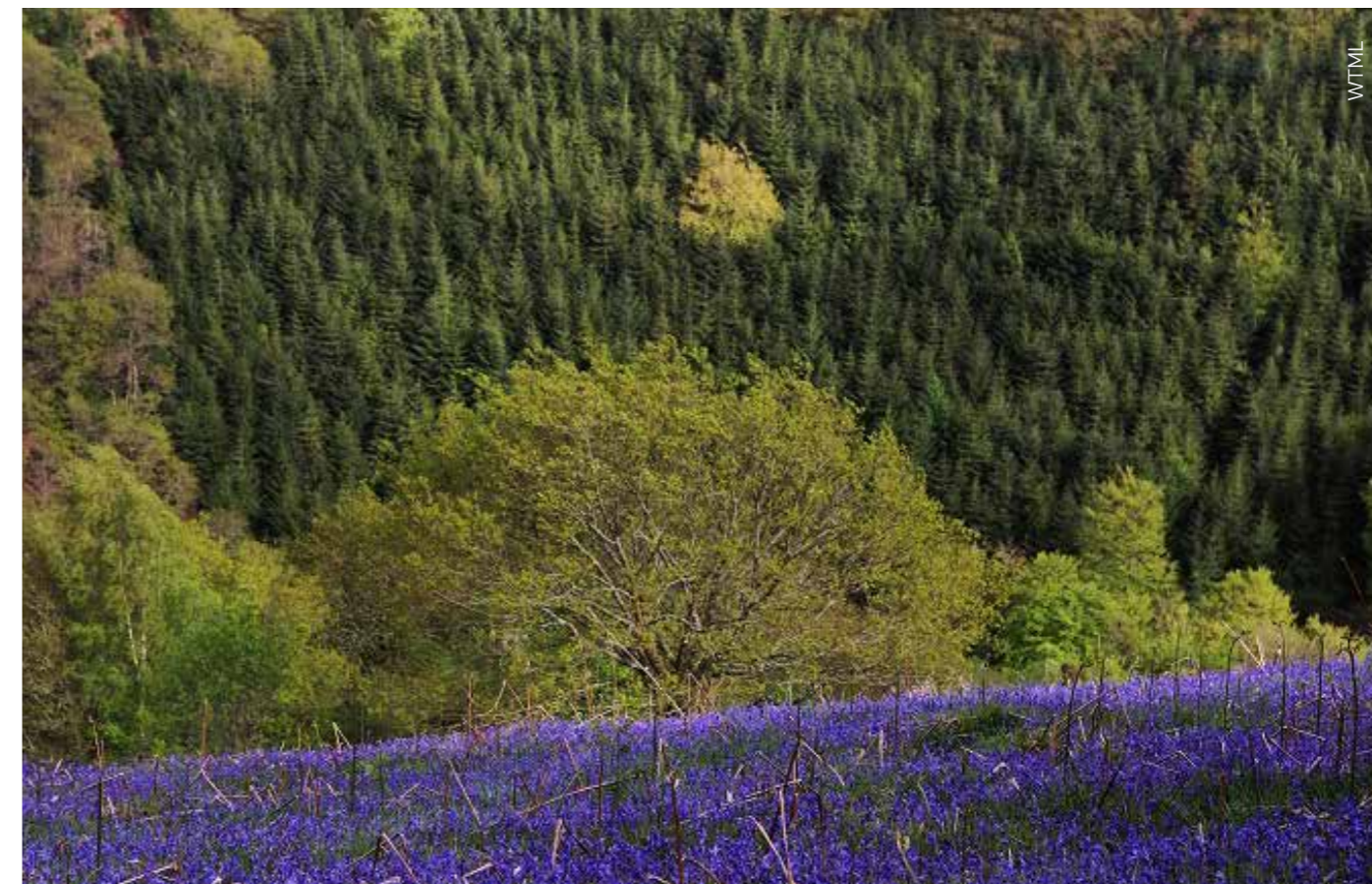
At the Woodland Trust we underpin our conservation work for woods and trees with evidence, often gathered through research carried out by universities and other research institutions.

Over the last few years, we have been increasing the amount of support we offer to researchers around the UK. We aim to help provide the evidence needed to make the right conservation decisions for trees, woods and people. The range of research we support informs the management of woods, planting and restoring woodland, outreach work with other landowners, and campaigns to protect existing woodland and inform future policy.

The long term consequences of leaving the EU for EU-funded research in the UK are still uncertain. While the UK's status as a non-member state is still being debated, UK research institutions are still able to access EU funds for research, but the terms through which the UK will be able to do so in future are yet to be agreed. In the face of this uncertainty, the role played by the Woodland Trust and other research supporting organisations may change in future. In the meantime, we continue to work towards securing the evidence needed to inform the conservation of woods and trees in the UK.



Dr Christine Tansey is the research and evidence co-ordinator at the Woodland Trust.



Ancient woodland restoration at Fingle Woods

¹ Forestry Commission (2018) Chalara dieback of ash (*Hymenoscyphus fraxineus*): symptoms. www.forestry.gov.uk/ashdieback

² The Tree Council (2015): Chalara in Non-Woodland Situations. Findings from a 2014 study.

³ Forest Research (2018) Gypsy moth (*Lymantria dispar*). <https://www.forestry.gov.uk/fr/beeh-9rfpmp>



WTML/Mark Sunderland

Nidd Gorge

Restoring planted ancient woodland sites

In spring 2017, we commissioned a re-survey of over 100 plots across 41 plantations on ancient woodland sites (PAWS) on our estate, led by Tom Curtis, partner at 3Keel sustainability advisors. The aim of this survey was to examine the progress of their restoration from conifer plantation to broadleaf woodland.

This was the third survey since 2001. It covered damp, fertile valley woods of the South West to dry, heathy woods in Kent and East Anglia, sites in Wales, the Midlands, and as far north as the Great Glen in Scotland. On each site the 2017 survey contributed to our records of the survival and composition of ground flora (focusing on ancient woodland indicator species), old trees, deadwood and soils. These records are compared against the different management approaches to conifer removal, from clearfelling

“
The stories emerging from the survey are varied, and reflect the individual characteristics and history of the woods themselves.

Tom Curtis, innovations partner at 3Keel



WTML/Lesley Newcombe

Wood anemone, *Anemone nemorosa*

(removing all trees at once), to gradual thinning, to sites that have had less active management.

The results of the survey enable us to learn about the most successful ways to protect and enhance the distinctive features of ancient woods that survive in virtually all PAWS. Working alongside colleagues at the University of Oxford, the analysis of the survey results is now being used to make recommendations and inform practical restoration management advice.

Oak health

Protecting Oak Ecosystems (PuRpOsE, www.protectouroaks.wordpress.com) is a large research partnership project supported by the Trust. Our Stratfield Brake site in Oxfordshire is one of three intensively studied oak woodland sites that are part of the PuRpOsE project to investigate oak health in Britain. In 2017, scientists from the University of Reading and Forest Research recorded information about the woodland through sampling soil, bark and leaves from oak trees and surveying ecological features of the site.

The research aims to discover why oak trees show symptoms of what has been called Acute Oak Decline (AOD). The information from Stratfield Brake will help to determine what physiological and other changes in oak trees are brought on by AOD, as well as their impact on associated microorganism communities in the soil.



WTPL/Anna Badley

“
Our work aims to understand interactions between pests, diseases, environments and humans.

Prof. Rob Jackson, PuRpOsE project lead, University of Reading

The PuRpOsE project team is currently analysing the data collected at Stratfield Brake and the other study sites and will be reporting the final results in 2019. In the meantime, we joined the researchers to explore the potential impact of AOD on the UK's oak woodland at a recent workshop.

The PuRpOsE project is funded by the Living With Environmental Change Partnership under the Tree Health and Plant Biosecurity Initiative. The project is a partnership between University of Reading, Centre for Ecology & Hydrology, Forest Research, University of Oxford, The James Hutton Institute, Stockholm Environment Institute and University of York.

If you are interested in finding out about the Woodland Trust's support of research, please get in touch: research@woodlandtrust.org.uk

Stakeholder workshop at Stratfield Brake

In April 2018, PuRpOsE researchers were joined by 15 participants representing woodland owners, foresters and NGOs to explore their work and its potential influence on woodland management decision making. The workshop was held at Stratfield Brake, where attendees were able to see trees both with and without symptoms of AOD on site. Participants were then asked to discuss and decide on how best to manage oak under different scenarios involving climate change, AOD and other pest and disease threats. This generated some interesting debate as ideas were exchanged from a range of perspectives.

The outputs from the workshop will be valuable to both the PuRpOsE research team and the Trust in developing recommendations for oak management as our understanding of AOD and other threats to oak improves.

“
To help solve oak health problems we need to unite expertise and knowledge from a range of different groups. At Stratfield Brake, forest practitioners demonstrated considerable breadth and depth of oak woodland management knowledge, producing some of the best discussion at a workshop that we have attended.

Duncan Ray, senior forest ecologist, Forest Research



FOREST RESEARCH

Forest Research sharing PuRpOsE project evidence about health threats to oak at Stratfield Brake

Wood Wise



WOODLAND
TRUST

The Woodland Trust, Kempton Way, Grantham, Lincolnshire NG31 6LL.

The Woodland Trust is a charity registered in England and Wales no. 294344 and in Scotland no. SC038885.
A non-profit making company limited by guarantee. Registered in England no. 1982873. The Woodland Trust logo
is a registered trademark. 11784_06/18