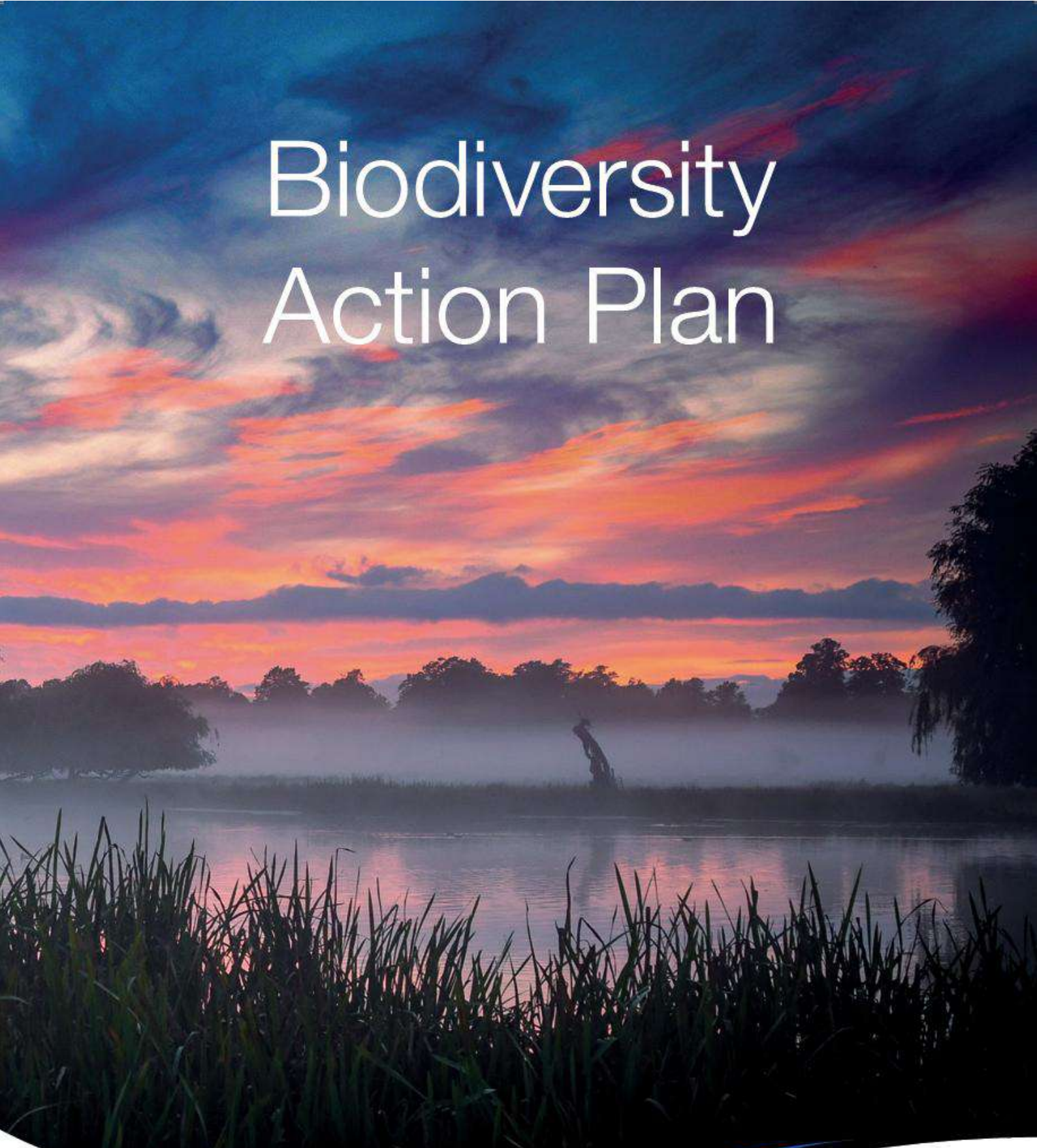
Biodiversity Action Plan



RICHMOND BIODIVERSITY PARTNERSHIP

LONDON BOROUGH OF RICHMOND UPON THAMES

The Richmond Biodiversity Partnership

The partner organisations that support the Biodiversity Action Plan for the London Borough of Richmond upon Thames.

London Borough of Richmond upon Thames

FORCE
Friends of the River Crane Environment

English Heritage

Royal Botanic Gardens Kew

ZSL

Royal Mid Surrey Golf Club

NPL
National Physical Laboratory

The Fulwell Golf Club

Port of London Authority

Waterlife Recovery Trust

Barnes Common

Friends of Ham Lands

Hampton Heath Friends

Thames Landscape Strategy
Weybridge – Hampton - Kew

Historic Royal Palaces

LARG
London Amphibian & Reptile Group

London Bat Group
A Bat Conservation Trust Partner Group
Charity No. 1160572

WWT London Wetland Centre

Environment Agency

The Royal Parks

TCV
The Conservation Volunteers

London Wildlife Trust

Let's Go Outside and Learn

salix
ECOLOGY

Butterfly Conservation
Saving butterflies, moths and our environment

The Borough of Richmond BRAG Allotment Group

Habitats & Heritage

Crane Valley Partnership

Strawberry Hill House & Garden

To get involved with the Richmond Biodiversity Action Plan and for further information please contact:

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Executive summary

The Richmond Biodiversity Action Plan (RBAP) sets out a framework to conserve, protect, and enhance the rich variety of habitats and species within the London Borough of Richmond upon Thames (LBRuT). Building on previous iterations from 2005, 2011 and 2019, the 2025 update highlights the importance of responding to the environmental challenges of climate change, habitat fragmentation and urban development.

To conserve, protect and enhance biodiversity the RBAP aims are to promote ecological connectivity, respond to climate change, engage residents and other stakeholders in nature conservation, and reduce the impact of development.

To achieve long-lasting success, the Richmond Biodiversity Partnership (RBP) will collaborate with stakeholders beyond the borough to plan conservation interventions at the landscape scale. It will also prioritise the inclusion and engagement of a diverse range of young people in biodiversity action, thus ensuring the next generation of technical experts, advocates and volunteers.

Richmond is in a key geographical location for nature conservation, situated on the River Thames wildlife corridor, connecting the green belt of Surrey with Inner London. The wealth of green spaces along the river and across the borough contribute to Richmond's exceptional biodiversity. Kew Gardens, Richmond Park, Bushy Park, Home Park and the London Wetland Centre are nationally recognised for their importance, but other sites including six local nature reserves, golf courses, cemeteries, private gardens, allotments and parks all augment the borough's biodiversity value.

The RBAP focuses on eleven priority species and ten habitats found within the borough. They were chosen for four reasons: they are characteristic of the local area, they are in local decline, they support conservation and the regional and national levels, or they are considered 'flagship' for public engagement. The RBAP also includes fourteen cross cutting actions (CCA), common to all species and habitats, which help identify opportunities for public engagement, research, information sharing, funding and holistic project planning. Notable additions to the RBAP in 2025 include the habitat action plan (HAP) for dark skies and a species action plan (SAP) for amphibians and reptiles. The SAPs for song thrush and house sparrow have also been consolidated to improve the delivery of shared conservation objectives.

The Richmond Biodiversity Partnership has been very successful in meeting the aims of the RBAP to date. Species such as water voles have been successfully reintroduced and native black poplars have been mapped, genetically tested and rare clones have been planted both locally and at partner sites across the UK. In support of species conservation, habitats have been created and enhanced. This includes over 2.5 km of riverbank restoration, increasing wildflower meadow area by around 6% and the installation of over 188,000 m^2 of pollination stations. This latest edition of the RBAP builds on the past successes to respond to emerging challenges and safeguard the gains made to date.

Central to the success of the RBAP is the engagement of the public and stakeholders across the borough. The RBP will prioritise creating and publicising opportunities for land managers, site owners, residents and employees to proactively support the nature conservation aims of the RBAP. We envisage a coordinated voluntary workforce that is empowered to act in their local neighbourhood and across the Sites of Importance for Nature Conservation (SINC) in

Richmond. In a collaborative effort, we can ensure Richmond upon Thames remains rich in wildlife and a green and pleasant urban borough not only for our benefit but also for generations to come.

Acknowledgements

I would like to thank all members of the Richmond Biodiversity Partnership who have contributed and helped to compile this Biodiversity Action Plan for the London Borough of Richmond upon Thames.

I am grateful for the passion and expertise of the 23+ organisations and many individual experts that define the membership of the Richmond Biodiversity Partnership. Their commitment and collaboration are inspiring, ensuring significant success in implementing the RBAP over the years. Their help and support have been instrumental in revising this document, ensuring the actions remain relevant from 2025 to 2030 and beyond.

I would particularly like to thank Mike Hildesley (Barnes Common Ltd), Rob Gray (FORCE), Tasha Worley and John Salisbury (Richmond Council) and Charlotte Harris (Habitats & Heritage) for their support writing and proofreading the document.

Special Thanks to Peter Woolliams for spearheading the research and for writing the HAP for dark skies, and to John Salisbury for writing the SAP for amphibians and reptiles. Significant work was done by HAP and SAP leads, coordinating discussion to update each plan and review the actions. Thank you to Callum Moore, Charlotte Harris, Becky Kendrick, Sarah Ive, Rob Gray, Tasha Hunter, Paul Losse, Mike Hildesley, John Salisbury, Bill Downey, Craig Ruddick, Jamie Simpson, Philip Briggs and Ian McKinnon.

The strength of the biodiversity partnership lies in its depth and breadth of membership. Through meeting attendance and consultation support you have enriched the conversation and contributed towards the ongoing success of biodiversity management across LBRuT. Thank you to Nick Oliver, Francis Bennett, Rachel Walker, Laura Nee, Claire Silva, Myszka Guzkowska, Ru Brookes, Peter Hall, Eleanor Evetts, Max Battison, Paul Cook, Sharon Mehta, Peter Woolliams, Eleanor Lawrence, Alison Fure and Art Gelling.

Thank you to the photographers who generously donated their work for use in this latest version of the document. In particular, Andrew Wilson for the frogs on the back cover and Jane Bain for the tawny owl on the inside back cover.

Finally, thank you to the London Borough of Richmond upon Thames Council for subsidising the printing of the document and supporting the ongoing coordination of the RBP.

Paul Jennings

Chair of Richmond Biodiversity Partnership, CEO of Habitats & Heritage.

Abbreviations

ARG UK: Amphibians and Reptiles Group UK
BAP: Biodiversity Action Plan
BBP: Beverley Brook Partnership
BBS: Breeding Bird Survey
BCL: Barnes Common Limited
BCT: Bat Conservation Trust
BHPS: British Household Panel Survey
BNG: Biodiversity Net Gain
BOP: Biochemical Oxygen Demand
BSBI: Botanical Society of the British Isles
BTO: British Trust for Ornithology
CBD: Convention on Biological Diversity
CCA: Cross Cutting Actions
CIL: Community Infrastructure Levy
CROW: Countryside and Rights Of Way Act
CVP: Crane Valley Partnership
DED: Dutch Elm Disease
DEFRA: Department for Environment, Food and Rural Affairs
DRE: Disease Resistant Elm
EA: Environment Agency
EC: European Community
EU: European Union
FBHP: Friends of Bushy and Home Parks
FC: Forestry Commission
FG: Friends Groups
FOHL: Friends of Ham Lands
FORCE: Friends of the River Crane Environment
FWHT: Fresh Water Habitats Trust
GIGL: Greenspace Information for Greater London
GIS: Geographic Information System
GLA: Greater London Authority
HAP: Habitat Action Plan
H&H: Habitats & Heritage
HRP: Historic Royal Palaces
IUCN: International Union for the Conservation of Nature
JNCC: Joint Nature Conservation Committee
LA: Local Authority (LBRuT)
LAG: Lowland Acid Grassland
LARG: London Amphibian and Reptile Group
LBAP: Local Biodiversity Action Plan
LBG: London Bat Group
LBP: London Biodiversity Partnership
LBRuT: London Borough of Richmond upon Thames
LEAP: Local Environment Agency Plans
LNHS: London Natural History Society
LNR: Local Nature Reserve
LTOA: London Tree Officers' Association
LTWGS: London Tree and Woodland Grant Scheme
LWT: London Wildlife Trust
MARS: Monitoring and Recording of Species
MGB: Metropolitan Green Belt
MOL: Metropolitan Open Land
NBMP: National Bat Monitoring Programme
NE: Natural England
NERC: Natural Environment & Rural Communities
NGO: Non-Governmental Organisation
NNR: National Nature Reserve
PG: Private Garden
PLA: Port of London Authority
PSPO: Public Spaces Protection Officer
PTES: People's Trust for Endangered Species
RBG: Royal Botanic Gardens Kew
RBAP: Richmond Biodiversity Action Plan
RBGK: Royal Botanic Gardens Kew
RBP: Richmond Biodiversity Partnership
RDB: (British) Red Data Book
RiPL: River Partnership in London
RP&WCSBP: Richmond Park and Wimbledon Common Stag Beetle Partnership
RSPB: Royal Society for the Protection of Birds
RYOT: Richmond Youth Offending Team
SAC: Special Area of Conservation
SAP: Species Action Plan
SBI: Site of Borough Importance
SDBWS: Surbiton District Bird Watching Society
SDG: Sustainable Development Goals
SERT: South East Rivers Trust
SINC: Site of Importance for Nature Conservation
SLI: Site of Local Importance
SMI: Site of Metropolitan Importance
SPA: Special Protection Area
SSSI: Site of Special Scientific Interest
SUDS: Sustainable Drainage Systems
TCV: The Conservation Volunteers
TfL: Transport for London
TLS: Thames Landscape Strategy
TRP: The Royal Parks
TPO: Tree Preservation Order
TRP: The Royal Parks
TSK2C: Thames strategy Kew to Chelsea
TW: Thames Water
UDP: Unitary Development Plan
UN: United Nations
WGS: Woodland Grants Scheme
WHS: World Heritage Site
WLH: White-Letter Hairstreak
WLO: Wildlife Liaison Officer (Metropolitan Police)
WWF: World Wildlife Fund
WWT: Wildfowl and Wetlands Trust
W&PCC: Wimbledon & Putney Commons Conservators
ZSL: Zoological Society of London

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1 Introduction

1.1 The Richmond Biodiversity Action Plan 2025

The London Borough of Richmond upon Thames (LBRuT) first published its Biodiversity Action Plan (BAP) in 2005. The Richmond Biodiversity Action Plan (RBAP) has been updated and revised in 2011, 2019 and most recently in 2025. The updates respond to emerging priorities identified by the members of the Richmond Biodiversity Partnership (RBP) as well as in response to regional and national concerns. Table 1a details how the RBAP has evolved over time.

The RBAP 2025 is comprised of eleven Species Action Plans (SAP) and ten Habitat Action Plans (HAP). The targets of these plans have been updated to ensure the RBAP remains relevant to the current context. The 2025 update also introduces a HAP for dark skies and a SAP for amphibian and reptiles. It also combines the SAPs for song thrush and house sparrow. The RBAP provides guidance for local planning decisions, as well as specific biodiversity targets aimed at conserving and, where possible, enhancing the presence of each species and habitat. In addition, 14 Cross Cutting Actions (CCAs) have been added. These have been introduced to promote connectivity of habitats at a landscape scale, responding to threats posed by climate change, and engaging the public in nature conservation. They are reflected in the aims of the RBAP below.

Aims of the Richmond Biodiversity Action Plan

To conserve and enhance the variety of species and habitats in the London Borough of Richmond upon Thames, the RBAP has five principal aims:

1) **Promote ecological connectivity**
   Opportunities to develop and enhance wildlife corridors and habitat mosaics will be identified to benefit multiple priority species identified in the RBAP species action plans.
2) **Respond to climate change**
   Supporting the approach outlined in LBRuT's Climate and Nature Strategy, through actions appropriate to specific habitats or species, informed by the emerging science.
3) **Engage residents in nature conservation**
   Increasing public awareness and responsibility for biodiversity; engaging them in talks, surveying and practical volunteering.
4) **Reduce the impact of development**
   Providing the up-to-date ecological priorities to support implementation of the Local Plan, consideration of planning applications and the implementation of Biodiversity Net Gain (BNG).
5) **Increase stakeholder engagement**
   Supporting the capacity of landowners and land managers to maintain and where possible enhance, species and habitats of importance.

Cross Cutting Actions – RBAP priorities

The RBAP 2025 Cross Cutting Actions (CCA) will facilitate collaboration between different HAP and SAP working groups. In particular, they will help prioritise improving ecological connectivity, understanding the impact of climate change, engaging the public in nature conservation.

Ecological connectivity

Ensuring that habitats across a landscape are linked to facilitate the movement of multiple species is central to the ambition of the RBAP 2025. The Richmond Biodiversity Partnership (RBP) will work with partners from neighbouring boroughs to enhance the physical arrangement of habitats through wildlife corridors and habitat mosaics. As well as supporting structural connectivity in this way, the RBP will also seek to promote functional connectivity. This will be achieved by engaging and informing local planning authorities, developers and local residents to ensure that their actions consider how different species use and interact with the landscape.

The London Borough of Richmond upon Thames (LBRuT) and the surrounding boroughs of south and west London have many excellent examples of high-quality habitat. The RBP will seek opportunities to apply the aims of the RBAP towards improving the structural connectivity between these spaces to benefit species survival, biodiversity and ecosystem function. This approach will help determine priorities for the application of onsite and offsite Biodiversity Net Gain (BNG) in the borough. This is particularly important in Richmond's context as an urbanised area, which is at risk of further habitat fragmentation from development pressure.

There are many opportunities to apply the aims of the RBAP to enhance ecological connectivity across the borough and beyond. The river Thames and tributaries such as the River Crane and Beverley Brook offer the chance to engage in catchment scale conservation, enhancing the links between aquatic ecosystems and their neighbouring terrestrial ecosystems as well as connecting habitats in linear patterns across the region. In addition, the structural connections within mosaics of habitats over a large area, often adjacent to waterways, will be protected and enhanced. An example of such a mosaic is the 'Ham Circle' of open spaces whose assemblages of birds, invertebrates and several specific priority RBAP species will benefit from this approach. Dark corridors, that often overlap with corridors associated with rivers and streams, provide another opportunity for enhancing ecological links across the landscape. The RBAP 2025 introduces a HAP for dark skies to highlight the importance of low light corridors for the functional connectivity of nocturnal species. Such dark corridors can vary in scale from local bat foraging lines through to the broad swathe that links the River Thames to the Surrey Hills Area of Outstanding Natural Beauty.

The aims of the RBAP will also be directed to enhance the structural and functional connectivity at smaller scales where local people can be empowered to act. Linking to the HAP for gardens and allotments, opportunities will be sought to engage residents and small-scale developers to enhance connectivity through wildlife friendly landscaping that will also create stepping stone habitats within the wider landscape. Projects including hedgehog highways and pollinator stations as well as management strategies like wilding grass verges and roadside ditches will educate and empower local people to value the biodiversity around them.

Climate change

The London Borough of Richmond upon Thames has declared a climate emergency and in response, the RBAP 2025 prioritises understanding and mitigating against the threats posed by

warming temperatures and more erratic weather patterns. The threats posed include small shifts in temperature having significant impacts on species' life cycles and distributions; droughts desiccating wetland habitats and stressing trees making them more susceptible to pests; and invasive and drought tolerant species dominating a wide variety of habitats, compromising delicately balanced ecosystems.

To help protect the complex communities that have co-evolved in this region, the RBAP prioritises surveying and recording with Greenspace information for Greater London (GiGL) to help inform of long-term trends in species distribution and prevalence. In addition, opportunities for research in collaboration with tertiary education institutions will be explored by the partners to contribute to the emerging science. The partnership will also collate research related to climate change impacts and management responses as a digital resource for partners, landowners and managers. Connected to this – the partnership will seek opportunities to trial alternative methods of management and monitor the impacts to determine best practice at mitigating the threats posed by climate change.

Public engagement

The involvement of the public in nature conservation strategies is essential to the success of the RBAP. Opportunities for public education, volunteer engagement and citizen science will be sought across the HAPs and SAPs to engage a large and diverse audience, representative of all communities in LBRuT. Without widespread public support, attempting to translate the RBAP from a document into proactive conservation action on the ground will be a futile task. Raising awareness is a positive process for two main reasons:

1) Heightening people's appreciation of their local environment will generate a feeling of long-term stewardship.
2) Increased awareness may reduce incidences of unintentional damage or disturbance through ignorance.

The public will be considered a key stakeholder of the broader partnership of landowners, land managers, local groups and organisations acting in LBRuT. The partnership will collaborate and coordinate public engagement events, workshops and activities available to the public. The actions, successes and challenges in nature conservation across the borough will also be shared more regularly through blog posts and publicly displayed QR codes linking to a website with updates related to the RBAP.

In particular, the RBAP will engage young people in the implementation process. Through interschool forums, volunteering sessions and awareness campaigns the RBAP 2025 seeks to build the capacity and inclination of the next generation to continue the conservation of biodiversity in the borough and across the UK.

The BAP 2025 also prioritises educating and engaging the public in how climate change affects biodiversity through a series of talks, walks and opportunities to volunteer in habitat management and monitor the impacts through citizen science.

	2005 & 2011	2019 additions	2025 additions
Species action plans (SAP)	- Bats - Mistletoe - Song thrush - Stag beetle - Tower mustard - Water vole	- Native black poplar - Hedgehog - House sparrow - swifts - White-letter hairstreak & elm - Pollinators	- Reptiles & amphibians - House sparrow & song thrush (combined)
Habitat action plans (HAP)	- Acid grassland - Ancient & veteran trees - Broad leaved woodland - Reedbeds - Tidal Thames	- Hedgerows, - Neutral grassland - Private gardens - Rivers and streams	- Dark skies
Notes	- In 2012 the actions were reviewed for each HAP and SAP.	- Mistletoe was removed due to the success of propagating the species across the borough.	- Connectivity, climate change and public engagement prioritised. - All HAP & SAP actions reviewed and updated. - Generic Actions rewritten as Cross Cutting Actions.

Table 1: RBAP changes over time

Key achievements since 2019

The Richmond Biodiversity Partnership and the constituent Biodiversity Action Plan HAP and SAP working groups continued their nature conservation work in the six years between 2019 and 2025. However, efforts were frustrated by the Covid pandemic between 2020 and 2022.

Where possible, partners have been recording and mapping habitats and species as well as managing and creating priority habitat, engaging the public, controlling invasive species and re-introducing species.

Surveying

Surveying of key sites for the priority species and habitats identified in the action plan has continued over the last six years. Citizen science projects have been instrumental in this process and have included monthly ecological monitoring along the Crane with the Zoological Society of London (ZSL); fortnightly water vole surveys in 2025 also with ZSL and the People's Trust for Endangered Species (PTES); geomorphological monitoring across the Crane catchment and parts of Beverley Brook using Morph; water quality sampling in Beverley Brook, and a garden wildlife survey for residents.

Other surveying work includes: 1) long term monitoring of bat populations at the London Wetlands Centre, raising awareness of the importance of such sites for winter foraging. 2) eDNA survey of the borough's ponds. 3) ZSL, the Friends of the River Crane Environment (FORCE) and South East River Trust (SERT) conducted the UK's first outfall safari along the River Crane in 2016, with a subsequent survey along Beverley Brookin 2024 4) Hydrology and ecology surveys of Richmond Park and Royal Mid-Surrey Golf course with TLS. 5) invertebrate surveys of the flooded Kew ha-ha and other sites which are of proven national significance. 6) Barnes Common conducted surveys on Palewell Common and East Sheen Cemetery.

Priority habitat achievements

Rivers and streams – including the Thames

- Coordinated removal of invasive species including giant hogweed, Himalayan balsam, Japanese knotweed and floating pennywort. FORCE has been very active on the River Crane in addition to mapping and management of Himalayan balsam by Thames Landscape Strategy (TLS) and LBRuT over the last five years.
- Riverbank enhancement and restoration including around 1.5km on the River Crane in Little Park and Crane Park, as well as 1.2km on the Beverley Brook at Palewell Common and Barnes Common. Works involved increasing light levels, removing toe boards and concrete, installing brush and wooden berms, adding gravel for habitat and removing over 4 tonnes of rubbish. TLS also installed 200m of spiling and conducted bank repairs during the Rewilding Arcadia Project in Kew and Ham.

Wetlands and ponds

- The area of reedbeds has been increased and enhanced through the restoration and extension of the Richmond Park Pen Ponds reedbeds and the addition of 2 reedbeds (700m^2) on Barnes Common linking to Beverely Brook. Reed cover at Leg o'Mutton continues to expand with breeding reed and Cettis warblers. Meanwhile, the ongoing management of reedbeds at Barnes Wetland Centre now attracts up to 70 breeding pairs of reed warblers each year.
- 3 new ponds (200m^2) and an ephemeral soak away pond on Barnes Common have been installed, and work to improve the light conditions of the permanent and ephemeral ponds on East Sheen and Palewell Commons has been undertaken. In addition, trial habitat improvement at Hammerton's Pond to enhance connectivity with Ham backwaters has been carried out by the TLS.
- An area of just under 3 acres has been left unmown in Old Deer Park to allow a natural wetland area to develop.
- 1 hectare of wetland enhancement has been carried out in Little Park.

Grasslands

- Meadow habitat across the borough has been increased by approximately 6%, principally through improving and managing five areas of neutral grassland in Crane Park (two hectares in total). Meadows have also been created at Marble Hill House by English Heritage and Plantlife.
- Lowland acid grassland active management has increased through the creation of several small scrapes on Barnes Common, and control of scrub species such as gorse, bramble, bracken and broom across the borough including Richmond Park.

Hedgerows and woodlands

- On average 300m have been planted annually, including several hundred metres planted across Richmond Crane Valley sites that are also in rotational management with weeding, chipping, laying and topping. Another 250m at Marble Hill House have been planted.
- Woodlands under active management plans have increased with Crane Park woodland a recent addition with new native species planted and invasives actively controlled.

Priority species achievements

Bats

- Replacement of energy-inefficient, light-polluting streetlights along the Warren Footpath and replacement with lower light-level, and more directional LED lights that cause less disturbance to bats
- Annual public bat walks at various sites around the borough including Richmond Park, Barnes Common, Leg o'Mutton Reservoir, London Wetland Centre, Kneller Gardens, Carlisle park.
- 16 custom made bat boxes and 30 cavities were carved directly into trees for bat habitat along Beverley Brook.

Native black poplar

- The targets for native black poplar have been met and targets for RBAP 2025 relate to monitoring.
- Records have been made of all known black poplar trees in Richmond Borough and all mature specimens and some younger trees of unknown provenance have been genetically tested. A propagation programme of all unique trees was completed with Barnes Common Limited and replanting of 3 trees of each unique clone completed.
- Barnes Towpath population has been fully restored through conservation work to veteran/ mature trees in addition to new plantings.
- Planting has also been supported in neighbouring boroughs and all rare genetic material trees have been distributed to multiple national satellite sites in the South East, South West, Midlands and North West for conservation.

Water voles

- 137 water voles were released onto the River Crane in 2024 following the loss of the species here from 2020 onwards. The release was preceded by reedbed and riparian habitat enhancements.
- The Crane Restoration and Engagement for Water voles (CREW) project has been set up and the Environment Agency's £75,000 local funding for 2024/2025 included work which will benefit water voles, with further funding to be received in 2025/2026.
- In the London Borough of Richmond upon Thames the major land managers are now hosting mink traps and mink surveying has been conducted along the Crane and Beverley Brook in preparation for identifying suitable sites for further reintroductions.

Tower mustard

- The population on the Stain Hill Reservoir site (one of two in London, but by far the most important) has been brought under an active management plan. A feasibility study to identify potential future transplant sites across south and west London has also been completed and partner collaboration and funding is now being sought.

White-letter hairstreak and elm

- 60 disease resistant elms have been planted across the borough providing an important food plant for the caterpillars of this rare butterfly.

Other species achievements

- The borough's first official traffic signs for hedgehogs were installed on Barnes Common. A further two have been added at Kneller Gardens and Hatherop Park.
- 10 stag beetle loggeries have been constructed across the borough over the last 12 months alone.
- 4 insect hotels have been created in 2024/2025.
- A bee bank has been created in Jubilee Meadows to support populations of solitary and mining bees.
- 188,318 m^2 of pollination stations has been installed across the borough.
- Two grey wagtail boxes were installed on the Beverley Brook.
- Three kingfisher banks were installed along the River Crane in 2024 by FORCE.
- Enhancing fish and eel connectivity with the Tidal Thames through the installation of a major fish pass at Mereway Road weir and a further fish and eel pass on the lower Crane.

1.2 The importance of biodiversity action plans

Biodiversity, or biological diversity, is the 'variety of life' - the myriad plant and animal species, the range of habitats in which they live, and the natural processes of which living things are a part. This includes the living organisms, the genetic differences between them, and the communities in which they occur.

Sustainable development is often defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland Commission 1987).

Biodiversity and sustainable development are therefore inextricably linked, as the wealth of species and habitats can be seen as an indicator of our environmental health and general well-being. This has been recognized by the United Nations in the Sustainable Development Goals (SDG) adopted in September 2015, which explicitly target biodiversity in Goal 15 (Life on Land). Considerable evidence highlights a significant decline in biodiversity on a global, national and local scale over the years. Biodiversity Action Plans are considered to be a critical aid to reverse this decline and help conserve, protect and enhance species and habitats that are rare, in decline, of importance and of value locally. In addition, such plans can help educate the public and raise awareness.

Property owners, managers, and developers are increasingly aware of the requirements for sustainability and one of the aims of this plan is to provide information on key habitats and species that will help them to take informed decisions.

What is a biodiversity action plan?

A Biodiversity Action Plan (BAP) is an evolving strategy and delivery mechanism for the conservation of biological diversity and the sustainable use of biological resources. A Local BAP (LBAP) lists prioritised actions for protecting, conserving and enhancing those species and habitats that are of local importance. The list of species and habitats in the RBAP reflects and supports those contained within the London and UK Biodiversity Action Plans.

This RBAP aims to protect and celebrate the wildlife in the borough of Richmond through a series of actions in order to improve the overall environment and contribute to enhancing biodiversity within the borough.

Implementing the BAP has involved a large number of local groups, individuals and organisations since its inception in 2005. These groups collaborate to monitor the biodiversity within LBRuT and help to gauge the quality of our environment through the indicators provided by the success of the habitats and species supported. The groups also meet together four times a year as the Richmond Biodiversity Partnership (RBP) to compare the actions taken and achievements towards the goals in the habits and species actions plans.

Why we need to conserve Richmond's biodiversity

In LBRuT, there are ever-increasing demands on land for new housing, commerce and recreation, which have resulted in habitats being threatened and the abundance of species diminishing. Wildlife in London still faces major challenges from the demands of a growing and more compact city, lack of resources to manage sites and habitats, and lack of awareness of the value of conserving biodiversity in an urban environment. In LBRuT, we set out to conserve and improve these complex and dynamic systems which support a wide range of fauna and flora.

In order to conserve LBRuT's biodiversity, we need to reverse the decline of species and habitats and ensure through the RBAP that proactive conservation is undertaken by all sectors of the community.

While conservation is often more complex in an urban environment than in the countryside, the availability of nature as an education resource for many more people, and its ability to be seen and understood by opinion-formers, more than justifies the additional effort required.

The importance of people

A broad partnership is important in the production and implementation of any LBAP, as local groups and organisations can be brought together to share expertise, knowledge, resources and responsibilities. Representation from organisations operating within LBRuT is needed to consider the views of those who have the most influence upon local biodiversity. The involvement of the public is essential and mechanisms to engage and inform of progress towards the actions will be established to ensure this important stakeholder is able to interact with the RBAP meaningfully.

It should be noted that there has been a long-established commitment and dedication to nature conservation and wildlife in LBRuT through the determination and efforts of various landowners, including Richmond Council, as well as organisations, community groups, volunteers and residents. The borough includes around 70 Friends of Parks and local amenity groups with an interest in local open spaces. Each of these has access to the Richmond Biodiversity Partnership and many are represented on it.

1.3 The history of biodiversity action since 1992

International action

The Earth Summit

In Rio de Janeiro in 1992 the largest gathering of world leaders met for the UN Conference on Environment and Development, demonstrating that environmental concerns had become a high priority on the world's political agenda. As part of the International Agreement on Sustainable Development ("Agenda 21"), over 167 nations, including the UK, signed up to the 'Convention on Biological Diversity of Species and Habitats', agreeing that direct action must be taken to halt the extinction of the world's biodiversity.

Strategic Plan for Biodiversity (2011-2020)

In 2010, a new Strategic Plan for Biodiversity was approved for the 2011-2020 period in Ngoya, Japan. Its mission is to "take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication." It had five goals and 20 biodiversity targets which provide a flexible framework in which to establish national or regional targets.

The Global Biodiversity Framework (Kunming Montreal)

Adopted in December 2022 at the Convention on Biological Diversity's (CBD) 15th Conference of the Parties (COP15), the main aim of the GBF is to halt and reverse biodiversity loss. It has four overarching goals focused on ecosystem and species health to be achieved by 2050. These are, 1) halting human-induced species extinction, 2) the sustainable use of biodiversity, 3) equitable sharing of benefits and 4) to close the biodiversity finance gap of $700 billion per year. Across these goals, there are twenty-three targets to be achieved by 2030. They include 30 percent conservation of land, sea and inland waters; 30 per cent restoration of degraded ecosystems, halving the introduction of invasive species, and $500 billion/year reduction in harmful subsidies.

The subsequent 16th Conference of the Parties in Rome (February 2025) concluded in an agreement in resource mobilisation which provides a clear strategy for raising finances to fund the work needed to achieve the goals of the GBF.

National action

The UK Biodiversity Group

In December 1993, a number of conservation organisations published a report entitled "Biodiversity Challenge: An Agenda for Conservation Action in the UK". Subsequently, two further documents were produced in the UK, which outlined the nation's commitment to biodiversity. The UK was one of the first countries in the world to respond to the Biodiversity Convention, which is documented in "Biodiversity: The UK Action Plan", which was launched in 1994. Subsequently, the National Biodiversity Steering Group was established and in 1995 published a two-volume document titled "Biodiversity: The UK Steering Group Report", which contained:

- Targets and costed action plans for key habitats

- Proposals for a UK biodiversity database with the establishment of a network of Local Record Centres.
- Recommendations for raising public awareness of biodiversity.
- Proposals for action at the local level, including guidance on preparing LBAPs.

The Government endorsed the report of the UK Steering Group in April 1996. In 1997, the Steering Group, now named the UK Biodiversity Group, produced guidance notes for the production of LBAPs. It was recognised from the outset that the success of the national document relied on the production of LBAPs, which detailed particular requirements of local biodiversity and were put together by a partnership of local organisations, charities and individuals.

Working with the Grain of Nature: A Biodiversity Strategy for England

DEFRA (Department for Environment, Food and Rural Affairs) produced "Working with the grain of Nature: a biodiversity strategy for England" in 2002 in partnership with a broad range of stakeholders in the public, voluntary and private sectors. The Strategy sought to ensure biodiversity considerations became embedded in all main sectors of public policy and set out a programme for the next five years to make the changes necessary to conserve, enhance and work with the grain of nature and ecosystems rather than against them.

Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services

Following the CBD's Strategic Plan for Biodiversity and the EU Biodiversity Strategy in 2011, DEFRA published "Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services", which superseded the above strategy and aims to set "a more effective, more integrated landscape-scale approach". The Strategy identifies key sectors and actions to take, including:

- Agriculture – to improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production by, for example, reviewing how agri environment schemes are used.
- Forestry – to bring a greater proportion of our existing woodlands into sustainable management and expand the area of woodland in England.
- Planning and development – through reforms of the planning system, take a strategic approach to planning for nature; retain the protection and improvement of the natural environment as core objectives of the planning system; and pilot biodiversity offsetting, to assess its potential to deliver planning policy more effectively.
- Water management – protect water ecosystems, including habitats and species, through a river basin planning approach; promote approaches to flood and erosion management which conserve the natural environment and improve biodiversity.
- Marine management – develop ten Marine Plans which integrate economic, social and environmental considerations.
- Fisheries – to ensure fisheries management supports wider environmental objectives, including the achievement of Good Environmental Status under the EU Marine Strategy Framework Directive.

Implications of the UK's withdrawal from the European Union

The UK formally left the European Union in December 2020. Up to this date, most of the UK's biodiversity laws had been shaped by legislation such as the Bern Convention on the conservation of European wildlife and habitats (ratified by the UK in 1982) and EU directives

such as the conservation of natural habitats (1992) and the conservation of wild birds (2009). After leaving the EU changes have been made to transfer functions from the European Commission to the appropriate authorities in England and Wales. It was agreed that the associated legislation would be copied over to the statute books.

The Environment Act 2021

This act introduced wide ranging environmental protections. For nature, it introduced planning considerations under Biodiversity Net Gain to ensure that some developments deliver at least a 10% increase in biodiversity. It also introduces the Local Nature Recovery Strategy (LNRS), a new system of spatial biodiversity strategies in England, required by law under the Environment Act 2021. 48 regions will work together to restore, create, and connect habitat.

Regional action

The London Biodiversity Partnership

In September 1996, the London Biodiversity Partnership (LBP) was established in conjunction with a prospectus ("Capital Assets") for biodiversity in Greater London. The partners included a wide variety of environmental organisations, the private sector, London boroughs, major landowners and corporate organisations who had agreed to support the implementation of this regional strategy.

The London Biodiversity Action Plan

In January 2000 the London Biodiversity Partnership published Volume 1 of the London Biodiversity Action Plan, 'The Audit', which takes stock of London's priority habitats and species, and provides an assessment of their status, threats and needs. 'Our Green Capital' was also published in 2000, as a follow on to 'Capital Assets' (1996), and as a companion to 'The Audit' and introduction to the Partnership's work.

The Biodiversity Action Plans were published between 2001 and 2005. The London Biodiversity Partnership ceased in 2013 due to lack of funding. However, the action plans are still being delivered at local level.

The Mayor's Biodiversity Strategy

In July 2002, the Mayor of London published the Mayor's Biodiversity Strategy, which was the first statutory strategy of its kind in the UK. It set out the Mayor's vision to maintain and enhance London's biodiversity and outlines the importance of a partnership approach and identified that LBAPs are an innovative way to involve key stakeholders and members of the public to ensure priority habitats and species are protected and enhanced at a local level. The Strategy also encouraged and supported the production and implementation of Local BAPs.

The London Environment Strategy

In 2018 the Mayor amalgamated all aspects of London's environment, including biodiversity, into one document for the first time. The **London Environment Strategy** sets out how the Mayor will work with others to make sure London's biodiversity is enhanced and that more Londoners can experience nature. The strategy identifies seven key areas of focus, including green infrastructure which sets the objective (5.2) '*to protect a core network of nature conservation sites and ensure a net gain in biodiversity.'* It includes four proposals. These are:

> **Proposal 5.2.1.a** The London Plan includes policies on the protection of Sites of Importance for Nature Conservation (SINCs) and Regionally Important Geological Sites (RIGS)
>
> **Proposal 5.2.1.b** The Mayor will develop a biodiversity net gain approach for London, and promote wildlife-friendly landscaping in new developments and regeneration projects
>
> **Proposal 5.2.1.c** The Mayor will provide guidance and support on the management and creation of priority habitats, the conservation of priority species, and the establishment of wildlife corridors. Priority habitats and species are identified in this section along with a smaller set of targets than set out in the London Plan. *
>
> **Proposal 5.2.1.d** The Mayor will work with key partners to establish a cost-effective monitoring framework, to ensure important natural environment data is collected consistently to inform future decision making
>
> * The strategy points out that though the list of targets identified here is shorter, *'these targets relate to habitats with the greatest opportunities to create new areas across much of London, and for which progress can be accurately monitored to 2050. This does not negate the need for targets for other, more locally relevant, priority habitats to be set through local biodiversity action plans (BAPs) at borough level, or through corporate BAPs.'*

London's Local Nature Recovery Strategy

This strategy is currently under development and is due to be completed in 2025. It will consist of:

1) a statement of London's strategic biodiversity priorities
2) a fully updated and comprehensive spatial habitat map with London's strategic Nature Recovery Network.

The strategy will provide a robust evidence base for the next versions of the London Plan and the London Environment Strategy using the network of over 1600 Sites of Importance for Nature Conservation (SINCs). It will also support increasing the quality, size and connectivity of these existing wildlife spaces and also combat climate change by strategically directing funding into the natural environment.

Local action - the Richmond Biodiversity Partnership

In 1996, as part of the local Agenda 21 process, the Richmond Biodiversity Group was formed, which comprised representatives from Richmond Council, London Ecology Unit, London Natural History Society, London Wildlife Trust, Royal Botanic Gardens Kew, The Royal Parks, Thames Landscape Strategy, Wildfowl & Wetlands Trust in Barnes and other local groups with an interest in wildlife and ecology.

This group has continued in one form or another since this time and has played an active role in protecting and enhancing local environments across the borough. Other participants now include nationally known organisations such as Historic Royal Palaces and active local charities and organisations such as Friends of the River Crane Environment and Barnes Common.

LBRuT launched the RBAP in 2005. In 2011, responsibility for organising and chairing the RBAP was handed over to local environmental charity, South West London Environment Network (SWLEN), now operating under the name Habitats & Heritage. The Richmond Biodiversity Group was, at the same time, renamed Richmond Biodiversity Partnership (RBP) to reflect its partnership structure.

1.4 Wildlife within Richmond upon Thames

Sites of metropolitan, borough and local importance for nature conservation in the London Borough of Richmond upon Thames.

LBRuT covers approximately 5,500 hectares and it is the only London borough to straddle both sides of the River Thames. The borough is believed to have one of the richest ecologies, with a wealth of different habitats and species supported by a large, diverse and high-quality area of parks, open spaces and conservation areas. Many of the species are also important on a regional, national and international scale. As well as LBRuT there are many large private landowners in the borough who are engaged in the Biodiversity Partnership. Richmond is fortunate to have two Royal Parks - Richmond Park and Bushy Park. Other large green spaces are Home Park and Hampton Court Palace, the London Wetland Centre in Barnes and the Royal Botanic Gardens Kew. Nature conservation value is an intrinsic component of these areas and this is recognised by the efforts of individuals, groups and organisations to protect and enhance the habitats and species of importance.

The London Ecology Unit undertook a Phase 1 habitat survey of LBRuT in 1987, which initiated the production of the London Ecology Unit's "Ecology Handbook – No. 21 Nature Conservation in Richmond upon Thames". This, as well as other surveys undertaken since, identified LBRuT as ecologically important for an array of habitats including woodland, grassland, scrub and wetland.

Nature conservation areas within LBRuT

There are 95 Sites of importance for Nature Conservation (SINC) in Richmond. They cover a total area of 2871.8 hectares, approximately 50% of the Borough's area. Several sites have statutory and non-statutory designations. For the latest version of the map (in colour) please visit the website. The table below details all sites included in the Local Plan adopted in October 2025.

Sites of Metropolitan Importance to Nature Conservation

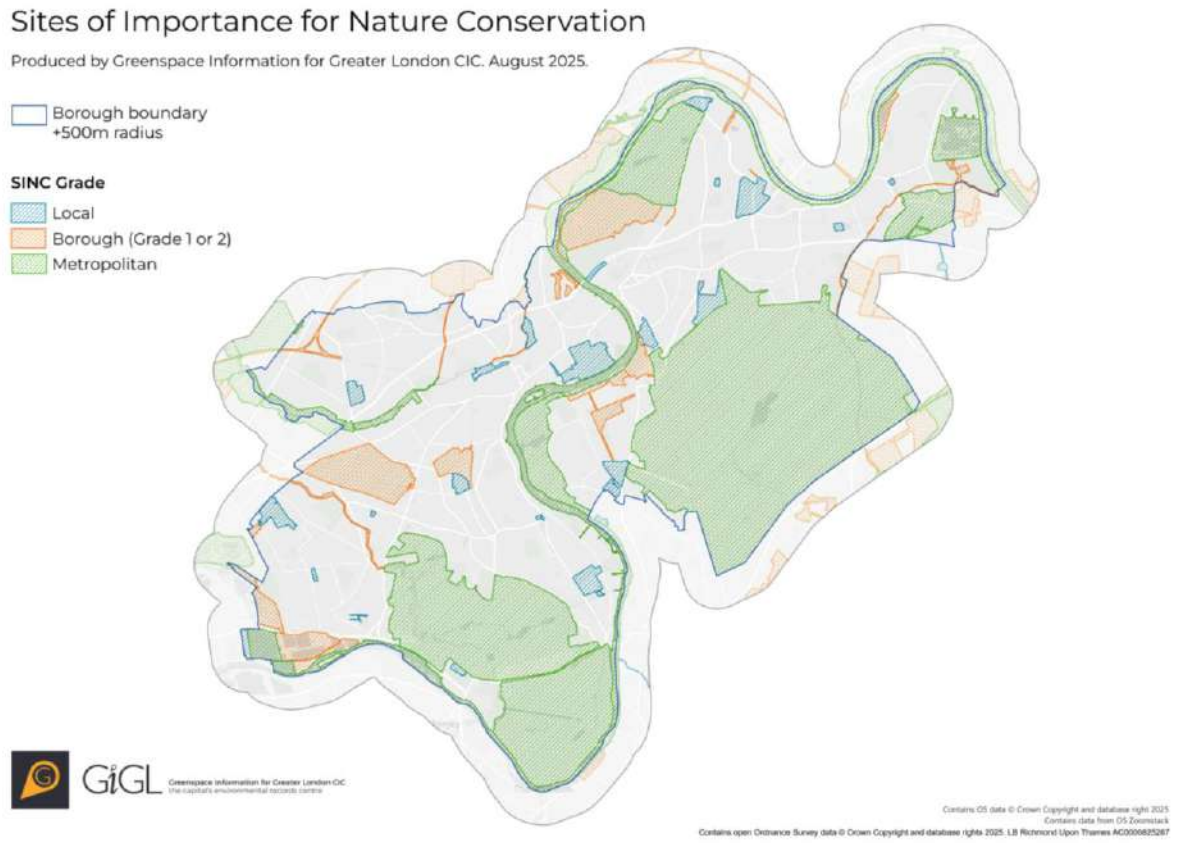
There are currently 10 sites within the borough, which contain the best examples of London's habitats, sites with rare species, rare assemblages of species, or which are of particular significance within large areas of otherwise built-up London. These areas afford the highest priority for protection.

Sites of Borough Importance to Nature Conservation (grades 1 and 2)

There are currently 35 sites of importance within the borough. These include woodlands, rivers, grasslands and some of the more mature parks which have ancient trees and meadows. Damage to these sites would mean a significant loss for biodiversity in LBRuT. Borough sites are divided into two grades based on their quality, but both are very valuable to local biodiversity.

Sites of Local Importance to Nature Conservation

There are currently 50 sites within LBRuT that are of particular value to nearby residents. These local sites are particularly important in areas where there may be a deficiency in wildlife sites. This list has seen significant additions from the last edition of the RBAP – it now includes allotments, more cemeteries and a school site.



Natural England designations in Richmond

World Heritage Site	National Nature Reserves/ Special Area of Conservation	Sites of Special Scientific Interest	Local Nature Reserves
- RBG Kew	- Richmond Park	- Richmond Park - Bushy Park & Home Park - WWT London Wetland Centre	- Barnes Common - Crane Park Island - Ham Common - Ham Lands - Lonsdale Road Reservoir - Oak Avenue, Hampton

*LBRuT sites of Importance for Nature Conservation: *Metropolitan (M), Borough (B), Local (L)*

Site	Reference	Name	Status*	Area Ha
1	RiB27	Cassel Hospital	B	3.489
2	RIB23	Kew Pond and Kew Green	B	5.398
3	RiL09	Old Mortlake Burial Ground	L	1.448
4	RiL30	Kew Meadow Path	L	0.108
5	RiL15	Churchyard of St Mary with St Alban, Teddington	L	0.517
6	RiB12	Barn Elms Playing Fields	B	3.469
7	M084	Bushy Park and Home Park	M	650.316
8	RiB14	The Copse, Holly Hedge Field and Ham Avenues	B	12.165
9	M081	Hounslow Heath	M	0.833
10	RiB26	Terrace Field and Terrace Garden	B	6.603
11	RiB22	St Margarets Residential Grounds	B	5.015
12	RiL25	Moormead Recreation Ground	L	4.945
13	RiB07	Fulwell and Twickenham Golf Courses	B	80.432
14	RiB25	Ham Common west	B	8.508
15	RiL27	Townmead Allotments, Kew	L	0.183
16	RiL03	Pensford Field	L	0.825
17	M087	London Wetland Centre	M	42.288
18	RiB02	Leg 'o' Mutton Reservoir LNR	B	8.168
19	RiL18	Beveree Wildlife Site	L	0.598
20	RiB15	Whitton Railsides	B	0.868
21	RiL07	Hampton Court House Grounds	L	2.305
22	M082	Richmond Park and Associated Areas	M	1081.193
23	RiL28	The Wilderness	L	0.518
24	RiB31	Twickenham Cemetery	B	7.769
25	RiB16	Petersham Lodge Wood and Ham House Meadows	B	9.818
26	RiB08	Duke of Northumberland's River south of Kneller Road	B	0.625
27	M031	River Thames and tidal tributaries	M	243.37
28	RiL02	Marble Hill Park and Orleans House Gardens	L	31.257
29	RiL26	Garricks Lawn	L	0.319
30	RiB30	Teddington Cemetery	B	5.494
31	RiL19	North Sheen and Mortlake Cemeteries	L	24.674
32	RiL01	St James' Churchyard, Hampton Hill	L	0.72
33	RiB09	Strawberry Hill Golf Course	B	20.362
34	RiB28	Trowlock Avenue riverside land, Teddington	B	1.686
35	RiB24	Portlane Brook and Meadow	B	4.335
36	RiL16	Langdon Park	L	5.032
37	M076	Crane Corridor	M	34.349
38	RiL17	Twickenham Road Meadow	L	2.788
39	RiL29	St Andrews Churchyard	L	0.379
40	RiL20	Hampton Cemetery	L	1.043
41	M154	Royal Botanic Gardens, Kew	M	122.72
42	M083	Ham Lands	M	76.783

Site	Reference	Name	Status*	Area Ha
43	RiB19	Hounslow, Feltham and Whitton junctions	B	4.638
44	RiL06	East Sheen and Richmond Cemeteries and Pesthouse Common	L	16.604
45	RiB06	Longford River in Richmond	B	5.748
46	RiB20	River Crane at St Margarets	B	1.176
47	RiL23	Hampton Common	L	13.163
48	RiB01	Royal Mid-Surrey Golf Course	B	81.946
49	RiB13	Beverley Brook from Richmond Park to the River Thames	B	9.757
50	RiB32	Udney Park	B	5.181
51	RiB04	Duke of Northumberland's River north of Kneller Road	B	0.734
52	RiB17	Oak Avenue Local Nature Reserve	B	1.803
53	RiB29	Twickenham Junction Rough	B	4.699
54	M085	Hampton Water Treatment Works and Reservoirs	M	65.425
55	RiB03	Hydes Field	B	15.687
56	RiB18	Hatherop Conservation Area	B	4.16
57	RiB10	Petersham Meadows	B	14.386
58	RiB11	Occupation Lane, Kew Embankment & Snail Reserve	B	1.823
59	RiL12	Barnes Green and Pond	L	3.324
60	M086	Barnes Common	M	51.969
61	RiB33	American University	B	0.767
62	RiB34	Kneller Hall	B	6.7
63	RiB35	Oak Lane Cemetery	B	0.61
64	RiB36	Hounslow Cemetery	B	2.73
65	RiL31	Borough Cemetery, Powder Mill Lane	L	3.865
66	RiL32	Broom Road Recreation Ground	L	2.225
67	RiL33	Challenge Court open space	L	0.885
68	RiL35	Jubilee Meadow (Heathfield Nature Park)	L	2.19
69	RiL36	Nursery Green, Linear Walk & Partridge Green	L	2.077
70	RiL37	School House Lane Orchard	L	0.097
71	RiL38	St Mary Magdalen, RC Churchyard, Mortlake	L	0.317
72	RiL39	St Mary The Virgin, Church Street, Twickenham	L	0.29
73	RiB21	Orford House (former St Michaels Convent)	B	0.722
74	RiL40	Palewell Park Allotments	L	0.31
75	RiL41	Cavendish House Allotments	L	0.932
76	RiL42	Ham Lands Allotments (also Walnut Tree Allotments)	L	1.351
77	RiL43	Twickenham Bridge Allotments	L	0.27
78	RiL44	Briar Road Allotments	L	1.946
79	RiL45	Marsh Farm Allotments	L	0.37
80	RiL46	Heath Gardens Allotments	L	0.518
81	RiL47	Bushy Park Allotments	L	4.816
82	RiL48	Hatherop Road Allotments	L	3.422
83	RiL49	Barn Elms Allotments	L	2.237
84	RiL50	Royal Paddocks Allotments	L	5.992
85	RiL51	Short Lots Allotments	L	0.495
86	RiL52	Westfields Allotments	L	0.698
87	RiL53	St Anne's Passage Allotments	L	0.098
88	RiL54	Manor Road Allotments	L	3.998
89	RiL55	Old Palace Lane Allotments	L	0.363
90	RiL56	Queens Road Allotments	L	1.428
91	RiL57	Brook Road Allotments	L	0.139
92	RiL58	South Close Allotments	L	0.186
93	RiL59	Collis Primary School	L	0.105
94	RiL60	Oldfield Road Meadow	L	0.644
95	RiL61	York House Gardens	L	2.106

Habitats

LBRuT is exceptionally fortunate in supporting a wealth of different habitats for an urban area, several of which are important on an international scale. Safeguarding and enhancing habitats is the key to conserving biodiversity. A good quality habitat can support a far richer range of species than a poor quality or mismanaged one. The aims of the RBAP are intended to halt further habitat loss, to enhance the quality of what is left through improved management and, where possible, increase the habitat resource through creation and/or restoration.

The RBAP recognises the importance of habitat connectivity in supporting the nature conservation efforts of species. Individual HAP working groups will seek to identify opportunities to collaborate, creating and enhancing habitat mosaics and wildlife corridors at a larger scale across the borough and beyond.

The UK Steering Group Report provides a list of 38 key (14 priority, 24 conservation concern) habitats for which conservation action is required (JNCC 1995). It also recommends that species and habitat priorities be set in a local context, a key factor in the production of a LBAP. Recommended criteria to select priority habitats include:

- UK priority habitats selected by the UK Steering Group Report, particularly those characteristic of London and the local area.
- Those that are facing local decline.
- Those that can be considered a 'flagship' habitat i.e. they appeal to the public.
- Those that have significance in a national and regional context.
- Those that support key priority species.
- Those that have potential for enhancement.

These criteria determined priority habitats for LBRuT. An action plan has been written for each.

Habitat	UK/London Priority habitat present in Richmond	Local decline	Flagship	Local significance	Support key species	Potential for local enhancement
Lowland acid grassland	✓	✓		✓	✓	✓
Ancient and veteran trees	✓		✓	✓	✓	✓
Broadleaved woodland	✓			✓	✓	✓
Hedgerows				✓	✓	✓
Neutral grassland				✓	✓	✓
Private gardens	✓	✓		✓	✓	✓
Reedbeds	✓				✓	✓
Tidal Thames	✓	✓	✓	✓	✓	✓
Rivers and streams				✓	✓	✓
Dark skies		✓			✓	✓

Habitats classification table

Species

The protection and appropriate management of a habitat should generally ensure the survival of individual species associated with that particular habitat. However, some species have reached such critically low population levels that they require specific attention. Nature conservation action for priority habitats and species will also have beneficial effects on other species, by protecting the resources they rely on for survival. Their protection may not be considered a priority currently, but may well become so in the future without appropriate management.

The UK Steering Group Report listed 1250 species, which require conservation action. This list is sub-divided into two sections, those that are considered 'priority species', and those that are of 'conservation concern'. An area as diverse as LBRuT supports a huge number of species from both lists. The UK Steering Group has produced guidelines for selection, which are as follows:

- All priority species. Conservation action at the local level will contribute to national species targets.
- Those facing local decline.
- Those that can be used to raise the profile of biodiversity in the public eye.
- Those that are characteristic of the borough.
- Those that serve as good indicators of habitat quality.

Using the above criteria, the following species have been identified as a particular priority in LBRuT and a Species Action Plan has been developed for each of them in the 2025 plan.

Species	**UK species of 'priority' or 'conservation concern' found in LBRuT**	**National decline**	**Profile raiser**	**Characteristic of LBRuT**	**Good indicator species of a particular habitat***
Bats	✓	✓	✓	✓	1
Black poplar	✓	✓		✓	
Hedgehogs		✓	✓		
House sparrow & song thrush	✓	✓	✓	✓	2
Stag beetle	✓	✓		✓	3
Swift		✓		✓	
Tower mustard	✓	✓		✓	
Water vole	✓	✓	✓	✓	4
White-letter hairstreak and elm	✓	✓	✓	✓	5
Pollinators		✓	✓		
Reptiles & amphibians	✓	✓			

* An indicator species is a species whose presence/absence or decline/increase provides an insight into the quality of the habitat with which it is associated. Obviously, there are no indicators which can tell us everything. However, a well-chosen one can give even the most casual observer a good overview of the habitat in question.

1	Bats – Daubenton's bats are indicators of higher water quality. Rivers & streams HAP
2	Song thrush – indicates health of scrubland, and garden and allotments HAP.
3	Stag beetle – indicates decaying wood and Broadleaved woodland HAP
4	Water voles – Rivers & streams HAP
5	White-letter hairstreak / elms

1.5 Monitoring, reporting & review

The monitoring, reporting, and review process is key to the success of the RBAP. Monitoring is an important feature within the process, as it helps to identify whether targets detailed within the individual Species and Habitat Action Plans have been met and if not, to identify why these targets have not been met so that revisions can be made to the BAP.

This BAP is not meant to be a static document, but rather a constantly evolving process, to meet the requirements on a local level and to ensure proactive nature conservation continues on the ground to protect and enhance LBRuT's priority habitats and species.

The current edition of the RBAP will run for an initial 5-year period, automatically extended unless and until replaced by a new plan. The action plans will be reviewed every year, to take into account new information about particular resources such as monetary funds, volunteer or staff capacity, whether the timings of individual actions need to be refined, and whether new action plans are required as well as taking into account changes in local conditions. The annual review will also highlight all the progress and action that has been undertaken in LBRuT as well as highlighting the priorities for action for the forthcoming year.

The role of leads and other partners

A lead has been identified for the RBAP as a whole and for each HAP and SAP, whose contact details can be found at the end of all the plans. The lead's role is to co-ordinate the work and actions of all the partners that are listed to ensure that implementation is recorded and monitored. This information will be used to produce an annual report. The lead will not be solely responsible for undertaking the actions. The 'other partners' identified in the actions are some of the implementers, but there will be many organisations not involved in the process of putting the plans together that are needed on board, and all are both welcome and encouraged to get involved.

The role of action plan working groups

Most of the action plans have recognised the need to set up a working group specific to that habitat or species. Most of these are already in place and many have been functioning successfully for many years. Working groups have proved to be an excellent medium for lead partners to co-ordinate implementation, identify new threats and opportunities for their plans and to draw in new members with the required expertise.

The initial composition of the working groups may be indicated in the plans, but additional members are always needed and interested organisations are welcome and encouraged to contact the lead partner to get involved with the relevant Habitat or Species Action Plan.

Monitoring

The MARS (Monitoring and Recording of Species) group of Richmond's Biodiversity Partnership will play a vital part in the monitoring process. Recording of species will indicate the success of whether targets detailed within the individual Species and Habitat Action Plans have been met, and if not to identify solutions as to why these targets have not been met, so that appropriate revisions can be made to the RBAP.

Any interested individual, group or organisation who would like to get involved in monitoring species should either get in touch with the lead of the relevant Species Action Plan or the Chair of the Richmond Biodiversity Partnership.

Monitoring of habitats and species will indicate whether the aim to reverse the decline of priority habitats and species within LBRuT has been achieved. This will help review, update, as well as add or delete any Habitat or Species Action Plans.

Reporting and review

The leads for each Habitat or Species Action Plan will monitor and record the progress of actions by specifying what has been achieved throughout the year. The leads will report progress to the Richmond Biodiversity Partnership at quarterly meetings. The leads will also report successes and failures as well as plans for the forthcoming year by producing summary reports on an annual basis. This information will be collated annually by Habitats & Heritage, and reported to all the partners and the public every year in a RBAP Annual Report.

Analysis and evaluation of the nature conservation resource is clearly a major component of the RBAP. Any collated information will be stored in a database at borough level and forwarded to Greenspace Information for Greater London (GIGL), which is London's Biological Record Centre that collates and manages all data for London's green space. This information will also be shared with the National Biodiversity Network (NBN).

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2 Cross Cutting Actions

All habitat and species action plans will review the Cross Cutting Actions (CCA) set out below to support the fulfilment of the RBAP aims.

Cross Cutting Actions (all SAPs and HAPs)			
Action	**Target Date**	**Lead**	**Other Partners**
Promoting habitat connectivity			
CCA01 – Draft collaborative landscape scale projects that promote greater connectivity.	2026 and ongoing	LA, H&H	Working groups
CCA02 – Digital mapping of habitats and features across the borough to inform the connectivity strategy.	2026	H&H	RBP
CCA03 – Seek and encourage cross-boundary collaboration by working with neighbouring boroughs wherever possible.	Ongoing	RBP	ALL
Increasing public engagement and responsibility			
CCA04 – Update Richmond biodiversity leaflets and reprint/put on H&H website and distribute.	2026	H&H, Working groups	LA
CCA05 – Enhance the role and responsibility of the public through 20 + volunteering opportunities, 20+ events, 2 press releases, social media, newsletters. (Link to celebration days)	Annual	H&H, RBP	
CCA06 – Deliver 3 talks / walks highlight the impact of **climate change** on biodiversity and engage volunteers in response.	Annual	RBP	
Informed planning			
CCA07 – Contribute to database of species records in London.	Ongoing	LA, H&H, Working groups	RBP
CCA08 – Investigate creating a standardised conditions assessment for each habitat. Statutory biodiversity metric tools and guides - GOV.UK	2026	LA, working groups	RBP
CCA09 – Use the RBAP to support implementation of the Local Plan and consideration of planning applications and to direct BNG.	Ongoing	LA	Working groups
CCA10 – Share issues potentially linked to **climate change** with H&H to support monitoring trends and patterns.	Ongoing	H&H	Working groups
Working groups organisation			
CCA11 – Partners to promote details of available grant schemes	Ongoing	RBP	
CCA12 – Working groups to meet at least twice a year, with at least one meeting in person.	Annual	Working groups	
CCA13 – Working groups identify research opportunities in scope of the BAP and share with local universities for postgrad research opportunities (especially related to **climate change**).	Ongoing	Working groups	
CCA14 – Create a virtual library available to partnership members on research and publications for each HAP and SAP (especially related to **climate change**).	2026 and ongoing	H&H, working groups	RBP

3 Habitat action plans for Richmond upon Thames

3.1 Ancient and veteran trees habitat action plan for Richmond

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"Those grey, gnarled, low browed, knock kneed, bowed, bent, huge, strange, long armed, deformed, hunch backed, misshapen oak men that stand waiting and watching, century after century."

(Francis Kilvert, *Diary of F. Kilvert*, 1876)

Aims

1) To develop a strategic approach to the protection and management of the London Borough of Richmond upon Thames's (LBRuT) ancient and veteran trees.
2) To promote and raise awareness of the value of ancient and veteran trees and secure the involvement of the LBRuT populace in their conservation.

Introduction

Ancient and veteran trees form a valuable part of our heritage, in historic, cultural and ecological terms. These attributes are now being recognised, along with their aesthetic appeal and landscape contribution.

The term 'veteran' tree encompasses a wide range of trees. A veteran tree may not be very old, but it has significant decay features, such as branch death and hollowing. These features contribute to its exceptional biodiversity, cultural and heritage value. (Natural England, 2024). The term 'ancient' refers specifically to the age class of a tree, describing the stage of

development in the ageing process beyond full maturity. These trees may be of a considerable size and have significant biodiversity value as a result of wood decay and habitat created from the ageing process. These trees have a high cultural and heritage value. (Natural England, 2024). Whilst all veteran trees are potentially of cultural and ecological value, ancient individuals are a key indication that there is likely to have been a continuity of veteran tree/deadwood habitat and management at a site.

For the purposes of this Plan, a veteran tree can be defined as 'a tree that is of interest biologically, culturally or aesthetically because of its age, size or condition' (Read, 2000). The term veteran is used throughout to describe all trees that have markedly ancient characteristics, irrespective of chronological age and the term ancient is applied specifically to trees that are ancient in years.

Ancient and veteran trees can be found throughout LBRuT:

- In areas of historic deer parks, which includes Richmond Park, Bushy Park, Home Park and Hampton Court Palace;
- In woodlands, which includes The Copse in Ham and Petersham Common; East Sheen Common and Palewell Common.
- In urban landscapes and relics of former land boundaries, which includes the residential gardens in Hampton, the playing fields at Barn Elms and the willows along the River Crane.

It is not just the trees that are important and valuable but the enormous diversity of other species, which they support, such as birds, bats, small mammals, fungi, lichen, mosses, beetles and in particular, saproxylic invertebrates. Many of these species are dependent on the dead or decaying wood habitat that is associated with ancient and veteran trees, for food and shelter. For example, several species of rare fungus do not even appear until the tree reaches a mature age and condition, which highlights the importance and value of ancient and veteran trees for biodiversity.

Current status

Data on the condition and number of veteran trees across LBRuT is not known. There is a complete record of all veteran trees of all species in Richmond Park and Bushy Park, which is reviewed annually by The Royal Parks. A veteran tree survey was also carried out in Home Park and Hampton Court Palace in 2012. The remainder of the borough also supports a large number of veteran trees and it is recognised that a systematic approach to surveying and recording the whole resource across the Local Authority's conservation areas and designated conservation sites is needed. The details of individual trees that have been protected by a Tree Preservation Order are held on Richmond Borough Council's database.

Specific factors affecting the habitat

The following list comprises the threats to the number and condition of ancient and veteran trees.

Implementation of risk-adverse management without due regard to veteran trees.

This is particularly relevant to ancient and veteran trees in built-up and urban areas where the trees and/or decaying wood are often removed in case of tree failure. Whilst health and safety is of paramount importance and landowners have a legal duty of care to take all reasonable steps to identify possible hazards and remove them, there is often an element of over caution and risk adverse management without due regard to the value of these trees. In residential areas, dead wood is also removed as a consequence of 'over tidying' by owners. A balance however needs to

be gained and this can be achieved by gaining professional advice from qualified arboriculturists and having systems in place to undertake the required inspections and carry out any remedial or identified work that may be required.

Pest and diseases

There are a number of potentially damaging pests and diseases currently within Britain, many of which have entered from abroad. Some examples are oak processionary moth, acute oak decline, bleeding canker of horse chestnut and ash dieback, which are virulent, fast-spreading and unstable in new environments. Such pests and diseases are significantly affecting a number of trees across the borough, including the ancient and veteran trees, their management and future sustainability. Information and advice can be gained from the Forestry Commission on best practice guidance in terms of control, regulations and requirements to reduce the spread of many pests and diseases.

Climate change and extreme weather events

Climate change and extreme weather events such as increasing temperatures, drought, high rainfall and high winds/storms can all impact upon ancient and veteran trees and weaken a tree's resistance to pathogens. Climate change and a warmer climate can make it easier for new pests and diseases to get established, and for existing ones to become a bigger problem, for example by breeding more frequently. Many species that also rely on the ancient and veteran trees for their survival appear to be less tolerant of climate change and such extreme weather events.

Inappropriate management

Ancient and veteran trees require specialist care and therefore inappropriate management, or lack of, can lead to a threat to the long-term retention of these trees. There are many actions that can damage trees including compaction of the roots by vehicles and/or people. The area around a tree needs to be cared for as well as the tree itself. In order to ensure the succession and retention of trees, a broad diversification of tree species and age is needed to guard against inappropriate management as well as the possibility of devastation by natural disasters and pests and diseases.

Visitor pressure and events

All trees are sensitive to root disturbance, which can be caused from development, construction, landscaping as well as high numbers of people and vehicles. The effects of these changes on trees can be quite devastating and can take many years to become fully visible. Interesting sites and big events can attract large numbers of visitors and spectators, which can put huge pressure upon ancient and veteran trees. The area around the tree as well as the tree itself needs to be safeguarded and this can be achieved by erecting temporary or permanent fencing to reduce the impact upon the roots and to keep visitors away.

Lack of replacement trees to ensure the sustainability of the ancient and veteran tree populations

As ancient and veteran trees are lost due to natural decay processes or removal, there is a lack of younger trees being planted as well as maintenance of semi-mature and mature trees (that have appropriate size, form, vigour and decay conditions to reach the ancient status) to replace them, which is leading to an imbalanced age structure. Losing ancient and veteran trees also results in a loss of dead wood habitat and associated species. The majority of ancient and veteran trees within the borough are from a small selection of species and are even-aged, which highlights the vulnerability of them to threats. To encourage a new generation of ancient and veteran trees that are of local provenance, it is important to take seeds and cuttings from existing ancient and veteran trees whilst implementing appropriate traditional management techniques on selected young, semi-mature and mature tree stock. This will help to ensure the long-term sustainability of the ancient and veteran tree population.

Fires

A number of ancient and veteran trees are lost as a result of fires, whether accidental from BBQs or planned from vandalism or anti-social behaviour. Older trees often provide large cavities and therefore ideal 'hiding places' to light a fire, have a BBQ or simply cause issues to the health and wellbeing of trees. It is often hard to prevent such incidents, as they take place 'out of working hours' and without prior knowledge, which makes it hard to enforce any legislation but posters and signs should be erected to inform members of the public of the 'dos and don'ts' where possible.

Current action

Legal status

A UK Habitat Action Plan for Wood-Pasture and Parkland was reviewed in 2011, as it is considered a priority habitat, which is threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). However a plan was not produced specifically for ancient or veteran trees. Some individual ancient and veteran trees are covered by Tree Preservation Orders, for their amenity value and many of these trees support species, such as bats and stag beetles that are protected under the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CROW) Act 2000, the Natural Environment and Rural Communities (NERC) Act 2006, and by the Conservation of Habitats and Species Regulations 2017 (as amended).

Regionally within London, the London Biodiversity Partnership produced an audit on 'Open landscapes with ancient/old trees', as it was considered an important habitat in London. However, there is no working group or Habitat Action Plan with set and agreed targets at the present time but organisations are strongly encouraged to take ownership by taking action to protect and enhance the existing habitat.

Locally, across the borough a number of veteran trees are protected by Tree Preservation Orders under The Town and Country Planning (General Permitted Development) (England) Order 2015 for their amenity value. Trees are also taken into consideration in the determination of planning applications. Many veteran trees receive protection because they are located within sites, which have conservation designations such as a Site of Special Scientific Interest (Richmond Park, Bushy Park & Home Park), a National Nature Reserve and Special Area of Conservation (Richmond Park) or a Site of Borough Importance for Nature Conservation (The Copse in Ham).

Mechanisms targeting the habitat

These current actions are ongoing. They need to be supported and continued in addition to the new action listed under Section 7.

The Royal Parks and Historic Royal Palaces

The Royal Parks (Richmond Park and Bushy Park) and Historic Royal Palaces (Hampton Court Palace and Home Park) manage the majority of ancient and veteran trees in the borough. All the veterans are mapped in the Royal Parks, are inspected and have individual work and management recommendations. In Home Park, a survey and condition assessment was carried out in 2012. The veteran trees are managed appropriately and in line with best practice and consent from Natural England.

Local Planning Authority

The Local Authority planning system affords protection for veteran trees in the borough by means of Tree Preservation Order's and Conservation Areas.

Flagship species

There are many flagship species, which are characteristic of ancient and veteran trees in LBRuT so the list below is by no means exclusive:

Common Name	***Latin Name***	**Brief Description**
<u>Saproxylic Beetles</u> **Stag beetle** **Cardinal click beetle**	 *Lucanus cervus* *Ampedus cardinalis*	 Larvae requires dead wood to feed in for up to 7 years before emerging as adult beetle A very rare beetle develops in the red rotten heartwood of old oaks and feeds on larvae of other invertebrates
<u>Bats</u> **Brown long-eared** **Noctule** **Soprano pipistrelle**	 *Plecotus auritus* *Nyctalus noctula* *Pipistrellus pygmaeus*	 Many bat species roost in the cracks and crevices of mature, ancient and veteran trees
<u>Fungi</u> **Beef steak fungus** **Oak polypore**	 *Fistulina hepatica* *Piptoporus quercus*	 Slowly degrades the heart wood creating ideal nesting habitats and food source A heartwood rotting species that requires exposed, seasoned wood of mature or decaying veteran oaks
<u>Birds</u> **Tawny owl** **Great spotted Woodpecker**	 *Strix aluco* *Dendrocopos major*	 Nests in suitable natural cavities & holes in large trees A species likely to be seen on veteran trees in the day
<u>Epiphytes</u> **Lichen sp.**	*Lecanora albellula* *f.albellula*	There are many mosses, lichens, liverworts, algae and micro-fungi associated with older trees. A signature species of quality standing deadwood habitat

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves

Specific actions targeting ancient and veteran trees			
Action	**Target Date**	**Lead**	**Other Partners**
APR01 – Maintain records and input onto Ancient Tree and Woodland Forums	Annual	TRP HRP	LA / FORCE
APR02 – Obtain records from Ancient Tree Forum and integrate veteran tree data into the existing Tree Preservation Order system	Annual	LA	FORCE
APR04 – undertake survey and map the existing population of ancient and veteran trees in LBRuT.	Annual	LA	FORCE
APR05 – Implement appropriate ancient and veteran tree management	Annual	LA	TRP / HRP
APR06 – Investigate possible sites and locations to set up a nursery for native ancient and veteran seed stock	Ongoing	HRP (tbc)	TRP / LA / FoBC
APR07 – Collect seeds and cuttings from native ancient and veteran trees to establish a native tree nursery	Annual	TRP HRP	FoBC / RBGK / LA
APR08 – Produce a leaflet/ digital resource on the value and importance of ancient and veteran trees across the borough to raise awareness	2025	TRP, HRP	LA / FORCE
APR09 – Publicise and celebrate ancient and veteran trees and traditional management techniques at 5 public events	Annual	TRP, HRP, LA	FORCE / TCV
APR10 – Share best practice and guidance on pests, diseases and biosecurity measures	Annual	TRP, HRP, LA	

Relevant action plans

Local Plans

Broadleaved woodland HAP, lowland acid grassland HAP, bats SAP, sparrow and song thrush SAP, stag beetle SAP, black poplar SAP.

London Plans

Woodland, Open Landscapes with Ancient/Old trees, Parks, Private Gardens, Churchyards and Cemeteries.

National Plans

Lowland Wood Pasture and Parkland, Stag Beetle.

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Contact

The lead organisation for this Habitat Action Plan is The Royal Parks, Richmond Park.

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3.2 Broadleaved woodland habitat action plan for Richmond

Mixed Oak Woodland, Ham Common Woods © Oliver Whaley

"Signals abound that the loss of life's diversity endangers not just the body but the spirit.....The ethical imperative should therefore be, first of all, prudence. We should judge every scrap of biodiversity as priceless while we learn to use it and come to understand what it means to humanity."

(Edward O. Wilson 1992)

Aims

1) Establish and maintain a working group to develop a strategy for the site protection and management of broadleaved woodland in the London Borough of Richmond upon Thames (LBRuT).
2) Conserve and enhance woodlands and woodland corridors, including hedgerows and scrub.
3) Encourage woodland research, education and promote public awareness.
4) Ensure biodiversity is conserved through appropriate management and species mapping.

Introduction

The common and scientific names of trees are given in the appendix.

This Habitat Action Plan (HAP) is part of a suite of Habitat and Species Action Plans specific to LBRuT. It works alongside the Ancient and Veteran Trees and hedgerow HAPs.

LBRuT is nationally important for its broadleaved woodland biodiversity. At the heart of the borough is Richmond Park which is a National Nature Reserve (NNR), Site of Special Scientific Interest (SSSI) and European Special Area of Conservation (SAC). In addition, LBRuT includes Bushy Park and Home Park, also designated SSSI, as well as the Royal Botanic Gardens Kew, which is a World Heritage Site.

It is assumed that firstly, broadleaved woodland biodiversity outside Richmond Park, and that within, are interdependent. Secondly, that broadleaved woodland provides a very high benefit for people and a high biodiversity at a relatively low monetary cost.

As with other areas of London, the last three decades have generally seen an increase in woodland and scrubland. Indeed, LBRuT is fortunate to have 396 ha (978 acres) of native woodland - the fourth highest of the London boroughs - and 78 ha (192 acres) of non-native woodland - the third highest of the London boroughs.

LBRuT's woodland harbours several nationally scarce woodland invertebrates and fungi, including some UK BAP Priority species. As well as providing for biodiversity, trees perform useful roles such as improving air quality, absorbing carbon dioxide, generating soil, soaking up noise pollution, ameliorating hot summers and providing shade and play areas for children.

However, without management such as grazing or cutting back, woodland can colonize acid grassland heaths, wildflower meadows and railway land, which can mean a gain of woodland at the loss of rare species or other habitats. Today many would consider that this loss is a fair exchange in a city for the extra services offered by trees. Equally, others believe that open spaces like heaths should remain open and not be encroached by woodland. Clearly the answer is a trade-off that should not allow the loss of biodiversity. This means that appropriate woodland management is very important to achieve the UK BAP goals.

Habitat definition

Broadleaved woodland is usually defined as any woodland in which more than 80% of its trees are broadleaved species. In the UK these are native species such as ash, hazel, oak and field maple which are common in LBRuT, and in southern Britain, beech and small-leaved lime which are far less common locally.

To properly manage broadleaved woodland one must distinguish between native and non-native trees. A generally accepted definition of native trees (see Appendix) are trees that colonized the British Isles after the last ice age before Britain was isolated from the rest of Europe by rising sea levels. Non-native trees (see Appendix) on the other hand have been introduced recently. Because wildlife are not as well-adapted to these trees, they support lower biodiversity than native trees. However, sycamore (*Acer pseudoplatanus*), that is common in LBRuT was thought to have been introduced in the 15th century to Britain and serves as host to many native species, whereas native holly, also common in LBRuT, serves as host to few organisms. Both species play little known roles in woodland ecology.

In Britain the term ancient woodland is defined as woodland at least 400 years old, and which may have been around as far back as last ice age (about 11,000 BP). As such, this woodland usually has a considerably higher biodiversity than more recent woodland, and serves to emphasize that woodland cannot be recreated simply by planting trees, but that successional ecological stability takes hundreds of years.

According to the London Ecology Unit, no ancient woodland survives in LBRuT, but wood pasture and some wet woodland have demonstrable ancient credentials. In addition, Richmond Park contains 400 veteran oaks that predate the enclosure of the park about 350 years ago.

Woodland habitats need to be linked up

Many small woodland habitats have been lost to urban development even in recent years. These 'micro-sites' perform important roles for movement of species between the other larger woodland sites. When considering appropriate measures for conservation of biodiversity, it is important to appreciate that habitats do not exist in isolation and that the more 'green corridors' there are linking different habitats, the more successful conservation of biodiversity will be. Therefore, the proximity and interaction of habitats and biodiversity adjacent to the borough must also be considered. In LBRuT these include: the SSSI of woodland / tidal flood meadow of Syon House and the wooded LNR of Isleworth Ait (both in the London Borough of Hounslow). These are separated by the River Thames from the Old Deer Park and RBG Kew. Also important are the locations and biodiversity of Wimbledon Common, Hounslow Heath and the wildlife corridor and sites of Metropolitan importance such as the River Thames and its tributaries. The scientific understanding of the interrelationships of habitats and species is still developing. Precautionary management considerations might include seed dispersal and germination mechanisms, migration routes, disease transmission, road noise and climate change.

Broadleaved woodland structural diversity

LBRuT is fortunate to have a wide range of woodland habitats. The high structural diversity of new oak forest (colonizing heath at Ham and East Sheen) and wet willow woodland (riparian Thames and River Thames islands) is explained to some extent by the smaller-leaved species facilitating good light penetration. In contrast, the closed canopy of large-leaved sycamore or horse chestnut woodland, for example, found on some islands and railway embankments, in the summer excludes much of the light. This may not benefit the ground flora, but serves as an important habitat for many invertebrates, including the millipede (*Cylindroiulus londinensis*) and the brown wood ant (*Lasius brunneus*) on Eel Pie Island, and for rare snails like the two-lipped door snail (*Lacinaria biplicata*) in several riparian sycamore woodland localities.

Woodland with good structural diversity is one that contains herb, canopy and subcanopy vegetation layers of different heights and ages. Woods with gaps in the canopy that allow sunlight to reach the ground probably support a much greater range of plants and animals than a closed canopy with trees of different height and shade. Sunny sheltered rides, glades and clearings provide for biodiversity and people. Features such as ponds or tidal flooding within woods also increase the number of species present.

In the past, natural events such as storms, disease and fire, together with the activities of animals like beavers, created open spaces within woodland, while grazing and browsing by deer and wild cattle delayed the succession of trees and shrubs and kept the gaps open. Early woodland management systems by man, such as coppicing, created and mimicked conditions for many species over centuries. However, the widespread cessation of such management

activities in the 20th century has led to the decline and loss of a number of species that require diverse structure and more open conditions.

Current status

Woodlands in London Borough of Richmond upon Thames

LBRuT is about 11 % wooded, approximately 474 hectares and more than any other neighbouring borough.

The majority of woodland is found in the Royal Parks, Petersham Common Woods, Petersham Lodge Woods, Ham Common, East Sheen Common, Royal Botanic Gardens Kew, The Old Deer Park, Barnes Common and along the Thames and its islands, as well as on railway land.*

Within the borough, as with other areas of London, broadleaved woodland is on the increase. Either it has been allowed to regenerate, or as in the case of Ham and East Sheen Commons is in the process of a natural transition from heath to woodland. Several factors in the last 100 years have meant that the deflected succession, formerly carried out by grazing animals, like rabbits or horses, or other management, has drastically declined.

The borough broadleaved woodlands are very varied in composition partly due to the fact that most are between 40 - 200 years old and therefore are in many stages of regeneration.

In areas of woodland colonization like Petersham, Ham and East Sheen Commons a thriving mosaic of succession is found, with slopes, old drainage ditches and soil types contributing well to the habitat heterogeneity. In other areas, such as the parts of Ham Lands and several islands, sycamore dominates, often with unusual non-native trees such as swamp cypress and Chinese necklace poplar. Sycamore is considered as invasive, but without further research and given the 'natural' thinning mechanisms (such as sooty bark disease) provides perhaps an equally valuable contrasting habitat, albeit perhaps less aesthetic.

Particularly unusual habitats are the tidally flooded willow woodlands. The riparian wet woodland fragments are characterized by many willow species including natural hybrids, and often include elder and hawthorn. In the past, native black poplar and alder would have been more prevalent along the river, and found in stands, rather than today, where they are found as isolated individuals.

* Railway land woodland and scrub are currently mostly unrecorded.

Specific woodland habitats in London Borough of Richmond upon Thames

The key examples are as follows:

(i) Old Deer Park ha ha Wet Woodland

Mixed wet woodland and tidally flooded willow carr

Characterized by: Many willow species, hawthorn, elm, reedbeds (*Phragmites australis*), sedges (*Carex* sp.), cut grass (*Leersia oryzoides*) (Schedule 8 Countryside and Wildlife act 1981), including other taxa e.g. Two-lipped door snail (*Lacinaria biplicata*), violet ground beetle (*Carabus violaceus*).

(ii) Ham Common / East Sheen Common

Mixed oak woodland colonised heath

Characterized by: oak, honeysuckle, holly, dogwood, aspen, sallow (in depressions with yellow loosestrife (*Lysimachia vulgaris*)). With heath relics including: gorse, wavy-hair grass (*Deschampsia caespitosa*) and birch (a pioneer species now dying back).

(iii) Petersham Lodge Woods and Ham Sea Scouts Wood

Tidally flooded willow woodland,

Characterized by: strandline detritus rich in invertebrates, crack willow, pendulous sedge (*Carex pendula*), hemlock water dropwort (*Oenanthe crocata*), three-cornered leek (*Allium triquetrum*), inscrutable small-leaved elm species and 3 huge London planes with bat roosts.

(iv) Thames towpath and Island Woods

Riparian and Island tidally flooded Woods

Characterized by: sycamore, willow, poplar (including native black poplar) with strandline detritus rich in invertebrates, pendulous sedge (*Carex pendula*), hemlock water dropwort (*Oenanthe crocata*), Himalayan balsam (*Impatiens glandulifera*) and nesting heron (*Ardea cinerea*). Other taxa including the Two-lipped door snail (*Lacinaria biplicata*),

(v) Petersham Common Woods

Mixed escarpment ash / oak / hornbeam woodland

Characterized by: Tall ash, oak (*Quercus* spp.) and hornbeam with subcanopy field maple, bird cherry, Norway maple, dewberry (*Rubus caesius*).

Other types include: wood pasture, sycamore, willow / poplar, oak / birch, blackthorn / hawthorn scrub, elm thickets.

Specific factors affecting the habitat

Habitat destruction and fragmentation through urban development

The largest cause of habitat loss is urban development. Fragmentation of habitat is a fundamental factor contributing to the loss of biodiversity, in that genetic exchange, and therefore species survival, is threatened. It also prevents necessary species migration due to factors such as resource depletion, population displacement, breeding or climate change.

Lack of management, or unsuitable management

Contractors and volunteers should have felling licenses that are assessed against the requirements of the UK Forestry Standard (1998), which takes into account biodiversity considerations. Good management should be appropriate in type, timing and extent. Bad and illegal practice includes, for example, chainsaw use in the bird breeding season or removal of hollow trunks that are usually bat roosts. If tree branches have to be removed they should be surveyed for bats. Often a naturally collapsing tree is the best self-management within woodland.

Loss of genetic integrity through replanting with stock of non-local provenance

Genetic research has allowed us to see that local stock are likely to be better adapted to local conditions, and therefore have a better chance of long-term survival. Imported stocks of native species may well introduce genetic erosion, weaknesses and bring in disease.

Climate change

After habitat loss, the effects of anthropogenic climate change are possibly the biggest threat to Richmond woodland biodiversity over the next 100 years, although the extent and precise effects on wildlife are difficult to predict, and we do not know the tolerance of many species.

Research is beginning to suggest that root mycorrhiza (fungal symbionts) that are adapted to the more stable subsoil conditions are not tolerant of climate change effects like drought or lack of frost. Beech trees are very sensitive to the effects of prolonged dry summers on native woodlands.

Research is also uncovering changes in woodlands dynamics and other subtle mechanisms. For example, it has been shown that competitive species such as holly are growing more extensively and rapidly, as subcanopy species, due to increasing number of frost-free days. As well as squeezing ecotypes and species, holly, unless managed, is likely to have a detrimental effect on woodland plant diversity, especially sub-canopy herbs, ferns, mosses and fungi, as well as preventing sapling germination.

In short, the evidence suggests that large changes are afoot and will undoubtedly affect the woodlands in Richmond in the coming years. It is important to monitor woodland for climate change impacts in the upcoming years, and the results of these studies should be incorporated into all further management plans and the development of woodland corridors.

Flood prevention measures, river control and canalisation disrupting natural hydrological processes within sites

Diseases and infestation

Generally tree diseases are a natural part of any ecosystem. However, there are more insidious diseases assisted by climate change and international trade, like: Dutch elm disease, sudden oak death (*Phytophthora ramorum*), ash die back (*Chalara fraxinea*) beech bark disease – that is caused by a combination of an insect, the felted beech coccus (*Cryptococcus fagisuga*) and a fungal pathogen (*Nectria coccinea)*; and sycamore sooty bark disease (*Cryptostroma*). Although not native as such horse chestnuts (*Aesculus hippocastanum*) are suffering with a combination of leaf miner (*Cameraria ohridella*) and bleeding canker (from the bacteria *Pseudomonas syringae*) Woodlands should be monitored carefully for these diseases including possible beneficial effects. For example, the natural thinning of sycamore and the dense stands of elm suckers - which left alone will eventually acquire the genetic capacity to become woodlands - certainly both have benefits for biodiversity.

The leaf roller moth (*Tortrix viridana*) is a major cause of defoliation of oak trees in LBRuT. This caterpillar can cause 80% defoliation by June, meaning the trees must produce new leaves, and with the consequent expenditure of energy there is a decrease in acorn production. However, the caterpillars serve as a good food source for birds and the moths for bats, both important mechanisms of bio-control. Since its introduction from the continent via infected imported trees for a development, Oak Processionary Moth (*Thaumetopea processionea*) has plagued oak trees in Richmond Borough forcing chemical treatment to prevent H&S issues from the caterpillars which fire their hairs when threatened or disturbed the hairs which can cause rashes and infections. This has also led to a reluctance to plant oak trees where it would normally have been the norm. Talks are in place to trial some relaxation of spraying allowing natural solutions to help control the caterpillars. Tree Health Pilot case study: Haringey Council - GOV.UK

Unnecessary removal of trees and dead wood - over-tidying

It is now well understood that deadwood is essential to the wellbeing of woodland, providing habitats for about 17% of the biota. In broadleaved woodland the insects and fungi associated with unhealthy or dead woodland trees are an essential and integral part of a woodland trees lifecycle and the ecosystem as a whole. In the past it was often assumed that deadwood should be removed from woodlands. This may have been for reasons such as for health and safety to the public, aesthetic and economic i.e. to make way for new plantings, etc. The ecological importance of dead, standing and fallen trees is increasingly being recognised as one of the single most important resources in any woodland - ancient or recent - and so deadwood should be retained wherever possible. In the last few years with the help of organizations like Natural England, The National Trust and the TCV, this appreciation has been understood and dead wood is often left in place. Richmond Park has a good established policy of leaving dead wood and crown-cutting limbs. Bushy Park has identified the need to conserve more dead wood. At an international level, World Wildlife Fund (WWF) calls on European governments and forest managers to help conserve biodiversity by increasing deadwood in boreal and temperate forests to as much as 20 - 30 cubic meters per hectare by 2030.

Up to a third of woodland insects, including a number of rare species, are dependent on dead wood. It is the substrate for a large proportion of fungi. For example, the oak polypore (*Buglossoporus pulvinus*) fungus, which is a UK BAP priority species and on Schedule 8 of the Wildlife and Countryside Act 1981, occurs in Richmond Park on the old oaks.

Dead wood is used by more than 200 species of fly and some 760 species of beetle, including the stag beetle (*Lucanus cervus*) which is becoming rare nationally, but for which Richmond is a stronghold. Dead wood also provides valuable nesting sites for birds, with one third of all woodland birds nesting in holes or cavities of dead trees. In Richmond, for example, nesting nuthatches can be seen in oak in East Sheen Common, treecreepers can be seen regularly on sycamore, and greater spotted woodpeckers benefit particularly from the maturing and dead birches found on Ham Common and in Richmond Park (Isabella Plantation for example).

Recent research has suggested that woodpeckers can be thought of as 'architects' of woodland providing 'housing' for species, in that they appear to be vectors for wood decay fungi, facilitating fungal entry to trunks and heartwood, after which a myriad of species can follow.

Pollution

Contrary to claims of forest decline, in most of Europe growth rate of trees is increasing. As well as changes in management practices, increased CO2 concentration, nitrogen deposition and changed climatic conditions are implicated. It has been shown that frost sensitivity has increased in some tree species with increasing air pollution.

Nitrogen deposition changes soil attributes and may have effects on mycorrhizal fungi and influence bryophyte communities. Air polluted with sulphur dioxide (SO2) has been detrimental to tree lichens since the industrial revolution, but such effects have been ameliorated by air quality control.

There is mounting evidence that a third runway at Heathrow would increase air pollution in the area. However, studies focus on the effects to humans and not on flora and fauna.

Introduction and/or colonization by invasive species

Species such as rhododendron are highly invasive on light soils (which predominate in the borough) and need rigorous control or good management as in Richmond Park. Sycamore, holm oak, holly, Norway maple, and cherry laurel may also crowd out more native species.

Lack of knowledge and information collation

A systematic approach to surveying and recording the whole resource is needed, as with the Ancient and Veteran Trees HAP. Railway land woodlands and scrub need to be recorded and assessed.

The considerable biodiversity information that exists with groups and individuals in the borough has not been centralized - this BAP aims to redress this.

Current action

Legal status of sites with broadleaved woodland and scrub

A number of mechanisms exist to ensure the protection and conservation of woodland and trees:

- The primary legislation is the Forestry Act (1967), which is administered by the Forestry Commission.
- All applications for felling licenses are assessed against the requirements of the UK Forestry Standard (1998) which takes into account biodiversity considerations.
- Tree Preservation Orders (TPOs) and those trees within residential Conservation Areas, designated by local authorities; prevent unnecessary damage to or felling of trees.
- Some sites have protective designations such as Sites of Special Scientific Interest (SSSI). Other designations are identified in local authority plans and highlight the importance of these areas within the planning process (listed below in Table 1).

Table 1: List of UK Site designations of broadleaved woodland within LBRuT,

N.B. Other important woodland sites exist without site designations

Site name	**National Nature Reserve**	**World Heritage Site**	**Site of Special Scientific interest**	**Local Nature Reserve**	**Metropolitan Open Land**	**Metropolitan Green Belt**	**Site of Metropolitan Importance**	**Site of Borough Importance**	**Site of Local Importance**
Acronym	**NNR**	**WHS**	**SSSI**	**LNR**	**MOL**	**MGB**	**SMI**	**SBI**	**SLI**
Barnes Common				x	x		x		
Barn Elms Playing Fields					x			x	
Bushy Park			x		x		x		
Crane Corridor					x	x	x		

Site name	National Nature Reserve	World Heritage Site	Site of Special Scientific interest	Local Nature Reserve	Metropolitan Open Land	Metropolitan Green Belt	Site of Metropolitan Importance	Site of Borough Importance	Site of Local Importance
Crane Park Island				x	x	x			
Duke of Northumber-lands River									x
East Sheen Common					x		x		
East Sheen & Richmond Cemeteries					x				x
Fulwell Golf Course					x			x	-
Ham Lands				x	x		x		
Ham Common				x	x		x		
Hydes Field					x	x		x	
Kew Meadow Path					x				x
Marble Hill Park					x				x
Occupation Lane Kew								x	
Orleans House Gardens					x				x
Beveree Wildlife Site									x
Palewell Common					x		x		
Pesthouse Common					x				x
Petersham Common					x		x		
Petersham Lodge Woods					x			x	
Richmond Park (also SAC)	**x**		x		x		x		
Richmond Cemetery									x
Royal Botanic Gardens Kew		**x**			x		x		
Twickenham Junction Rough					x				x
Twickenham Golf Course					x			x	
The Cassel Hospital									x

Site name	National Nature Reserve	World Heritage Site	Site of Special Scientific interest	Local Nature Reserve	Metropolitan Open Land	Metropolitan Green Belt	Site of Metropolitan Importance	Site of Borough Importance	Site of Local Importance
The Copse Ham					x			x	
The Copse (Hampton Wick)					x				x
The Crane Corridor							x		
7 Thames wooded islands					x	x			
Twickenham Road Meadow								x	
Strawberry Hill Golf Course					x			x	

Flagship species

These special plants and animals are characteristic of broadleaved woodland in LBRuT.

Lesser spotted woodpecker	*Dendrocopos minor*	The smallest and least common of the three British woodpeckers. They breed in broadleaved woodland, parks and orchards, and seem to like river valley alders or regenerating elm. They need decaying wood for nest sites as they make a new nest chamber each year. They are in rapid decline in the UK.
European alder	*Alnus glutinosa*	A specialist riparian or wetland tree. Shiny leaves and small cones. Has nitrogen fixing root bacteria (*Frankia* sp.). Some good examples have colonized the river revetment but not common in borough.
Native bluebell	*Hyacinthoides nonscripta*	Grows in established woodland. Subject to genetic erosion through hybridization with the Garden or Spanish bluebell (*H. hispanica*)
Treecreeper	*Certhia familiaris*	Small, very active tree bark specialist. It is speckled brown above and mainly white below with long, slender, down curved bill. BTO research suggests that it is in decline.
Bats	Including *Pipistrellus* sp. Noctule bat *(Nyctalus noctula)*	Winged mammals. Many bats use healthy hollow trees for winter and summer roosts.

Two-lipped door snail	*Lacinaria biplicata*	A spire shelled mollusc. Its habitat is soil surface (usually with ivy cover) of occasionally flooded riparian land in the shade of closed canopy woodland.
Beetles	Including stag beetle (see SAP) and Cardinal click beetles *(Ampedus cardinalis)*	The greatest threat to the cardinal click beetle is the felling of veteran oaks.
Oak	*Quercus robur*	Emblematic of LBRuT and one of the longest lived trees in the UK. It serves as host to more species of birds, bats and invertebrates than any other tree.
Purple hairstreak (butterfly)	*Quercusia quercus*	Dark wings flash iridescent violet purple. Only foodplants are oaks. Require undisturbed leaf litter and ground layer for pupation (leaf blowers are bad). Can be seen in hundreds flitting over oak tree crowns.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for broadleaved woodland			
Action	**Target Date**	**Lead**	**Other Partners**
BLW01 – Map the distribution of all existing broadleaved woodland with ground truthing	2026	LA	Working group
BLW02 – Carry out a survey of the condition of LBRuT's broad-leaved woodlands including the extent to which they are managed.	2028	LA	Working group
BLW03 – Investigate woodland schemes or grants for sources of funding.	On-going	LA, H&H	Working group
BLW04 – Evaluate current woodland SiNC designations and where appropriate provide evidence and support to LA for change to grading.	2028	Working Group	LA,
BLW05 – Identify woodland heritage features within the borough, especially any at potential risk and suggest appropriate management for inclusion to management plans.	On-going	Working Group	LA

Specific actions for broadleaved woodland			
BLW06 – Create a reference link that gathers information for best practice policies on woodland management, that managers can refer to.	2026	Working Group, H&H	LA, TRP, HRP
BLW07 – Work with LA to ensure that woodland management plans are updated and include current best practice and sustainable working methods.	2026 2028	Working group, LA	
BLW08 – Set up a Tree Warden Scheme through a citizen science project.	2026	working group	LA
BLW9 – Following BLW01**,** identify any gaps in existing and potential woodland corridors and consider planting schemes to	On-going	H&H, LA	RBP
BLWR10 – Reduce the non-native species within woodlands. Start a programme of removing invasive tree species from woodlands, aiming to clear 10% per site per year, exceptions to this include protected species habitats.	On-going	LA	RBP
BLW11 – Leave all standing dead wood in woodlands unless Health and Safety reasons dictate otherwise.	On-going	LA	RBP

Relevant action plans

Local Plans

Ancient and Veteran Trees, Acid Grassland, Black Poplar, Tidal Thames, Bats, Stag beetle.

London Plans

Woodland, Tidal Thames, Private gardens, Black Poplar native (*Populus nigra spp.betulifolia*), Bats, Mistletoe, Stag Beetle, Churchyards & Cemeteries, Wasteland, Heathland.

Open landscapes with ancient/old trees habitat audit, Tidal Thames habitat audit, Private gardens habitat statement, Marshland habitat audit, Farmland Audit, Railway Linesides audit.

National Plans

Wet woodland, Lowland mixed deciduous woodland, Lowland wood-pasture, Ancient and/or species-rich hedgerows and parkland.

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Appendix

List of tree and shrub species that are considered invasive in the British Isles:

Tree of Heaven	*Ailanthus altissima*
Snowberry	*Symphoricarpos albus*

List of tree and shrub species that are native (or naturalised) to LBRuT:

Alder	Alnus glutinosa
Alder Buckthorn	*Frangula alnus*
Ash	Fraxinus *excelsior*
Aspen	*Populus tremula*
Beech	*Fagus sylvatica*
Birch, Downy or Brown	*Betula pubescens*
Birch, Silver	*Betula pendula*
Bird Cherry	*Prunus padus*
Blackthorn	*Prunus spinosa*.
Black Poplar, (native)	*Populus nigra* var *betulifolia*
Broom	*Cytisus scoparius(?)*
Crab Apple	*Malus sylvestris*
Elder	*Sambucus nigra*
Elm, English	*Ulmus procera*
Elm, Wych	*Ulmus glabra*
Elm, hybrids with *U. minor*?	*Ulmus* sp.
Dogwood	*Cornus sanguinea*
Field Maple	*Acer campestre*
Gean, or Wild Cherry	*Prunus avium*
Gorse, Common	*Ulex europaeus*
Hazel	*Corylus avellana*
Hawthorn, Common	*Crataegus monogyna*
Hawthorn, Midland	*Crataegus laevigata*
Holly	*Ilex aquifolium*
Hornbeam	*Carpinus betulus*.
Lime, Small-leaved	*Tilia cordata*
Oak, English	*Quercus robur*
Oak, Sessile	*Quercus sessilis*
Privet, Wild	*Ligustrum vulgare*
Rowan	*Sorbus aucuparia*
Spindle	*Euonymus europaeus*
Willow, Crack	*Salix fragilis*
Willow, Goat	*S. caprea* - also known as Great Sallow
Willow, Grey	*S. cinerea* - also known as Grey Sallow.
Willow, White	*S. alba*
Yew	*Taxus baccata*

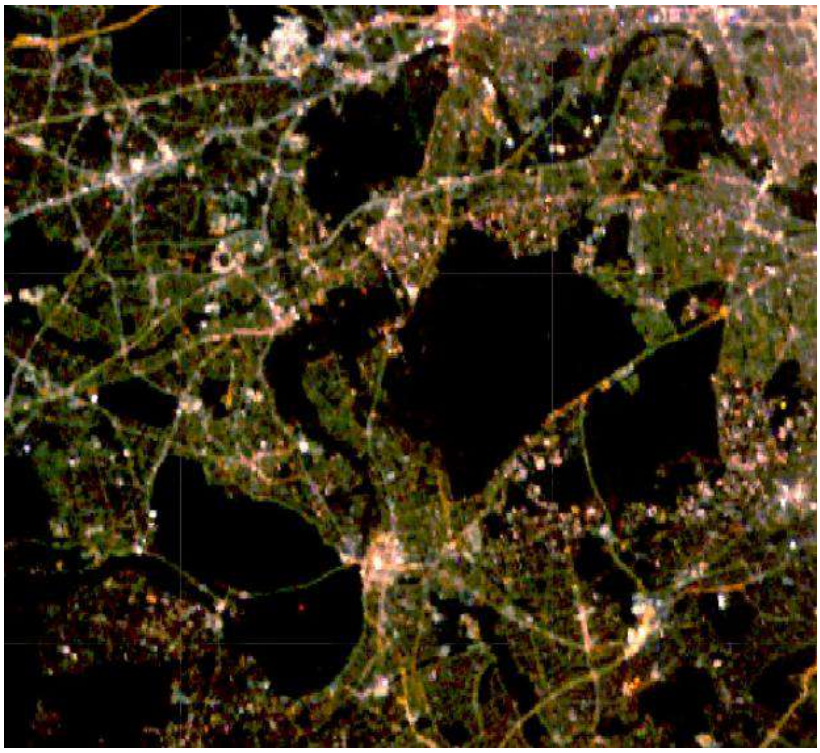
Sweet Chestnut, Grey Poplar, Damson and Bullace are usually treated as 'honorary natives', i.e. were brought here by people but have naturalised in historic times. The hybrid known as Common Lime & Weeping Willow are also often accepted as honorary natives too.

Native status is ascertained by analysis of the pollen content of post-glacial deposits.

List of tree and shrub species that are <u>not native</u> to the British Isles, but which are known to naturalize within the wilder habitats of LBRuT:

Amelanchier	*Amelanchier* spp.
American Oak	*Quercus rubra*
Summer Lilac	*Buddleia davidii*
Cherry Laurel	*Prunus laurocerasus* (more correctly Laurel Cherry)
Cherry Plum	Prunus cerasifera
Copper Beech	*Fagus sylvatica purpurea*
Cotoneaster	*Cotoneaster* sp.
Hybrid Apples	
Holm Oak	*Quercus ilex*
Honey Locust	*Robinia pseudoacacia*
Horse Chestnut	*Aesculus hippocastaneum*
Indian Horse Chestnut	*Aesculus indica*
Norway Maple	*Acer platanoides*
Plane, London	*Platanus x hispanica*
Plane, Oriental	*P. orientalis*
Poplars	*Populus* sp. not those listed under native.
Rhododendron	*Rhododendron ponticum*
Turkey Oak	*Quercus cerris*
Swamp Cypress	Taxodium distichum
Swedish Whitebeam	*Sorbus intermedia*
Snowberry	*Symphoricarpos albus*
Sycamore/ Great Maple	*Acer pseudoplatanus*

3.3 Dark skies habitat action plan for Richmond



"To go in the dark with a light is to know the light.
To know the dark, go dark. Go without sight,
and find that the dark, too, blooms and sings,
and is travelled by dark feet and dark wings."
– Wendell Berry

Aims

1) Establish and protect a series of "dark corridors" (as part of a wider nature connectedness activity) to help nocturnal species move around the environment.
2) Map sources of light impacting on greenspace and undertake benchmark measurements to quantify the sky brightness, sources of light pollution and detect any trends.
3) Disseminate lighting best practice guidance and the impacts of light pollution to encourage stakeholders to adopt better lighting practices where possible.
4) Work with the Council to minimise the impact of street lighting on the LNRs, SINCs, SSSIs and more widely, by reduction of colour temperature, dimming, shielding and part lighting as appropriate.
5) Work with wider stakeholders, (e.g. Local councils, GLA, green space groups, dark skies organisations etc) to exchange case studies and good practice, to influence light pollution beyond the borough.
6) Work with local groups and encourage greater public participation in appreciation of nocturnal nature and the night sky.

Introduction

Unlike the other habitats in the BAP, the Dark Skies habitat covers the whole of the borough, via the impact of the level of night time light on the flora and fauna (and human population).

The Dark Skies HAP relates to almost all other HAPs and SAPs. It has particular relevance to: Tidal Thames, Rivers & Streams, Bats, Hedgehogs and Pollinators.

In a totally natural environment, the day length and night time light levels vary depending on the time of year and the phases of the moon. The flora and fauna have evolved with this cycle over millions of years as it controls many aspects of their lives, such as when to feed, breed, hibernate, migrate etc. It is only since the invention of the electric light some 150 years ago that the light levels at night have been impacted by human activity. Artificial light at night (ALAN) or Light Pollution refers to the manmade light emitted at night that results in a brightening of the sky, which spreads out away from where it is emitted, affecting all species over a wide area.

ALAN is a growing problem that affects all aspects of the natural world because nearly all living things react to light. Harm has been observed at an individual species level through to entire populations because increased light levels affect activities such as food finding, reproduction, migration and communication. This occurs because some species' activities are inhibited by light whilst others are attracted to light and confused by it. ALAN also disguises barriers in the landscape that can result in injury and death to a wide range of species, including observed effects among birds, fish, mammals, reptiles, insects and other invertebrates, and plants [2]. ALAN has been noted as one of the most pressing and imminent threats to global biodiversity, with more impacts being discovered as more research is undertaken.

It is estimated that around 13% of all electricity use is for lighting and that worldwide light pollution levels might be rising at up to 10% per year. Working actively to reverse this trend is important to reduce the environmental impact of lighting as well as enabling savings in carbon and energy costs.

In recent years across the UK there has been a widespread replacement of streetlights with newer, more energy efficient LED units. These tend to emit more blue light that can be more harmful to wildlife than other colours and also human health as it interferes more strongly with our circadian rhythms.

Much night time lighting is unplanned and poorly implemented. It often provides far higher levels of illumination than needed and results in glare and uneven illumination that fails to provide the safe conditions that are intended and results in much larger areas being lit than is required for the intended application. Light comes from a wide range of sources and so a wide range of stakeholders need to be engaged for improvements to be made.

Unlike other types of pollution, it is relatively simple to improve, and the benefits can be realised immediately. It is NOT a case of turning lights off, rather applying the "right light, right time, right place with the right control" philosophy. This approach will enable benefits for people whilst minimising the potential harm that can be caused for ecosystems. Reducing light pollution will enable the borough's biodiversity to exist in a more natural state, with additional energy saving and health benefits. It will also help reduce the impact of Richmond's night lighting on neighbouring boroughs.

Habitat impact

Unlike the other habitats, the night sky covers the whole borough. All areas of the borough are affected by light pollution, both from local lights, but also neighbouring boroughs. Wide engagement is needed to reduce the overall background light pollution levels.

It is important to protect and enhance the recognised biodiverse areas in the borough and to reduce the impact that local lighting has on them. In collaboration with other parts of the BAP it is essential that we act to improve habitat connectivity along green and blue corridors by ensuring that light levels are also considered. At night this requires ensuring that artificial light does not impact on these "dark corridors", where one badly shielded light could effectively cut the corridor in half, with species unwilling to enter the brightly lit area.

Current status

A night-time satellite image of the UK (Figure 1) shows London has significantly brighter night skies than many countryside areas, with the Milky Way invisible and only the main planets and a few dozen stars visible - instead of over 2000 stars in a truly dark location. It is clear that London is a significant source of light pollution, with its effects detectable many tens of kilometres away.

Much light pollution reduction activity to date has focussed on already dark areas, whereas if urban and suburban light pollution could be reduced, an increased area would benefit from darker skies.

Local

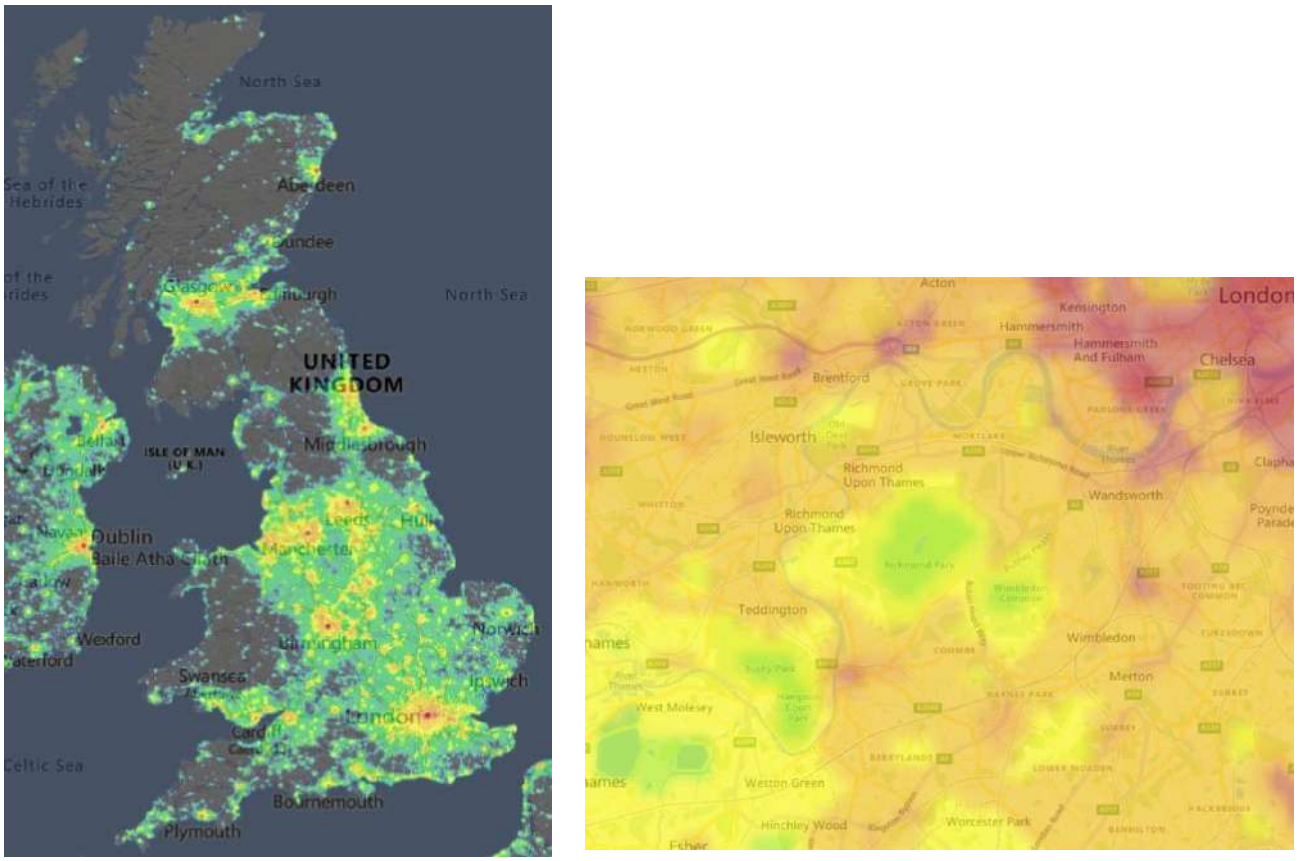


Figure 1 UK wide overview and local 2023 VIIRS light pollution – Lightpollutionmap.info.

Richmond, being on the edge of London, suffers fairly high levels of night light. A map of the current light pollution in the local area is shown in (Figure 1 and initial image); the darker red areas (mainly town centres) are brighter, with the green areas being darker (such as Richmond and Bushy Parks).

Current satellite data suggests that the light pollution levels in the borough are broadly stable, with some areas appearing to have reduced their impact due to recent Full-Cutoff LED light upgrades.

It is clear that there are sources of light pollution in neighbouring boroughs and so contacts and collaborations with these councils to share experience and good practice could enable a wider scale impact that will benefit the borough.

Richmond council has upgraded to LED lights and has a full inventory of all the lights it operates and the output levels for them. The opportunity for part-night lighting and dimming will be investigated where appropriate as well as the possibility of replacing lights near to biodiverse areas with warmer colour ones and adding shields to minimise their impact on wildlife

Wider London

The Greater London Authority published a Light Pollution report in 2023 [1] that proposed a number of activities that the Mayor and local councils should implement to help make measurable reductions in the level of light pollution across the capital.

In 2023 the City of London published a Lighting Supplemental Planning Document [2] outlining its expectation for lighting in planning proposals in the capital. This covers a wide range of situations including exterior and interior lighting, and it has been suggested that this approach should be copied by other boroughs.

In 2022 the Campaign for the Protection of Rural England (CPRE) published a 10-point Dark Skies Action Plan for London [3]. Many points have been adopted as actions of this plan, especially those involving council action, wider London collaboration, dissemination of good practice and engagement with the public to help quantity local light pollution.

There are a small number of astronomical societies that hold observing sessions in the capital, the most obvious being the Baker Street Irregular Astronomers [4], who meet monthly in Regents Park, though currently there are none in Richmond Borough.

Wider UK

Across the UK, many countryside areas such as National Parks have been successful in applying for Dark Sky status from DarkSky International [5], the nearest to the borough being the South Downs and Cranborne Chase. In these cases, the areas were surveyed for the night sky brightness, with council and community collaboration to actively protect the darkest areas and enact good lighting policy.

To help boroughs improve their light pollution awareness the UK Dark Skies Partnership [6] have produced a “toolkit” for local authorities highlighting how to implement good lighting policy and reduce light pollution [7].

The institute of Lighting Professionals [8] has published a series of technical guides to help organisations understand the issues around lighting and the current industry good practice that minimises the generation of light pollution.

Recently Buglife UK has launched a campaign to raise awareness of light pollution as it has a huge negative impact on nocturnal pollinators [9]

The British Astronomical Association has lead the Commission for Dark Skies [10], that has worked with volunteers to raise the issue of light pollution and work with stakeholders to make a positive impact and recognise those organisations that have embraced good lighting.

Legal position

The Council Planning Policies contain requirements for external illumination to be well designed and to minimise both light trespass and light pollution, however these do not cover existing lighting installations or domestic lighting.

The new Richmond Local Plan [11] contains a number of points and policies aimed at minimising light pollution within new planning applications:

- **Policy 43 Floodlighting and Other External Artificial Lighting.** With installations needing to justify their lighting and demonstrate that it avoids impacting nocturnal wildlife in need of darkness.
- **Point 20.19** "The lighting of the public realm needs careful consideration to ensure it is appropriate to address safety and security issues and make night-time activity areas and access routes welcoming and safe, while also minimising light pollution and thereby impacts on biodiversity, protected species as well as residential amenity."

Current council lighting policy enables the public to request additional streetlighting, though with a number of exclusions that support light pollution mitigation: e.g. Parks, Open Spaces, Playing Fields, Private Roads or where the light levels meet the required standards. This action plan will support the council with developing supplemental guidance on lighting.

Much of the light pollution comes from shops, transport infrastructure, sporting venues, industrial areas and domestic security lighting. These are not within the scope of the council's direct control and so these groups will need to be engaged, to raise their awareness of the issue of light pollution, the current good practice and the council's aim for promoting biodiversity.

One of the only legal measures that can be currently used for dealing with light pollution sources is that Light pollution is a "statutory nuisance" under the 1990 Environmental Protection Act [12], meaning that it must either "unreasonably and substantially interfere with the use or enjoyment of a home or other premises" or "injure health or be likely to injure health". If this can be shown, then councils can serve an abatement notice. There are however exempt premises such as airports, transport premises, goods vehicle centres, prisons.

There is still no central government policy or activity on light pollution, even though there have been several attempts to propose policies (for instance the proposed 2021 Environment Bill), most recently in 2023 from the House Of Lords [13] All Party Parliamentary Group on Light Pollution [14]. In the meantime, several countries have already enacted strong light pollution laws, including France, Czechia, Croatia and Slovenia.

Specific factors affecting the habitat

Non-council sources

The council is able to influence exterior lighting through the planning process but has no direct control on existing or domestic sources of light pollution.

Out of borough sources

Much of the lighting that brightens Richmond's night skies comes from outside the borough, for instance central London, neighbouring boroughs and Heathrow airport.

Perception of crime and security.

One of the biggest challenges to reducing light pollution (apart from the cost of changing lights) is the impact on perceptions of personal safety and crime. Many people (especially women and the elderly) feel vulnerable in unlit or poorly lit areas. The presence of bright streetlighting can provide confidence that a council is working in the best interests of its residents. However, glare from poorly directed bright lights is a particular concern for night time safety. The intense light can scatter inside the observer's eye, reducing the contrast and visibility of objects at night for motorists, pedestrians and cyclists. It takes time to recover from glare, older people tend to be more strongly affected and modern blue-rich LED lights tend to produce greater glare than more warm coloured lights. Good quality lighting minimises glare and aims for even illumination levels, so that it is easier to see what is going on and avoids creating potential "hiding spaces".

Research seems to suggest that greatest benefit on the perception of safe lighting comes from careful adding small amount of light to darker areas, rather than to add additional lighting to well-lit areas [15].

There is conflicting research of the impact of lighting on crime and safety, some indicating it can reduce crime [16] and others that it has no effect [17] or could even lead to an increase [16]. Many councils in the UK have implemented dimming or part night lighting curfews, which has enabled data to be obtained over wide areas and thus provide more reliable information. This action plan will seek to understand the latest evidence in this area and learn from the experiences and case studies to ensure that proposed lighting changes are supported by the best evidence base and most likely to be accepted.

Many London boroughs (including Richmond) are creating Night Time Strategies [18] to support the night time economy, both of shops and restaurants and also the people whose jobs require them to work at night. This will naturally involve providing the right lighting to support the night time economy and make travel after dark safe. This action plan will engage with the Richmond Night Time Strategy to promote good lighting practices [8] so that the light that is provided has the maximum benefit, whilst minimising the negative impacts noted in previous sections.

Lack of data

The main source of light pollution data for long term and worldwide light levels at night is from various satellites (e.g. DMSP [19] and the VIIRS [20] instrument on the NASA NPP_Suomi mission). Interactive maps of this data are widely available online e.g.lightpollutionmap.info [21]). They provide fairly low-resolution measurement (km scale), so are unable to identify specific local sources of light pollution. Neither of these satellites were designed to specifically monitor night time lighting levels and their detector colour responses and sensitivity mean that changes in the colour of light pollution may hide changes in the levels of light pollution. Satellites also only measure the brightness of the light that escapes vertically upwards, either from lights directly or from the reflection of light on various land surfaces. What they cannot quantify is the amount of light that escapes near the horizontal from lights that leads to light pollution spreading out across the countryside.

The council has an inventory of all its streetlights, with information about light fitting and output level, but there is essentially no data on other lights in the borough.

There is a need for more local light level benchmarking, measuring the actual levels of light in the biodiverse sites in the borough and also regular benchmark measurements at a number of fixed locations to detect trends. This could involve using "Sky Quality Meters" [22] or other

suitable light meters. Established good practice will be followed to ensure the greatest confidence in the obtained data.

The use of citizen science approaches, either loaning light meters to local groups or encouraging the wider participation in established activities such as the CPRE Big Star Count [23] and Globe At Night [24], should be undertaken. It might be that the use of "All Sky Camera" approaches would be useful to help pinpoint the larger sources of light pollution both inside and outside the borough.

Local groups will need to be engaged to help identify specific lights that have disproportional impact through shining light directly into the green spaces and dark corridors in the borough.

Current action

Local

The dark skies HAP is new for this edition of the BAP and so there are no specific actions that are underway. The current BAP has activities on bats, private gardens, hedgehogs, which have relevance to dark skies and will be engaged with. Previously a leaflet on rivers and light pollution has been produced [25] noting the importance of green corridors and the impact on bats.

A number of groups (for instance Habitats & Heritage, Friends of Bushy Park, Barnes Common Limited) already hold bat walks, where the impact of artificial lighting could be raised.

There are currently no local amateur Astronomical societies, making it harder to organise astronomical themed light pollution awareness events, though several schools (e.g. Waldegrave, Lady Eleanor Holles, Turing House) do offer GCSE Astronomy and thus make their students aware of the issue of light pollution, though not specifically with a biodiversity aspect.

Actions

Most of these actions are specific to this habitat. Please note that the partners identified in the tables are those that have been involved in the process of forming the plan. It is not an exclusive list and new partners are both welcomed and needed. The leads identified are responsible for co-ordinating the actions – but are not necessarily implementers.

Action	Target Date	Lead	Other Partners
DS01 - Identify gaps in Richmond's "dark biodiverse corridors".	On-going	Working group	All RBP friends and partners
DS02 - Identify actions to improve the extent and connectivity of dark corridors	On going	Working group	All RBP friends and partners
DS03 - Support borough green space stakeholders including friends' groups to understand and quantify their local lighting, working with them to reduce its impact on at least two sites.	On going	H&H	RBP Friends groups
DS04 - Measured reduction of light trespass into at least two borough green spaces.		HAP lead	
DS05 -Established collaborative links to other local councils and wider UK light pollution and biodiversity stakeholders to enable collaborative activities and exchange of ideas and case-studies to help reduce wider light pollution.	2025	Working Group	LA, NE
DS06 - Work with stakeholders to raise awareness and engagement with dark biodiverse places e.g. Bat Walks, moths, bioluminescence, stargazing.	Ongoing	H&H	All
DS07- Engage with two stakeholders with large lighting presence, to reduce light pollution by lighting improvements**.**	2027	Working group	
DS08 - Report on external Urban Dark Sky recognition options from Dark Sky International.	2026	Working group	
DS09 - Promotion of the annual CPRE Star Count and other Citizen Science Light Pollution awareness activities at a borough level.	Annual	H&H?	

Relevant borough action plans

Local Plans

Private gardens, Bats, Hedgehogs, Pollinators

London Plans

There are no current London wide Light Pollution plans, though there are a number of reports with recommendations that have a London wide coverage:

- CPRE Dark Sky London Action Plan [26]
- London Assembly light pollution report and recommendations [1]

National Plans

There are currently no National Plans to address light pollution, though there are several reports with recommendations that have a national coverage have been written in recent years.

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[2] City of London Lighting Supplementary Planning Document, 2023, https://www.cityoflondon.gov.uk/assets/Services-Environment/lighting-spd-2023.pdf, 2023.

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[24] https://globeatnight.org/campaigns/.

[25] R. B. Partnership, "Rivers and Light Pollution," https://habitatsandheritage.org.uk/wp-content/uploads/2020/11/RBP-Rivers-and-Lighting-Leaflet.pdf-resize.pdf, 2010.

[26] CPRE, A TEN POINT PLAN FOR DARK SKIES IN LONDON, https://www.cprelondon.org.uk/wp-content/uploads/sites/10/2021/03/Dark-Sky-London-Action-Plan-.pdf.

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Websites:

- UK Dark Skies Partnership – Local Authorities, communities and dark skies toolkit – https://www.southdowns.gov.uk/wp-content/uploads/2022/10/Local-Authorities-Communities-and-Dark-Skies-Toolkit-Oct-2022.pdf
- Institute of Lighting Professionals: https://theilp.org.uk
  Dark Skies International - https://darksky.org/
- DarkSky UK https://darksky.uk/
- Light pollution map – www.lightpollutionmap.info

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3.4 Gardens and allotments habitat action plan for Richmond

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"The love of gardening is a seed once sown that never dies, but grows to the enduring happiness that the love of birds and flowers gives."

— Gertrude Jekyll

Aims

1. To promote and celebrate gardening and landscaping methods that enhance wildlife habitats and biodiversity.
2. To engage neighbours and communities in raising awareness and creating examples of best practice.
3. To establish and promote public policy that aims to enhance biodiversity in gardens and to prevent loss of green space.
4. To foster partnership between private, public and voluntary sectors and engage influential organisations in education, health, horticulture and garden design.

Introduction

Scope of this plan

This Habitat Action Plan is relevant to gardens, allotments, and other kinds of land or green space. Including: Domestic gardens in owner occupied, privately rented or social housing; allotments; gardens in public spaces such as schools, care homes, colleges etc; public or private community gardens and publicly accessibly private gardens.

The title 'Gardens and Allotments' is used as shorthand to refer to all the above categories.

Why gardens are important

Gardens represent substantial land use in the London Borough of Richmond upon Thames (LBRuT) and are managed by a large number of people who can contribute to biodiversity by becoming involved in nature conservation in their everyday lives. Gardens include a range of habitats and are inter-connected green spaces for animals such as hedgehogs that need to roam over large areas. Typical garden habitats are woodland, grass areas, hedges, standing water, and walls. Some animal species, e.g. robins and foxes, are now more common in cities, and particularly domestic gardens, than in rural areas. This Habitat Action Plan (HAP) is relevant to Species Action Plans (SAPs) for hedgehogs, house sparrow and song thrush, bats, stag beetles, amphibians and reptiles, and swifts. The HAP for pollinators is also relevant, as private gardens are important for a diversity of plants flowering throughout the whole year. As well as being wildlife habitats, gardens offer benefits in terms of drainage and water conservation, air cooling, air quality, and general health and well-being. The interconnected nature of gardens mean that they can also play an important part in dark corridors, as referred to in the Dark Skies Habitat Action Plan.

Public policy

Pressures from building development and the need for parking space can be a threat to biodiversity. Planning and transport policies at all levels, from local to national, have an impact on the biodiversity potential of gardens. The Mayor of London's aim to make London the world's first National Park City includes a commitment to regulation in new buildings for more green roofs, green walls, rain gardens (small green spaces which help prevent flooding), and habitats for wildlife. The Mayor's Environment Strategy and the GLA Greener City Fund represent opportunities to raise the profile of private gardens as important contributors to biodiversity.

"The importance of street trees, private gardens and the increasing number of green roofs and walls have not previously been fully appreciated in London. … the Mayor will…provide advice to householders about how gardens contribute to improving green infrastructure at a local level. The Mayor's programme will [include] working with urban designers, developers and planners to promote and communicate the benefits of a greener built environment including gardens." (Draft London Environment Strategy August 2017).

Involving communities and organisations

There is widespread interest in wildlife gardening and scope for developing communication between people through the internet, e.g. social media, and in person. There are many good education and information resources about wildlife friendly gardening. However, information does not always reach the intended audience. It may reach people but not engage them actively and change behaviour. Organisations in all sectors can do more locally to disseminate and celebrate good practice and to involve a wide range of people and organisations in actively promoting biodiversity and helping to conserve nature.

Current status

Domestic gardens account for nearly one fifth of the land in LBRuT. Richmond is subject to the same pressures on green space as London and England as a whole. As the population grows, space is needed for housing, services and transport. Garden land is being lost and there is a need to slow the decline and also to mitigate the effects of garden loss on biodiversity.

Land use for domestic gardens

The most recent available data show that domestic gardens accounted for 19% of land use in Richmond and 24% in London as a whole. The lower figure for LBRuT is skewed by its large area of public green space. The area of public green space in Richmond is 51%, compared with 38% for London, and Richmond Park is a major contributor to this proportion.

	Total area (hectares)	Area of domestic buildings	Area of domestic gardens	Area of public green space
Richmond	58.5 thousand	7.0%	19.4%	50.8%
London	1.6 million	8.7%	23.8%	38.2%
England	132 million	1.1%	4.3%	87.5%

Table 1. Land Use Database 2005 (https://data.london.gov.uk/dataset/land-use-ward)

Loss of vegetated garden land

Across London, between 1998 and 2008 an area of vegetated garden land the size of 2.5 times Hyde Park was lost on average each year. As a result of garden design and management, the area of vegetated land dropped 12%. The area of garden buildings increased by 55%. The amount of hard surfacing in London's gardens increased by 26%. These figures show how green space in private gardens is under threat. (London Garden City, LWT & GiGL, 2010).

Population growth

In 2021 there were 80,700 households in the London Borough of Richmond upon Thames. This represents an increase of 4,600 (6.0%) households in the period since the 2001 Census.

Specific factors affecting gardens

The following seem to be some of the main challenges to wildlife-friendly habitats within gardens:

- Desire for tightly mown lawns and tidy borders and a mistaken belief that wildlife gardens must be messy and unkempt.
- Removal of all dead wood, leaves and ivy, which if left provide good habitat for many fungi and invertebrates and hibernation sites for hedgehogs, other small mammals and amphibians.
- The use of garden chemicals and slug pellets.
- The replacement of boundary hedges with fences or walls without gaps, which affects species that need to roam for food, shelter and mating, e.g. hedgehogs.
- Fewer open compost heaps.
- Infilling of water features.
- Hard surfacing as a way of creating low-maintenance gardens or to provide parking or storage space.
- The decline in growing vegetable and fruit crops which provide wildlife with food, especially in the autumn and early winter.
- Predation of wildlife by domestic cats.
- Planting of alien or invasive species which generally support lower abundance and diversity of native wildlife.
- Use of more lighting in gardens than needed.

Current action

Legal status

Garden habitats have no specific legal protection, although trees are protected in Conservation Areas and through Tree Protection Orders. Individual species, including great crested newt, birds and bats are protected under European Protected Species regulation; the Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000; and other similar legislation. Badgers are protected by the Badger Act 1992. Change of use of a garden is covered by the Town and Country Planning Act 1990. Allotments are regulated by the Allotments Act 1922, 1925 and 1950.

Mechanisms targeting private gardens and allotments

Public awareness

Raising public awareness is important so that people know how their own gardens may affect wildlife and why wildlife is important. Organisations in all sectors have a role to play in raising awareness. Examples include promoting wildlife surveys and encouraging best practice in gardening as well as compliance with legal responsibilities as householders, e.g. to avoid disturbing nesting sites. Increasing public concern for wildlife and biodiversity also encourages media interest, which can be harnessed to promote awareness.

Community engagement

There are good opportunities to work with groups of neighbours on common issues. Examples include local responses to the National Garden Scheme and other open garden events, allotment associations, and individuals working on specific issues such as hedgehogs. There is scope for highlighting and disseminating good practice through the promotion of wildlife gardening schemes.

Learning

Schools and colleges can enable children and young people to be future leaders in wildlife friendly gardening and nature conservation more generally. Voluntary and specialist organisations can support this through curriculum and personal development and delivering learning sessions. Adult and community learning organisations can promote awareness for adults. Green sector jobs should be promoted.

Local Authority planning and regulation

The local authority has a role in local policy, for example:

- Planning guidance on Sustainable Drainage Systems
- Garden waste management
- Tree Protection Orders
- Tree Policy
- Ecology and Biodiversity Policy
- Limiting light pollution
- Biodiversity Net Gain

Flagship species

Gardens and allotments considered as a whole represent a large and often interconnected area of green space. Several local action plans refer to species or habitats that are to be found in gardens. These are the Species Action Plans for hedgehogs, house sparrows and song thrushes, bats, stag beetles, swifts, amphibians and reptiles, and pollinators. Gardens have a great importance for bees and butterflies as well as other insects.

Certain species of conservation importance, characteristic of gardens and allotments, have been selected as flagships for this Habitat Action Plan:

- Birds: Song thrush, house sparrow, swift
- Mammals: Hedgehogs, badgers, bats
- Invertebrates: Stag beetle, bees (all species), butterflies (all species)
- Amphibians: Common frog, slow worm.
- Plants: Dandelion

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for gardens and allotments			
Action	**Target Date**	**Lead**	**Other partners**
G&A01 – Promote wildlife friendly gardening practices including ponds through web pages, social media, community and gardening and allotment association events, open garden events, printed information and practical examples.	2025 and ongoing	H&H	Community BlueScapes, LBRuT Friendly Parks for All, LGOAL, TRP
G&A02 – Investigate feasibility and funding for Richmond wildlife gardening award scheme	2027	H&H	LGOAL
G&A03 – Promote citizen science wildlife surveys including big butterfly count, garden bird watch	2025 and ongoing	H&H, LGOAL	WWT, Community BlueScapes, RBP
G&A04 – H&H to collect and collate sightings for flagship species and report to GiGL in appropriate format.	2025 and ongoing	H&H	LA, RBP
G&A05 – Promote awareness of legal obligations and best practice for biodiversity when commenting on planning applications.	Ongoing	LA	
G&A06 – Work with planning officers, providing advice and making the case for wildlife friendly gardens.	Ongoing	LA	
G&A07 – Develop and promote advice for public, private and community landowners and leaseholders including householders and allotment holders on enhancing biodiversity.	2025 and ongoing	LGOAL, H&H	LA
G&A08 – Raise awareness around SuDS and promote best practice	Ongoing	LA, Community BlueScapes	RBP

Specific actions for gardens and allotments			
Action	**Target Date**	**Lead**	**Other partners**
G&A09 – Engage private sector organisations in promoting wildlife friendly gardening, including garden centres, horticultural training institutions, gardening and landscaping firms, etc.	Ongoing	H&H	
G&A10 – Promote wildlife friendly gardening with schools and colleges	Ongoing	LGOAL	H&H, Community BlueScapes, RBP
G&A11 – Promote wildlife friendly gardening with social landlords	Ongoing	H&H	Community BlueScapes
G&A12 – Engage community gardens and allotment associations in promoting awareness and best practice in wildlife-friendly gardening.	Ongoing	H&H	Allotment associations, RBP
G&A13 – Promote de-paving and rainwater harvesting in gardens and allotments.	2025 and ongoing	LA, Community BlueScapes	H&H, LGOAL

Relevant action plans

Local

Species and Habitat Action Plans as identified above (Introduction)
Richmond upon Thames Climate and Nature Strategy 2025-2030
Richmond Climate and Nature Strategy 2025-2030 – 2025 Action Plan

Regional

London Private Gardens Habitat Action Plan, LWT / GIGL [archived]
Mayor of London: Parks, Green Spaces and Biodiversity
Mayor of London: London Environment Strategy

National

National Pollinator Strategy

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Appendix

Public information messages

Campaign and information sites have detailed information about many topics. The following are examples of topics for public information through action PG01 above.

1. Let grass grow, allow leaves and dead wood to lie, let flowers go to seed
2. Plant native species: natives help to sustain the whole system for insects, birds and other wildlife e.g. dandelions, daisies and clover.
3. Plant a variety of shrubs, especially natives, for hedges
4. Make small spaces green with pots and containers
5. Choose a variety of insect-friendly plants flowering throughout the year
6. Prune or fell trees and shrubs outside of bird nesting and flowering seasons
7. Collect and conserve water
8. Make ponds, mini-ponds or damp areas
9. Leave or make gaps in fences for Hedgehogs
10. Minimise lighting: make gardens more friendly for nocturnal wildlife such as hedgehogs and bats
11. Use alternatives to pesticides for slugs and other pests
12. Use harmless methods of deterrence for foxes
13. Compost garden waste and use sustainable peat-free compost
14. Enjoy and learn about wildlife: spotting and recording butterflies, birds, bees
15. Build homes for insects, bats, birds and Hedgehogs
16. Feed the birds, summer as well as winter
17. Involve neighbours and share information and learning.

3.5 Hedgerows habitat action plan for Richmond

© Simon Hawkins

"Love thy Neighbour; yet don't pull down your Hedge."

(Benjamin Franklin, *Poor Richard's Almanack*, 1754)

Aims

1. Conserve and enhance hedgerows within the London Borough of Richmond upon Thames (LBRuT), using an appropriate management system that will benefit the wildlife and local residents.
2. Raise public awareness and appreciation of the habitat's ecological value.
3. Distinguish which hedgerows can be deemed to be ancient or species-rich habitats, if any.
4. Identify more of the habitat's flagship species of flora and fauna.
5. Identify new suitable sites for planting of hedgerows.

Introduction

Hedgerows are man-made structures of immense biodiversity that form part of our national historic, cultural and landscape heritage. Hedgerows are defined as a row of shrubs or bushes that can have trees within, typically bordering an area of land, pathways, roads or embankments. Their use dates back to before Roman time as a means of marking out land ownership and fencing in livestock. At the moment there are roughly 477,000 km of managed hedgerows within Britain; before modern farming techniques, the increase of housing, and transport links, hedgerows would have seemed to have connected the whole of the United Kingdom together.

The UK BAP defines two types of significant hedgerows that need protection:

- Ancient hedgerows that were in existence before the Enclosures Acts passed between 1720 and 1840, giving landowners the option to add large areas of common land to their estates, and
- Species-rich hedgerows containing five or more native flora species along a 30 metre stretch.

Those that are found within or surrounding a residence garden or house are not included within this Habitat Action Plan (HAP).

The myriad of species that thrive on a hedgerow's unique ecosystem consists of evergreen and deciduous flora such as holly and hawthorn, common garden and wild flowers, insects, arachnids, birds and mammals. Examples of animals found in hedgerows include but are not limited to beetles, butterflies, moths, song thrushes, blue tits, hedgehogs, bats, shrews and foxes. This diversity of flora and fauna means that hedgerows are in the unique position of containing 47 species that are of environmental concern within the UK, 13 of which are also globally threatened species.

In addition hedgerows can be seen, like streams and rivers, as natural corridors for species of flora and fauna to disperse between different areas of ecological significance, making them an important factor within residential and industrial areas linking parklands, woodlands, grasslands and commons together.

Another advantage is that hedges act as natural barriers to adjacent habitats, protecting them from wind, pollution, noise and intruding human activities. Hedgerows prevent soil erosion and water run-off, bring wildlife and idyllic greenery to urban areas and conceal signs of dilapidation (i.e., graffiti-stained walls, wasteland, etc.) from visitors.

Current status

Since 1945 there has been a sharp decline in the amount of hedgerows throughout the UK, with an annual net loss of 5% due to their removal and neglect.

A systematic survey to define the amount and total length of hedgerows within the LBRuT, and to determine which of these are worthy of being classified as ancient or species-rich hedgerows, is yet to be carried out. It is also important to note that the speculation about what species are to be found within hedgerows in LBRuT can be made, however, a more extensive survey is needed to determine which are actually present.

Areas that have hedgerows within the borough include churches, cemeteries, allotments, the Royal Parks, railway and road embankments, golf courses, parks and commons.

Specific factors affecting the habitat

Lack of knowledge

The significant diversity that is held within these ecosystems needs to be centralised through assessment and sharing between groups and individuals in the borough. This information should include the total mass length and condition of ancient and species-rich hedgerows, the quantity of hedgerows holding ecological significance but not fitting either description, and a more detailed list of the variety of flagship species that can be found.

Poor management techniques

Removal: Hedgerows have been part of the British environment for hundreds of years, but unfortunately their removal in favour of fences or walls is a practice that has gained popularity since the 1940s. Not only has this caused the destruction of these valuable ecosystems, but also fragmented sections of previously continuous habitats inevitably leading to a reduction in diversity.

The trend towards the removal of dead wood, valuable to saproxylic communities such as fungi and insect larvae, has also increased and led to further reduction in the biodiversity of these ecosystems.

Neglect of hedgerows is also of concern. When hedgerows are not correctly maintained they can fall victim to invading plants such as brambles and weeds or non-native species such as snowberry, buddleia and cherry laurel spreading from gardens. When these species take hold they thrive within the hedgerow habitat, outcompeting the desired hedgerow species and even leading to the spread of disease.

When hedges are left to become entangled and overgrown they tend to attract the build-up of litter and pollution, a practice that is unsightly and may attract vermin. In addition, the dumping of grass cuttings or material chippings can affect the growth of flowers and other plants that thrive at the base of a hedgerow.

Wrong timing: The art of felling and coppicing trees and hedges may bring about rejuvenated growth with an increase in fruit, berries and nuts, but when these actives are done at the wrong time of year (spring and summer) food needed for hibernation will not appear during the autumn months and drastically affect the ecology of a hedgerow habitat.

Noise and use of pesticides: Leaf blowers are another popular tool for environmental management, but their use in close proximity to a hedgerow can disturb the underlying leaf litter and habitat. The use of pesticides, herbicides and fertiliser predominantly upon farmland or in parkland constitutes another great threat to the ecology of hedgerows. Farmers and groundskeepers are aware that undermanaged hedgerows can be a source of pests and weeds and are therefore more likely to target these habitats for treatment, negatively impacting their natural flora and fauna.

Urbanisation

The increase of housing and businesses has led to the removal and fragmentation of lengthy hedgerows that could well have been ancient or rich in species. Because the majority of recent urbanisation would have happened before any legislation was introduced to protect hedges, we

cannot be sure, but in all likelihood we already will have lost large corridors that historically would have connected areas of ecological significance in LBRuT and other boroughs.

For public safety and to ease congestion many pathways and roads have been widened. Even when hedgerows survive these operations, the additional concrete can cut of the root systems below ground, preventing effective drainage and lead to stagnant water putrefying the roots. The laying or maintenance of cables and pipes causes similar problems.

Household proposals

Household owners sometimes have certain hedges and trees removed or felled due to them shading their dwelling or blocking a desired view; however applications to do so are not always accepted.

Current action

Legal status

The Wildlife and Countryside Act of 1981 (as amended) declared the removal of hedgerows containing nesting birds to be illegal, and in 1990 the Town and Country Planning Act gave protection to trees found within hedgerows. In 1995 the Environment Act introduced the control and protection of hedgerows deemed to be of historical importance or species-rich and required land owners to seek permission from their local authority for the removal of a hedgerow.

This was followed by Hedgerow Regulations in England and Wales in 1997 which stated that hedgerows stretching over twenty meters in the countryside, on common land, on protected land, being used for agriculture, forestry or the breeding of animals should not be removed. Within LBRuT this includes many areas like Kew Gardens, Richmond and Bushy Park, Barnes Common, Crane Park and Ham Lands.

Mechanisms targeting the habitat

These current actions are ongoing. They need to be supported and continued in addition to the new action listed under Section 7.

The introduction of the Environment Act in 1995 has brought about the protection of important hedgerows in Britain. So far however, no hedgerows in LBRuT have been deemed as important, though many have gained status of protection due to being in areas of importance. Richmond Park is a SSSI and a SAC, Barnes Common and Ham Lands are two of many LNR's in the borough and they also fit under the conservation status as SMIs. Other conservation status found within the borough include SBIs and SLIs.

Volunteer work on the coppicing, planting, trimming and laying of hedgerows is a common occurrence during the winter months, mostly implemented by The Conservation Volunteers (TCV), Richmond group.

Flagship species

These special plants and animals are characteristic of hedgerows in LBRuT.

Song thrush	*Turdus philomelos*	Found throughout the UK, it is one of the smallest species of thrush at approximately 20-23 cm, and due to establishing breeding territories within late winter, they are one of the first birds to herald in the spring. They are a UK Red List Species of 'High Conservation Concern'.
Stag beetle	*Lucanus* cervus	Britain's largest terrestrial beetle thrives upon dead wood as part of its lifecycle. The larva will spend nearly seven years in the wood growing in size. Surprisingly London is a place of national significance due to its high stag beetle numbers.
House sparrow	*Passer domesticus*	The house sparrow has spread itself around the world, but has declined in numbers within the British Isles. It can be spotted all year round and lives within loose colonies of 10-20 pairs.
Bat species	*Chiroptera*	There are 6 known bat species within LBRuT including the Pipistrelle (common and soprano) the noctule, brown long-eared and Daubenton's. Hedgerows can give all these species areas to roost and feed.
Hedgehog	*Erinaceous europaeus*	Hedgerows provide these spiny mammals with shelter and help them to scourge for food. They can cover about two miles a day or more with the help of linked hedgerows.
Blackthorn	*Prunus spinosa*	Blackthorn is a deciduous shrub that grows up to five meters tall. It has spiny branches and cream coloured petals before the leaves in spring. This shrub is most commonly found as part of ancient hedgerows. It is also the food plant for the Brown Hairstreak (*Thecla betulae*), listed as Vulnerable on the UK Red List 2022.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for hedgerows			
Objective 1: To collate existing baseline data of hedgerow status within LBRuT.			
Action	**Target Date**	**Lead**	**Other Partners**
HR01 – H&H to investigate GiGL's regionally held hedgerow data and share with working group.	2025 (Q4)	H&H, Working Group	GiGL
HR02 – H&H to contact mangers and landowners, individuals and organisation across LBRuT regarding locations of hedgerows, and any associated species.	2025 (annual)	Working Group H&H	RBP, LA, TCV, London Wildlife trust, HRP, TRP, Butterfly Conservation, Royal Botanic Gardens, Kew, Barnes Wetland Centre.
HR03 – Utilise LBRuT data to see how many consented removals of ancient hedgerow and species-rich hedgerow have been removed in recent years. Collect a time series of this data to identify rate of loss over time.	2025 (annual)	LA, H&H	
Objective 2: To identify methods of increasing the existing knowledge base, and establish effective methods of storing and communicating this data.			
HR04 – Implement an online platform suitable for storing and presenting data. Create an online mapping system which can depict the current distribution and status of hedgerows across LBRuT.	2026	H&H	GiGL
HR06 – Carry out a 'Hedgerow Safari', a led citizen science programme across Richmond borough that mobilises volunteers to explore and survey existing hedgerow. This would need to be integrated with the mapping system.	2026-2027 (Q4)	H&H	TCV, ZSL, Local Friends Groups
HR07 – Investigate the potential to scale up the 'hedgerow safari' across all boroughs in London.	2028	H&H	ZSL, Peoples Trust for Endangered Species
HR08 – Standardise methodology for land managers and project managers to report the quality and abundance of hedgerow on their land or the land they are working on. This would need to integrated with the online mapping system.	2026-2027	H&H	LA, GIGL
Objective 3: To increase knowledge of the existing hedgerows within LBRuT, mapping their distribution and species diversity.			
HR09 – Equip all project and land managers with the knowledge and skills to survey hedgerows. Provide a standardised knowledge base, potentially through a workshop delivered at Barnes Common.	2026-2027	H&H	Friends of Barnes Common, GiGL

HR10 – Establish the 'Hedgerow Safari', training workshop and downloadable informational instruction pack to be found on the H&H website.	2026-2027	H&H	H&H, Barnes Common, TCV
HR11 – H&H to set up a hedgerow safari webpage on their website, and to implement the reporting mapping system. Members of the Richmond Biodiversity Partnership to disseminate this information through respective communication outlets.	2026-2027	H&H	RBP
Objective 4: To secure appropriate management for hedgerows ensuring their protection and enhancement.			
HR12 – Utilising the TCV online handbook, compile a resource pack that promotes best practise of hedgerow management to land owners and land managers.	2026	TCV	H&H
HR13 – Work with LBRuT to ensure that permission to remove ancient or species rich hedgerows is only granted in exceptional circumstances.	2025	LA	H&H
HR14 – Work with LBRuT to ensure that the use of non-native species is disallowed in the planting of new hedges throughout the borough.	2025	LA	H&H
HR15 – Utilising existing legal frameworks to encourage any breach of the law is pursued and prosecuted where possible.	2025	LA	H&H
Objective 5: To enhance and increase both the abundance and quality of hedgerows where possible across LBRuT.			
HR16 – Utilising data available, identify areas where new hedgerow can be planted. Ensure that native species-rich hedges are planted and compile a list of recommended suppliers.	2026	H&H	LA, RBP
HR17 – Plant an additional 300m of hedgerow annually.	2025 annual	H&H	FORCE/ Friends of Barnes Common/ Local Land Owners
HR18 – Manage an additional 400m of hedgerow annually for wildlife using a mix of methods.	2025 annual	FORCE	H&H, TCV, Barnes Wetland Centre
HR19 – Encourage land managers to establish hedgerow as an alternative/complementary feature to fencing and/or walling.	2026	LA	H&H
HR20 – Identify grant providers to fund the procurement of hedging plants and locate reliable sources for obtaining hedging plants.	2025	TCV	RBP
HR21 – Identify existing hedgerows which could be potentially enhanced through additional planting schemes.	2026	H&H	
Objective 6: Raise the profile of the ecological value of hedgerows to the general public, increasing their awareness and appreciation.			
HR22 – Produce a factsheet of information on the importance of hedgerows.	2025	H&H	
HR23 – Develop a web site link that has information on hedgerows within LBRuT.	2026	H&H	Mapping for Change
HR24 – Involve communities in management projects.	ongoing	TCV, FORCE BCL	H&H

Relevant action plans

Local Plans

Ancient parkland & veteran trees, Lowland acid grassland, Broadleaved Woodland, Private Gardens, Stag Beetle, Bats, Song Thrush.

Richmond Biodiversity Partnership Hedgehog, White Letter Hairstreak Butterly, House Sparrow and Song Thrust SAPs.

London Plans

Grasslands, Churchyards & cemeteries, Heathland, Parks & Urban Green Spaces, Private Gardens, Wasteland, Woodland, House Sparrow.

National Plans

Grasslands, Heathland, Woodland, Parkland, Built up Areas and Gardens, Urban, Stag Beetle, Song Thrush.

Key References and Sources of Further Information

Muir, R. & Muir, N. (1987) *Hedgerows: Their History and Wildlife.* Michael Joseph Ltd. London

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3.6 Lowland acid grassland habitat action plan for Richmond

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"By the middle of spring there may be on the ... Common little heaps of sandy material surrounding a miniature crater which leads to a deep hole, like the pipe of a toy volcano... shortly a red-tailed bee approaches, goes down the shaft, performs its business, and departs."

Walter Johnson, *Animal Life in London*, 1930

Aims

1. To ensure the protection and optimal management of lowland acid grassland (LAG) and associated wildlife within the London Borough of Richmond upon Thames (LBRuT).
2. To improve awareness of the ecological value of LAG in the local, regional and national context.
3. To develop appreciation of the habitat and its associated flora and fauna across the broadest spectrum of the local public and within higher education, that may afford research opportunities. To secure the involvement of local residents in its conservation.
4. To ensure all significant sites of LAG found within LBRuT have an appropriate management system, primarily aimed at pragmatic but effective conservation and enhancement of the habitat.

Introduction

Lowland Acid Grassland refers to the type of sward that develops over acidic soils. This type of soil is usually derived from underlying sands and gravels, is free-draining and low in nutrients. The finer qualities of this habitat are indeed worthy of wider awareness and appreciation.

Typical fine grass species associated with this habitat i.e. *Agrostis capillaris* (common bent), *Festuca spp* (red and sheep's fescues) and *Deschampsia flexuosa* (wavy hairgrass*)*, are attractive in themselves and do not require regular mowing. Unlike chalk grassland, acid swards are not generally celebrated for their wealth of colourful wildflowers, although they can present a colourful mosaic containing low-growing species that are highly attractive, including *Rumex acetosella* (sheep's sorrel), *Campanula rotundifolia* (harebell), *Erodium cicutarium* (common stork's-bill), *Plantago coronopus* (buck's-horn plantain), *Polygala serpyllifolia* (heath milkwort), *Spergularia rubra* (sand spurrey) and *Ornithopus perpusillus* (birds-foot). Other associated wildflowers include *Potentilla erecta* (tormentil), *Hypochaeris radicata* (cat's-ear) and *Galium saxatile (*heath bedstraw).

A less widespread sward, often found in areas where drainage is more impeded, and present in parts of Richmond Park, consists mainly of *Molinia caerula* (purple moor-grass). Nationally scarce plants found in Richmond's acid grassland include *Trifolium glomeratum* (clustered clover), *Moenchia erecta* (upright chickweed), *Medicago minima* (bur medock), and *Scilla autumnalis* (autumn squill).

It is important to note that acid grassland has always had an important place in the habitat mosaic on heathland, and that the current lack of heather should be viewed as symptomatic of an imbalance brought on by particular circumstances, rather than the undesirable replacement of one habitat by another. LBRuT contains vastly more LAG habitat than heathland. Therefore, although this HAP in principle seeks enhancement and restoration of both, its focus is on the maintenance and improvement of LAG.

The largest areas of LAG occur in and around Richmond and Bushy Parks, with other areas in Hampton Court Palace/Home Park, the Royal Botanic Gardens (RBG) Kew, and the Commons of Barnes, East Sheen and Ham. There is also acid grassland on the Royal Mid-Surrey and Richmond Golf Courses, and at the former St Michael's Convent on Ham Common. There also will be unidentified patches within private gardens surrounding these areas. Most of these sites lie on the gravels of the River Thames terraces and thus have free-draining, light soils.

The acid grasslands and heaths of Greater London, including LBRuT, south Essex and north-west Kent, are all host to a distinctive community of spiders, bees and wasps, ants, beetles, bugs and flies known collectively as the Thames Terrace Invertebrates. This is one of the most important and threatened invertebrate assemblages in Britain (London Biodiversity Action Plan 2005) and includes many hole-nesting bees, ants and wasps, such as the rare mining bee (*Andrena florea)*. Features believed responsible include the loose and often denuded substrate, the region's geographic situation in the driest corner of the British Isles, whilst still in proximity to the sea, and an availability of nectar-rich wildflowers. The distribution of species within this community is apparently restricted and under pressure from continuing development, coupled with a lack of appreciation/awareness for the acid grassland habitat on which they depend.

More familiar insects frequenting acid swards are the small heath (*Coenonymphia pamphilus)* and small copper (*Lycaena phlaeas)* butterflies. Associated bird life, attracted by rich insect pickings, includes the meadow pipit (*Anthus pratensis)*, skylark (*Alauda arvensis)* and green woodpecker (*Picus viridis)*.

Increasingly, researchers are recognizing the importance of yellow meadow ants (*Lasius flavus)*, with their characteristic ant-hills, as ecological engineers affecting the patterns and survival of many other species. For example, in 2018, there were areas of Richmond Park where harebell,

sheep's sorrel and heath bedstraw only occurred on ant-hills, while a topsoil of sand above gravel is most likely due to erosion of old ant-hills. The size and distribution of ant-hills are strong indicators of undisturbed open LAG habitat, with some ant hills in the borough estimated at 150-200 years old (Dr Tim King, 2018).

Acid grassland sites in London are arguably some of the richest in the UK in Hymenoptera, affording opportunity for continuing and robust research. For example, recently a new cynioid (gall wasp) species, *Alloxysta pseudoconsobrina* was described based on a specimen collected from Barnes Common, and is currently housed at the British Museum of Natural History (Ferrer-Suay et al. 2017).

Current status and progress made under previous action plans

Lowland dry acid grassland is listed as a priority habitat for conservation in the UK Biodiversity Action Plan. London's estimated 1300 hectares contribute about 4% to the national resource. Because of the widespread distribution of acidic soils, most London boroughs have some acid grassland. Although there are several extensive areas - including Richmond Park, Wimbledon Common and Putney Heath in Merton and Wandsworth, and at Wanstead Flats in Redbridge - a significant proportion occurs as widely scattered, overlooked fragments on the margins of more ubiquitous habitats, such as amenity grassland, scrub, road and rail verges and on some longer-established wasteland sites.

Much of London's remaining acid grassland has suffered in quality through a variety of factors. Ideally, it would be maintained by grazing animals and occur alongside stands of heather and gorse, small areas of bare ground and lichen cover, patches of scrub and peat-filled bogs. There would also be variation in structure within the grassland community reflecting its stage of succession. However, invasion by coarse grasses, bracken and developing woodland, are all too commonly associated with the habitat London-wide, particularly where soil depth and nutrients have increased or the soil acidity decreased for whatever reason.

LBRuT has the largest total area of LAG in Greater London with 620 hectares. This accounts for almost half of the recognised LAG habitat in Greater London (46%). Therefore, any significant changes to area within LBRuT are also significant within London. In view of its scarcity within London, it is not surprising that many of its characteristic species are also rare. Most of the acid grassland specialist species can be found within LBRuT.

Status on surveys and indicators of site conditions: So far as we are aware, there has been no full ecological survey of vegetation within LBRuT since 1984 or 1985, carried out at that time by the now-defunct London Ecology Unit. More recently, detailed National Vegetation Classification (NVC) surveys have been conducted at some sites (e.g. Richmond Park in 2004, 2011, and most recently 2016). Surveys of habitat at various sites have also established the presence and extent of LAG, such as at the Copse, Ham Common Wood and elsewhere. However, these surveys do not of themselves provide a satisfactory basis for accurate measurement of the loss or gain in total acid grassland coverage within LBRuT over the years, as they are site specific.

Less formal surveying systems have been adopted at some sites (e.g. Barnes Common) which allow coverage and quality to be assessed based on the frequency of key species present.

Anecdotal and photographic evidence (including some wartime aerial photography) has also been used to suggest that there might have been a significant increase in the acid grassland at

Kew Gardens due to a more relaxed management system, whilst at other sites, such as on the Commons at Barnes and Ham, there may have been significant losses in the previous decades, since grazing ceased well before that.

Progress under previous HAP: The previous local HAP for LAG set targets for identifying all significant sites and encouraging improved management, identifying walk leaders and speakers, campaigning to get good news out, and identifying suitable sites for restoration and enhancement. Progress has been and continues to be made on these targets, as well as earlier targets on grazing and improved mowing regimes.

In addition to the specific targets set in previous plans, managers of several key sites have continued to enhance and restore LAG habitat, with further experimental grazing and/or mowing regimes, scrub and bracken control (including use of working horses), and scrapes. Research has been commissioned on yellow meadow ants, and relevant surveying and monitoring for relevant species encouraged.

LAG remains a little understood habitat among the general public, although its importance is recognised within LBRuT, with good support not only from the biodiversity group but also among the Council's officers and policy makers.

Specific factors affecting the habitat

Lack of a clear identity

The historic and somewhat lowly image of LAG, coupled with its confusing identity as a habitat type, have at times led to it being undervalued. This makes it particularly vulnerable to mismanagement, and also viewed as expendable by developers and their advisers. Indeed, a good substrate of gravels is almost ideal for low-rise building, and some fail to recognise that this is a natural feature with its own specific ecology. A further consequence can be reduced interest from third party funding sources in supporting LAG, in comparison with other habitats – such as woodland tree planting.

Management constraints

a. Losses to acid grassland areas such as at the Commons at Barnes and Ham, seen in the latter half of the twentieth century, were a result of a lack of management plans to maintain or enhance the habitat. This has been largely rectified for significant sites, although further work is needed to ensure plans can be implemented effectively.
b. The optimal management of acid grassland is generally considered to be through low intensity natural grazing by a variety of animals including sheep, cattle, ponies (as in Hampshire's New Forest), deer and rabbits, as evidenced by the successful management in the Royal Parks and the London Wetland Centre in Barnes. As important as the grazing, is the impact of hooves, which is hard to replicate. However, the small size, fragmented nature and concern about fencing of common lands (incorrectly assumed by the public to constitute enclosure) make this impractical for open areas such as the Commons at Barnes, East Sheen and Ham. Even where grazing is possible, there is concern about the disturbance to wildlife and grazing animals from uncontrolled dogs as well as the increased footfall which interest in the animals would bring, thus requiring constant supervision.
c. Mowing is the most suitable alternative to grazing for larger 'un-grazeable' open spaces. In addition, minor, controlled fires have also been effective in halting succession on many sites, but this is unlikely to be practical within the borough. For areas where

mechanical mowing is the next best alternative to grazing, it is crucial for cutting regimes to be carefully worked out, otherwise much damage can be done, especially to a site's invertebrate interest. Ideally cutting should be phased in a checker board pattern, maintaining different heights of sward – and allowing small mammals to escape. However, many areas are inaccessible or unsuitable for tractor mowing, due to obstacles such as uneven ground, ant-hills or tree stumps. In these situations, cutting should be by hand or reciprocating scythe or strimmer, or by topping hay cut on larger meadows, which should reduce damage to invertebrates. Necessary removal of the cuttings, to help reduce nutrients in the soil, should be delayed briefly to allow insects time to safely evacuate the area after cutting, and before baling or other removal. Few mowing contractors are able to offer such a service and many managers do not have access to appropriate machinery. Barnes Common has demonstrated how the use of two-wheel tractors with reciprocating blade scythes, augmented by a compact tractor with topper, hay bob and small baler can allow an effective mowing regime for smaller sites.

However, recent research on ant-hills suggests that areas with undisturbed ant-hills benefit from minimal intervention, limiting work as far as possible to manual scything, raking and sapling removal, and only when necessary.

d. Timing is a further issue: the window between when the grassland is needed to support invertebrate populations (and higher order species), and when it is too late to mow and remove is tight – typically within September.
e. A lack of resources can lead directly to passive neglect, allowing bracken to dominate, scrub and woodland to develop and invasive plants to establish themselves. Programmes in the last decade at some of the key sites, such as Barnes Common, have shown how this can be reversed, with bracken and scrub reduced, woodland borders pushed back and invasive plants brought under control. Bracken and scrub control have been shown to be effective at several sites: costs need not be prohibitive and funding can be identified to support LAG habitat improvement such as this.
f. The lack of records and evidence supporting best practice for management of LAG reduces the case for priority in budget allocations and third-party funding applications.

Amenity and Sports Use

As stated in Section 3, the majority of the acid grassland within LBRuT is found either in public open spaces or within golf courses, where there are often heavy pressures on site managers to accommodate conflicting recreational demands. Acid grassland therefore continues to be lost through unsustainable management, such as irrigation, fertilisation, reseeding and even tree planting.

Recent years have seen a welcome upsurge in the number of visits to local open spaces and in recognition of their contribution to health and wellbeing. However, this also results in heavy pressure on these areas for popular leisure and recreational uses such as dog-walking, horse-riding, cycling and walking, all adding to wear and tear, as well as increased amounts of litter and dog excreta. There is also increased pressure to use open sites for commercial enterprises such as professional dog walking, forest schooling, organised games (survival games, parties etc), often on the grounds of employment creation or education, but without regard to the impact such activities can have on sensitive habitats such as LAG and the capacity of the site to absorb higher footfall. The thoughtless fly-tipping of green garden waste adds further to

increased nutrient levels and the introduction of non-native species that can threaten LAG habitat.

The risk of fires, whether started by accident or deliberately, is another hazard within public sites. This can result in direct damage to habitat, or to managers keeping their grasslands mown too short and regularly to benefit wildlife. Against this there is increasing public recognition that there are benefits to wildlife in leaving areas unmown – such as in cemeteries where cutting may be delayed to a single cut late summer/early autumn or in border strips around amenity areas.

Other concerns

a. Often, the roads, cycle tracks and footpaths that run through the open spaces on which most of LBRuT acid grasslands are found are also considered vital routes for through traffic. Therefore, 'best practice' management plans to address that the consequent degradation must be tempered to accommodate the wider regional transportation and local amenity concerns.
   Where roads or paths are resurfaced, particular attention needs to be paid to the materials imported. There have been instances of calcareous path materials having a measurable impact on the soil composition as much as ten metres from the pathway, due to water run-off and dust particles. The latest Public Spaces Protection Orders (PSPO's) for LBRuT have removed restrictions on bicycles. Special measures may be needed if this results in undue wear and tear on sensitive nature conservation sites, which would include all LAG sites.
b. Nutrient enrichment by atmospheric pollution is causing increasing concern, but beyond the control of most site managers. Vehicle emissions are an insidious agent of change within plant communities. This may be partially addressed in areas such as Richmond Park, but are beyond control in most other areas of Richmond. Salt applied to roads in winter can be damaging to vegetation on verges, while all the LBRuT sites are below the Heathrow flight path and thus exposed to enhanced pollution levels from air traffic. It may seem logical that decades of smoke-free environment and the resulting reduction in acid rain may have actually reduced the acidity balance of the soil. However, at the time of writing, there appears to be very few long-term UK monitoring studies of soil acidification and none of soil biota (http://www.air-quality.org.uk/16.php). The effect of recent measures to control vehicle emissions will be of considerable interest to several key LAG sites in Richmond.
c. Nutrient enrichment by dogs remains a significant concern, with increasing numbers of people owning dogs, which need to be exercised. A further concern is the veterinary chemicals and pharmaceuticals introduced by dogs and through animal husbandry. Introduction of walks which help keep animals away from the more sensitive areas can help – ideally with 'sacrificial' areas where dogs are initially let off leads and most likely to urinate (now a bigger problem than dog mess, which is increasingly bagged and removed by responsible dog owners).
d. There is constant pressure on open unprotected sites for development purposes, and even protected sites are impacted through increasingly dense development at their fringes. This can lead to increased fragmentation, habitat degradation and lack of 'corridors' for wildlife. Further concerns at present include the possibility of golf courses or properties with large lawns ceasing to be viable and/or becoming available for sale or development, more intensive development adjacent to ecologically sensitive sites, the

associated impacts on connectivity corridors, and the impact of inconsiderate lighting on nocturnal species. This includes, but is not limited to, bats.

e. Of particular concern is the connectivity of the 'Ham Circle' of sites with LAG (including Ham Lands, Ham Common Woods and Petersham Lodge Woods) with records of similar invertebrate populations, which in turn support higher life forms. These populations far exceed the levels which would be expected of such sites if they stand alone. Consequently, these are considered to be relic populations from when the whole area was less built up, and probably only survive by virtue of the connectivity between sites as at 2018.

Current status and action

Legal status

Protected sites: Many of the areas of acid grassland within LBRuT enjoy some level of recognition and protection. Richmond Park is a Site of Special Scientific Interest (SSSI) and a National Nature Reserve (NNR). It is a Grade 1 Heritage Landscape and Special Area of Conservation (SAC). Bushy Park was granted SSSI status in 2014. Within Hampton Court Palace, Home Park is an SSSI, a Metropolitan Site of Importance for Nature Conservation (SINC) and a Grade 1 Listed Park. The Royal Botanic Gardens at Kew is a UNESCO World Heritage Site. Barnes Common is Metropolitan Open Land (MOL) and a Local Nature Reserve (LNR). Many of the other areas in which significant acid grasslands are to be found within the borough have Metropolitan SINC status.

Protected species: Identified protected species associated with the habitat in LBRuT are primarily the rare invertebrates, several of which are listed in the British Red Data Book (RDB). Examples include *Andrena florea*, the bryony mining bee; *Philanthus triangulum,* the bee wolf wasp; and the digger wasps *Diodontus insidiosus* and *Cerceris quinquefasciata*.

Mechanisms targeting the habitat

Note: The following management and restoration actions are ongoing. They need to be supported and continued, in addition to the actions listed under Section 7.

a. Scrub management: Arguably the single most effective action that can be taken for LAG is the management of scrub and bracken, either within or adjacent to the LAG area. This allows the quality of the sward to increase, and in most cases will extend coverage as well as quality. The methods used for scrub and bracken control will inevitably vary by site, depending on equipment, manpower and funding available, but may include regular and repeated cutting, mattocking or scraping out root (bramble in smaller areas), spraying (by licensed operators), rolling (bracken) or even the temporary permitting of regular outdoor learning groups (positive wear and tear). The effectiveness of any programme is also highly dependent on the timing of its implementation and the understanding of requirements/skills of those implementing the programme.
b. Advice and Guidance: it would be of great benefit to all sites if those able to graze or achieve high standards of mowing might share best practice and also offer assistance to other managers, with possible scope for identifying contractors able to offer the specialised services required.
c. Enhancement: the best natural enhancement will come from the spread of ant colonies within the site, as they are the natural architects of LAG. Where soil has clearly become over-enriched and typically is deeper than 10cm, it may be beneficial to scrape to release the seedbank in the lower layers of soil. Natural regeneration should be

supported wherever possible, but restoration of some sites may require judicious seeding with appropriate species and from known UK sources, as far as possible from local sites.

It should be recognised that many of the actions taken to control scrub and bracken may not eliminate these, but will result in enhancement, as the thinning or less vigorous growth of the scrub or bracken may allow better growth by grasses and other species. Control programmes must allow for repeat or additional actions in at least two subsequent years, and from time to time thereafter.
Care should also be taken to ensure that any materials brought on site, such as for path making, will not cause damage to the balance of the soil or risk introducing alien species.

d. Education and Understanding: alongside the practical steps outlined above, raising awareness and improving knowledge and understanding of LAG within the wider community is vital. To this end, the actions are suggested with regard to both physical conservation and engagement across as wide a cross-section of the public as possible. In this way, it is hoped that everyone using LAG habitats, including dog walkers, will have greater understanding and respect with regard to the impact of our actions, including addressing all forms of eutrophication and supporting moves to reduce vehicle emissions. It is also hoped that there will be more opportunities to share best practices across different sites locally and regionally by providing occasions for sharing knowledge and networking among managers.
e. Montitoring and Evaluation: alongside the botanical and overall condition assessment of the LAG, it is noted that LAG is also monitored by many different researchers and interest groups, professional, academic, and citizen scientists, as well as university students, schools, and individuals. The gathering of data and understanding from all of this activity is a measure of the importance of the habitat, covering as it does such species as badgers, hedgehogs, reptiles, amphibians, bats, birds, butterflies, dragon/damselflies , small mammals, aculeate hymenoptera and other invertebrates, as well as mosses, lichens and fungi. Whilst no action targets have been set relating to this activity, some of which is covered within species action plans, it would be worth the working group at least noting what monitoring and evaluation is being conducted across the various sites, not least as this might be an important consideration in bids for funding.

Flagship species

Some characteristic flora and fauna of acid grassland in LBRuT:

Harebell	*Campanula rotundifolia*	This 'bluebell of Scotland' is a welcome addition to dry grassland swards late into the summer. It is present in small numbers in Richmond Park, but has not been observed on Barnes Common for over two decades
Sheep's sorrel	*Rumex acetosella*	A member of the dock family, its blood-red leaves characterise acid grassland and have been eaten as a wild salad plant in the past. This is a common first-generation species in lowland scrapes before grasses establish.
Heath bedstraw	*Galium saxatile*	A sprawling plant, often found on the tops of anthills. In flower it has a foam-like appearance, and was traditionally used to stuff pillows and mattresses. A chemical property may have repelled bed bugs and other parasites.
Wavy hair-grass	*Deschampsia flexuosa*	An attractive grass with a silvery-red inflorescence, it is typical of several fine grasses found in this habitat.
Small copper butterfly	*Lycaena phleas*	The metallic orange of this tiny butterfly's forewing provides its common name. A common larval foodplant is sheep's sorrel.
Green woodpecker	*Picus viridis*	Frequently seen on the ground in acid grassland. Ants are a favoured food, enticing the bird from its more usual haunts amongst parkland trees and woodland. Local Name: yaffle.
Yellow meadow ant	*Lasius flavus*	An ecological engineer, affecting the patterns and survival of many other species. E.g. areas of Richmond Park where harebell, sheep's sorrel and heath bedstraw occur only on ant-hills. A paper in Bird Study (Alder & Marsden, 2010) suggests patterns of green woodpeckers in the countryside are correlated with the presence of ant-hills. A further two recent papers from Germany (Streitberger & Fartmann 2015, Streitberger & Fartmann 2016) names two species that, whilst not likely to be found in the Richmond area, do offer further insight into ant-hill ecology, highlighting that ant-hills are at the basis of the ecology of many other species, although this has only recently been realised.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for lowland acid grassland The targets broadly fall within three categories: extend coverage, improve quality and improve knowledge and understanding.			
Target	**Target Date**	**Lead**	**Other Partners**
AGH 01 - Maintain a list of all sites within the borough with known areas of LAG and identify key contact for liaison. Where possible provide reference or link to relevant section(s) of management plan.	Q4/2025	Working group	Identifed significant sites within RBP See Appendix
AGH 02 – Identify, for each site, management's estimated LAG coverage, and current management priorities; identify where more detailed surveying would be advantageous, subject to funding.	End 2025	Working Group	Identified site contacts
AGH 03 – Identify how quality is assessed for each site and the indicators/methodology used. For example; fine grasses; indicator flowering species; ants and other indicator invertebrates; bare patches; stability; negative indicators (coarse grasses, plants, encroaching scrub, bracken, encroaching woodland, invasives); frequency of survey (seasonality).	End 2025	Working Group	Identified site contacts
AGH04 – Investigate if a single methodology can be adopted or differences between methods can be calibrated into a common understanding, possibly linked to status for BNG purposes.	End 2026	Working Group	
AGH05 – Review coverage and quality at 2-yearly intervals to establish if gains have been made or if sites are degrading; consider if reasons can be identified (e.g. competing habitat biodiversity priorities, lack of funding, public behaviour etc.); note and disseminate lessons learned (positive and negative) that might help guide future management.	Baseline then 2 yearly	Working Group	Identified Site contacts
AGH06 – Resist loss of LAG to hard surfacing (e.g. surfaced paths) or development and encourage connectivity. List known sites with GiGL so these can be noted within PEAs and other environmental assessments. Where loss is unavoidable, ensure compensation is sufficient for, and is spent on, creation or enhancement of LAG and its management, plus monitoring and evaluation to achieve biodiversity net gain of at least 10% and maintain this over 30 years.	ongoing	Working group	LBRuT

Where planning applications could impact LAG, ensure PEAs and other environmental assessments cover the habitat and that appropriate materials are specified for paths or other features.			
AGH07 – Review Local Plan to see if LAG needs are reflected and prepare the case that can be made to boost LAG as opportunity arises, especially in terms of increasing and resisting even minor loss of connectivity.	When Local Plan issued	BCL	LBRuT (Parks) (Planning)
AGH08 – Check HAP tracker updated by all sites at least once a year	ongoing	WG	Identified site contacts
AGH09 – Hold one site visit meeting per year for managers and volunteers to share best practice, network and celebrate, rotating between sites.	Ongoing	BCL	Working Group
AGH10 – Identify opportunities for improvements (extent and/or condition) that might be developed so that projects are 'shovel ready' for funding opportunities, even if immediate funding is not available, either within individual sites or collectively across the borough (e.g. corridors of green infrastructure) if this might have more appeal.	Ongoing	Working Group	H&H
AGH11 – Research: Build collaboration with other organisations and links with (local) universities and students to promote research opportunities linked to LAG. Identify if there are suitable topics for postgraduate study (such as under AGH 04, linked also to AGH 03 and 02) and commission, if funding available. Identify opportunities for citizen science (species surveys etc.).	Ongoing	Working Group	Education officers within relevant organisations
AGH12 - Raise awareness of LAG as a priority habitat in an urban context with local schools, community groups. Identify if/how LAG and related species can be embedded within curriculum at primary and/or secondary level and how to reduce/prevent damage to the habitat.	Ongoing	Working Group	Education Officers within relevant sites
AGH13 – – Identify challenges to and opportunities for LAG presented by Climate Change.	On-going	Working Group	LBRuT Climate Change Team
AGH14 – Identify adverse impacts on LAG from visitors or other causes (such as dogs, eutrophication, invasives, green waste etc.), and encourage responsible behaviours, sharing lessons learned between sites.	On-going	Working Group	
AGH15 – If opportunity arises in either Royal Parks or Vine Road Project to introduce one or more green roofs then promote experimental use of acid grassland and monitor results as a case study for wider application.	2025/6	BCL	Working Group LBRuT
AGH 16 – Develop virtual library on LAG with database on research and publications providing	0ngoing	BCL/WG	All

insight into LAG, drawing on links with researchers and universities working in related fields.			
AGH 17 – Translate Previous print/DVD information/education pack of materials into electronic format and make available to RBG	mid 2025	BCL	
AGH 18 - Create an Information Centre for LAG within the borough and nationally within the Master Plan proposals for Vine Road, offering support for research, lifelong (formal and informal) learning and community engagement linked to LAG on Barnes Common, in the Royal Parks and elsewhere in the borough.	Planning Dec'n likely 2026	BCL	LBRuT
AGH 19 – Working Group to meet at least twice a year - once a year in person (at event under AGH 09) and at other times remotely, unless there is a complex issue for discussion which will be more effective in person.	Ongoing	Lead	H&H

Relevant action plans

Local Species Action Plans

Bats, Song Thrush.

London Habitat Action Plans

Acid Grassland, Woodland, Heathland. Other plans that may make reference to LAG: Wasteland; Churchyard and Cemeteries; Parks, Amenity Grasslands & City Squares; Open Landscapes with Ancient/Old Trees; Rail Line-sides, Reptiles; Humble Bumble.

National Species and Habitat Plans

Lowland Heathland, Lowland Dry Acid Grassland, Purple moor-grass and rush pasture, Skylark, Hornet robber-fly (*Asilus crabroniformis),* Long-tongued bumble-bee (*Bombus humilis)*.

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Acknowledgements

This Habitat Action Plan was updated in 2024 by a Working Group led by Barnes Common Limited (Mike Hildesley), working in collaboration with TRP (Sarah Ive), RBG Kew (Ruth Brookes) and H&H (Paul Jennings, Charlotte Harris) with insights from other members of the RBP. Earlier contributions reflected in this HAP were gratefully received from Dr Nigel Reeve, Dr Tim King, Charlotte Williams and Julia Balfour from the Royal Parks, and Natalie Dale-Skey at the Natural History Museum. Further comment and feedback is very welcome.

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Appendix – significant LAG sites and contacts

- Richmond Park – Sarah Ive
- Bushy Park – Sarah Ive
- Home Park – Nicholas Garbutt
- Barnes Common – Mike Hildesley / Will Dartnell
- Ham Common – Tasha Hunter
- Royal Mid-Surrey Golf Course – Claire Silva
- Richmond Golf Course – Roehampton – (RP liaison:)
- East Sheen Common - Tasha Hunter
- Hampton Heath Friends - Art Gelling
- Fulwell Golf Course – Peter Hall
- NPL – Peter Woolliams

Other Relevant Contacts

- Paul Losse, Salix
- John Salisbury LBRuT

3.7 Neutral grassland habitat action plan for Richmond

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Aims

1) To map the location of neutral grasslands, including lowland meadow habitat, within the London Borough of Richmond upon Thames (LBRuT).
2) To identify neutral grasslands within LBRuT with the potential for restoration to species-rich grassland.
3) To identify neutral grasslands in positive management within the borough
4) To ensure the protection and optimal management of neutral grasslands within LBRuT.

Introduction

Found on neutral, mainly clay or loam soils, neutral grasslands and lowland meadows can be rich wildlife habitat and are treasured components of our pastoral and historical landscapes. A wide-ranging approach is adopted in this plan to grasslands treated as neutral grasslands. The designation of "neutral grassland" in this HAP includes most forms of semi-improved and unimproved neutral grassland (lowland meadows and 'other neutral grasslands' in the UK Habitat Classification) but excludes very species-poor improved and amenity grasslands (Modified Grassland in the UK Habitat Classification) . In LBRuT this grassland is cut rather than grazed (except for deer grazing within The Royal Parks and Home Park). With little or no improvement by fertilisers, neutral grasslands may be cut for hay in late June to early July after the summer profusion of colourful flowers. The flowering plants set seed before the hay is cut and, traditionally, the meadow is grazed in autumn.

Semi-improved grasslands are moderately species-rich with typically 8-15 species per metre squared. Typical species include autumn hawkbit, black medick, cuckoo flower, bulbous buttercup, common cat's-ear, common sorrel, germander speedwell, lesser trefoil, ribwort plantain, meadow buttercup, red clover, selfheal and yarrow.

Lowland meadows are characterised by a higher number of herbs and grasses – they can frequently boast up to 30 grasses and 100 or more wildflower species. Grasses include sweet vernal-grass, crested dog's-tail and red fescue, while flowers include common knapweed, bird's-foot trefoil, lady's bedstraw, meadow vetchling, ox-eye daisy, rough hawkbit and yellow rattle.

Bees and butterflies, such as meadow brown and common blue are among the hundreds of insects which probe the grassland flowers for nectar. In turn, these attract bats and many declining farmland birds, including skylark, whose numbers have more than halved over the last 25 years.

Current status

Semi-improved grassland or 'other neutral grassland in the UK Habitat Classification are grasslands are found on a wide range of soil types and conditions, often derived from more species-rich grassland following agricultural improvement. They are fairly ubiquitous across the UK.

Lowland meadow, however, is a "habitat of principal importance" in England. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. The habitat is listed in section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006. The purpose of the section 41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions

Lowland meadow grasslands have undergone a remarkable decline in the 20th century, almost entirely due to changing agricultural practice. It is estimated that by 1984 in lowland England and Wales, semi-natural grassland had declined by 97% over the previous 50 years to approximately 0.2 million hectares.

Lowland meadow habitat is very rare within LBRuT and is currently only known to exist at two sites: Brewhouse Meadows in Bushy Park and an area of the London Wetland Centre. However there are a large number of semi-improved grassland ('other neutral grassland) sites that, with some restoration and appropriate management, have the potential to be restored to more species rich grassland.

Specific factors affecting the habitat

A key feature of lowland meadows and the more species-rich semi-improved grasslands is that they are found on neutral soils with low nutrient inputs. Any nutrient enrichment such as historic addition of fertilizer, dog fouling or atmospheric nitrogen deposition will affect species richness and the grassland is more likely to be dominated by a few competitive species. Any previous ploughing, reseeding or application of herbicides will also have an impact on grassland condition.

To ensure long-term value, neutral grasslands must be maintained, as, without maintenance, natural succession results in a shift towards a sward dominated by coarse grasses and eventually results in succession to scrub and woodland. Management prevents change to a species-poor sward dominated by coarse grasses and arrests succession to woodland.

Without regular management, studies have shown that most grassland flowers disappear rapidly. Even if the grass is left uncut for a single year, coarser vegetation will start to become more dominant.

Plants need to complete their full life cycle each year – i.e. allowed to grow, flower and set seed – in order to thrive. Generally, most flowers take roughly six to eight weeks from flowering to successfully shedding viable seed. Cutting plants down in full flower deprives invertebrates of nectar and pollen and stops plants reproducing from seed. Regular and early cutting quickly eliminates some species, such as yellow rattle, which can even help keep grasses under control. Through its semi parasitic nature yellow rattle weaken course grasses creating space for other more delicate wildflowers.

Removal of grass clippings plays a major role in maintaining species-rich vegetation, curbing the growth of vigorous plants that smother their neighbours and helping to reduce soil nutrient levels. It also removes the 'thatch' of dead vegetation, exposing underlying soil and giving seeds room to germinate. However, overly intensive management can be damaging. All-year-round mowing or mowing too often can inhibit flowering, reducing the species richness of the sward.

Other concerns

Roads, cycle tracks and footpaths through the open spaces on which most of LBRuT neutral grasslands are found are often regarded as vital routes for through traffic, and 'best practice' management plans to address the consequent degradation have to be tempered to accommodate the wider regional transportation and local amenity concerns.

There is constant pressure on open unprotected sites for development purposes, and even protected sites may suffer from increasingly dense development at their fringes, leading to increased fragmentation and habitat degradation.

Current status

Legal status

Existing areas of lowland meadow as well as potential sites within LBRuT enjoy some level of recognition and protection: Bushy Park and The London Wetland Centre are both Sites of Special Scientific Interest (SSSI) and Sites of Metropolitan Importance for Nature Conservation. A number of the other sites supporting species-rich neutral grassland including Ham Lands, Oak Avenue Nature Reserve and Terrace Fields are also Sites of Importance for Nature Conservation and receive some protection through the Local Plan.

Neutral grassland in LBRuT

Habitat audit

An audit will be required in order to

a) Identify existing neutral grasslands within the borough.

b) Assess the value of these grasslands.

c) Identify those grasslands in positive nature conservation management

d) Identify and map grasslands requiring management intervention

Habitat restoration

Options for habitat restoration include optimising management or full scale restoration involving soil preparation and re-seeding.

Characteristics of soil suitable for grassland restoration are shown below:

Parameter	Level
Topsoil depth	200–300 mm
Drainage	Slow
pH	Acid to slightly acid (pH 5.5–6.5)
Available phosphorus[a]	25 mg l^{-1}
Organic matter[b]	4%
Total nitrogen[b]	0.2%

[a] Acceptable upper limit. A level of available phosphorus of less than 10 mg kg-1 is ideal to maximise floristic diversity within unimproved, semi-natural grassland communities (Marrs and Gough, 1989). While values of 11 to 25 mg kg-1 have potential, expect reduced floral diversity and increased risk of competition from rank and pioneer species.

[b] Acceptable lower limit.

Natural colonisation of bare substrates may be suitable where long establishment time frames are acceptable. While this option is preferable as plants establishing will be from local genetic stock adapted to soils and local conditions, it is only suitable if neutral grasslands are adjacent. Natural colonisation tends to be a very slow process as it requires the habitat to expand in from these local areas and bare ground will remain during this time that will be prone to colonisation by rank plant species. These will need to be controlled if they become dominant and limit the natural colonisation process. Natural colonisation can be accelerated through the selective introduction of grassland species via seeding or green-hay strewing.

Seeding can be undertaken using seed collected from a local donor site, subject to obtaining the permission of the landowner or tenant. Care must be taken not to deplete the donor site of seed by over-harvesting. When ripe, seeds should be collected and stored in airtight containers in a dark place at a temperature of between 2 and 5°C until required. Alternatively, a seed mix may be bought. A reputable seed house will be able to supply a mix suited to the climate and principal soil conditions of the site. Local provenance should be preferred, where available. Seed is normally sown in September or October, either by hand or using agricultural machinery such as slot seeders and seed drills, which maximise the area sown for the amount of seed used (Crofts and Jefferson, 1999). If sowing by hand, mix with damp sand to help ensure the seed is evenly distributed and lightly roll or tread the soil surface. Raking should be avoided as it can concentrate seed distribution or bury the seed too deep. If there is a prolonged dry period, the seeded area may be lightly watered. Birds and other seed predators should be kept off the land as much as possible.

Green-hay strewing can also be effective. This involves taking freshly cut hay from a local grassland which will contain seeds, and spreading this over the site to be colonised. Identify a suitable local donor site and ensure the hay is cut after flowering but while the seeds are still attached. At the donor site, keep hay turning to a minimum and collect and spread (strew) at the receptor site as soon as possible after cutting to minimise seed losses. The hay should be removed from the receptor site after a few weeks once the seed has dropped. Using a local source means that a closer match can be made between the new and existing grasslands.

Biosecurity (the objective of reducing the transmission of pests and diseases) is important and good working practice should be observed when using the green-hay strewing or seeding

techniques to minimise the risk of transporting harmful organisms between sites. For example, clean and disinfect tools and boots before leaving donor and regeneration sites.

Habitat management

If only one cut is possible, due to financial constraints the grassland should be cut once a year, between mid-July and the end of September. This allows plants to flower and, importantly, gives time for seed to be set.

Cutting the grassland in mid-July, at the end of September and once more before Christmas is the ideal option to conserve and enhance wild flowers, as it mimics the pattern of traditional meadow management.

Even where the creation works take place in a very suitable location, evaluation of the management practices is required to get the right mix for establishment and long-term success. A site-specific long-term management plan is required. This should include a monitoring and evaluation programme that will enable the management regime to be adapted as necessary. The JNCC (2004) reports that monitoring of lowland grassland habitats should include:

- Extent of the grassland establishment: % ground cover, bald patches and presence of leaf litter.
- Sward composition: grass to herb ratio, positive indicator species, negative indicator species, species with local distinctiveness.

Flagship species

These special plants and animals are characteristic of neutral grasslands in LBRuT.

Flora	**Fauna**
Bugle	Meadow brown
Autumn hawkbit	Common blue butterfly
Birds-foot-trefoil	Green woodpecker
Common knapweed	Goldfinch
Goat's beard	Grass snake
Ox-eye daisy	Slow worm
Yellow rattle	
Lady's bedstraw	
Rough hawkbit	

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for neutral grassland			
Target	**Target Date**	**Lead**	**Other Partners**
NG 01 – Draw up a list and map the location of all significant sites supporting neutral grassland	End of 2024	working group	LA/HRP/TRP
NG 02 – Identify sites under positive nature conservation management	End of March 2025	working group	H&H / LA
NG 03 – Assess the relative value of each site using existing data	End of 2025	working group	H&H / LA
NG 04 – Contract out development of management plans for selected sites	End of 2025	working group	LA
NG 05 – Monitor selected sites with trained surveyors	End of 2026	Surveyors/working group	Working group, H&H, LA
NG 06 – produce report of all surveyed sites and disseminate to all interested parties	Annually from 2026	working group	H&H, LA

Relevant action plans

Local Plans

Lowland Acid Grassland

National Plans

Lowland Meadow

Key references and sources of further information

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3.8 Rivers and streams habitat action plan for Richmond

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Aims

1) To improve the ecological value of rivers and streams in London Borough of Richmond upon Thames (LBRuT).
2) To increase public knowledge and appreciation of the value of rivers and streams in LBRuT.

Introduction

This plan considers the habitats provided by the rivers and streams (other than the River Thames) within LBRuT. The relevant rivers and streams include:

- Beverley Brook
- Lower Duke of Northumberland's River
- Longford River
- Portlane Brook
- River Crane
- Whitton Brook (also known as Birkett's Brook)

These rivers and streams are all direct tributaries of the River Thames, apart from the Whitton Brook, which flows into the Crane.

Two of the rivers, the Lower Duke's and Longford, are artificial, having been originally constructed to convey water to Syon House in the 16th Century, and Hampton Court in the 17th

Century, respectively. Consequently these two rivers do not have drainage catchments feeding them.

There are, within the Borough, a number of other small streams that are not currently well known or appreciated. One objective will be to identify these and see if they can be improved. One example is Cross Deep, an old stream that had been a feature of Horace Walpole's house at Strawberry Hill and, although it has since been culverted at this location, it still appears above ground through Strawberry Hill golf course.

The habitats associated with rivers and streams include the river channel and margins, along with any green corridor through which the river or stream flows. Rivers and streams are particularly important in urban environments such as LBRuT because of their linear undeveloped character, providing wildlife corridors through the borough that can also link other larger habitat areas together.

Rivers and streams support a variety of related habitats in the borough in addition to reedbeds – such as marginal wetlands, wet meadows and wet woodlands for example – and these are included within the scope of this plan.

All of the borough's rivers and streams flow into and/or out of other London boroughs – principally LB Hounslow and LB Wandsworth. The habitat values are, as a consequence, closely linked to the habitat value in these other boroughs.

Current status

The River Crane catchment includes the lower Duke of Northumberland's River, which is an artificial channel flowing from the Crane in Twickenham to the Thames in Isleworth, and the Whitton Brook, which is a small tributary rising in Whitton and joining the Crane in St Margarets.

The River Crane rises 20 km to the north of the borough in LB Harrow and flows through the boroughs of Ealing, Hillingdon and Hounslow before entering LBRuT in Crane Park. The river creates a 6km green corridor through the borough before flowing into the Thames in the LB Hounslow at Isleworth. The final kilometre of the river is connected to the Thames and tidally influenced, providing a significant area of freshwater creek habitat for the Tidal Thames. Most of the River Crane corridor is designated as a Metropolitan Site of Importance for Nature Conservation.

The Lower Duke of Northumberland's River, although an artificial channel, has considerable environmental value and is designated as a Borough level SINC. It flows for around 2km through LBRuT before going through LB Hounslow and into the Thames in Isleworth.

The Longford River is another artificial channel, constructed to bring water to Hampton Court. It brings water from the River Colne, around 10 km to the north west, to feed the channels, streams, lakes, ponds and fountains of Bushy Park, Hampton Court and Home Park, and is included as an intrinsic part of the Bushy Park and Home Park SSSI.

The Portlane Brook is a small stream with tributaries in Spelthorne and Feltham, which passes through several Thames Water sites including Kempton Nature Reserve – combined as a SSSI, European SPA and International Ramsar site. Once it enters Richmond, south of the Shepperton railway line, it forms the western boundary of the borough, and of the Greater London area. It joins the Thames to the west of the Hampton reservoirs, at Grand Junction Island.

The Beverley Brook is the only significant surface watercourse on the southern side of the River Thames within the borough. It rises near Stoneleigh in LB Sutton and flows through the boroughs of Kingston and Merton before entering the borough in Richmond Park, where it is a key part of this SSSI. The river flows for around 6km through LBRuT, continuing through Palewell Common and Barnes Common, before entering the Thames to the north of Putney in LB Wandsworth. The lower part of the river is tidally influenced, due to tidal flaps at the base of the river closing during high tides.

These are urban rivers and subject to associated river engineering, water pollution and encroaching development risks. Nevertheless, they are also considerable environmental assets for the borough, sometimes overlooked compared to the Thames and yet with their own distinct environmental value. They are important fisheries, containing large numbers of coarse fish as well as eels, recently re-introduced to the Crane, Beverley Brook and Longford River via new eel passes from the River Thames.

Water voles were present historically on the Crane, Longford and Duke of Northumberland's Rivers and have been re-introduced on the Crane in 2024. All the river corridors provide essential movement and feeding routes for bats and kingfishers. Other riverside species of interest include: water shrew; harvest mouse; reed warbler; water rail; little grebe; water crowfoot; sand martin; Daubenton's bat and the ruddy darter dragonfly.

Specific factors affecting the habitats

Pollution is a significant factor in all these rivers and streams. There are ongoing chronic pollution problems, with causes such as:

- consented outflows from sewage treatment works Affecting both the Crane and Beverley Brook through their connections with the Colne and Hogsmill catchment respectively)
- "misconnections", where waste water from domestic (and other) properties is connected into the surface water drainage system;
- polluted run-off from roads;
- small scale illegal discharges into surface drains

In addition there is a constant risk to all of these rivers from major pollution incidents, caused by failures of the sewerage system and major transport incidents for example. Pollution impacts may be from within LBRuT and can also flow into the borough from upstream parts of the catchment.

The rivers are vulnerable to low flows during periods of drought, and flood impacts following periods of heavy rain. Droughts can result in rivers such as the Lower Crane drying completely, and all rivers become increasingly vulnerable to oxygen depletion and fish kills following an extended period of warm and dry weather. Flood flows can result in the flushing out of fish from the river system, particularly where there are no backwater refuge areas. The severity of both these impacts is increasing in response to both climate change and an increased amount of impermeable cover (e.g. roofs, concrete, and tarmac) within the surrounding and upstream drainage catchment.

River engineering, particularly in the middle part of the last century, has resulted in large parts of the natural river being divorced from any marginal or flood plain habitat, in concrete or wooden toe boarded river channels, often straightened, overly deep and/or overly wide. The two artificial

channels (Longford and Duke's River) are also largely devoid of marginal habitat, although in places this has developed subsequent to their construction.

Barriers, such as weirs and sluice structures, create restrictions to the migration of fish within the rivers, and between the rivers and the Thames.

In many places the river margins are not managed to optimise the river or marginal habitat. Over-shading with trees and bushes for example can lead to dark river corridors where little or no in-stream or marginal flora is able to develop.

Dark night-time corridors, with little or no artificial light penetration, are essential foraging habitat for bats. In many places these corridors are (or are at risk of) being compromised by the use of security and amenity lighting from adjacent developments.

River corridors can be conduits for the spread of invasive species. There are major problems with the invasion of Himalayan balsam, giant hogweed, crassula, floating pennywort, and Japanese knotweed along river corridors within the borough. There are also problems and risks associated with Chinese mitten crabs, American signal crayfish, Asiatic clams and mink for example.

Much of the open space habitat within the borough is associated with river corridors, and has some level of development protection allocated to it such as Metropolitan Open Land or higher. At present this should mean it is protected from development. Nevertheless, there are prime development sites adjacent to the rivers and streams in the borough – where a pre-existing moribund site may be scheduled for re-development or a new and larger scheme is proposed. There may be opportunities for river improvement associated with these schemes, but also risks of further encroachment and light spill for example. Smaller infill developments can also fall into this category. Major development proposals in other boroughs can also impact on the value of the overall river corridor, with knock on effects within the borough.

Public access to river habitats in urban areas is generally to be encouraged. However, increased public access does also bring increased risks and pressures. Problems result from litter and pollution as well as disturbance of wildlife by people (and by their dogs). Measures have been introduced locally to mitigate these impacts – local Friends groups organise litter clear ups and encourage pro-social litter removal by the wider community; wildlife friendly areas are designated and/or created informally in some parts of the river corridor where access by people and dogs is discouraged elsewhere – often by the use of natural barriers supported by public information.

Current action

All of these rivers are included within catchment partnerships or other groupings, and these help to co-ordinate the management of the river corridor and support river improvement schemes. The Crane Valley Partnership (CVP) was formed in 2005 and includes LBRuT, GLA, Environment Agency, Heathrow Airport Ltd and Thames Water, as well as representatives from the four other boroughs in the catchment and many third sector organisations, including London Wildlife Trust and FORCE for example. CVP's catchment area includes the Lower Duke of Northumberland's River, Whitton Brook, Longford River and Portlane Brook as well as the River Crane – though until recently much of the focus has been upon the Crane itself. Crane Valley CIC was setup in 2021 as the new host for the Partnership.

The Beverley Brook Partnership includes LBRuT and each of the four other catchment boroughs. South East Rivers Trust is the host organisation.

The Thames Landscape Strategy (TLS) was launched in 1994 and covers the river between Weybridge and Kew, including much of the river within LBRuT. TLS is also the lead organisation for the Richmond Tidal Thames HAP.

Plans and activities for the Crane and Beverley Brook catchments are set out in their catchment plans and endorsed by the Environment Agency. All the borough's rivers are covered by the relevant parts of the GLA's All London Green Grid. These documents set out the current value of the rivers and streams in the borough as well as listing improvement projects proposed. Other projects are listed in the GLA's London River Restoration Strategy. Blue Ribbon policies by the GLA, endorsed and extended in the borough's Local Plan, provide a framework of policy and protections.

LBRuT's Local Plan includes policies for the protection and enhancement of river corridors as important wildlife features and local community assets. Any development local to these assets is expected to provide benefits to them. Works are being delivered on the ground by a wide variety of organisations, normally with the active engagement and endorsement of the Environment Agency as the permitting regulator.

ZSL has undertaken a number of projects to install eel and fish passes, linking these tributaries again to the Tidal Thames.

The Citizen Crane project started in 2014 and has pioneered the use of citizen scientists to monitor the ecological and chemical quality of the River Crane and, working alongside Thames Water and the Environment Agency, has overseen improvements in the chronic pollution loads coming into the river. Similar approaches are now being delivered in the Beverley Brook.

The Smarter Water Catchment (SWC) programme is a major programme of river and open space improvement works supported by Thames Water. The Crane Valley is one of three pilot catchments across the Thames region and the 10 year programme started in 2020. This has enabled a major step change in delivery of improvements across the catchment, both through SWC funding and as a catalyst for other funding schemes.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions.

Specific actions for rivers and streams			
Action	**Target Date**	**Lead**	**Other Partners**
RS01 – Set up a Rivers and Streams working group to liaise, identify key issues and share best practice. Ensure this group liaises effectively with other HAP and SAP groups such as Tidal Thames; Bats; Water Voles; Reedbeds. This was delivered in 2019 by having a joint working group together with these other groups.	Completed 2019	RS HAP Lead	LBRuT, WWT, FBC, RP, TLS, SERT, FORCE etc

RS02 – Provide an effective means to link the working group members with other activities and opportunities across London – such as River Partnerships in London; individual catchment partnerships; etc. Operates through six monthly formal meetings as well as more regular informal information sharing	Ongoing from 2019	Working Group	RiPL, CVP, BBP, EA, SERT, TLS etc
RS03 – Identify opportunities to incorporate protections and improvements to the rivers and their corridors through borough mechanisms such as the Local Plan; Village Plans; Vision Plans and CIL lists for example	Ongoing From 2019	LA and Working Group	
RS04 – Work with LBRuT planners and potential developers to identify and implement improvements to the river corridor that will ensure net environmental benefits are derived from any development. This will require early notification from potential developers and/or LA about any possible developments that may affect a river corridor**.**	Ongoing from 2019	LA, working group and developers	CVP and BBP
RS05 – Identify means to better support those rivers without co-ordinated support at present, particularly the Longford River (upstream of Bushy Park) and Portlane Brook**.** This may include more active inclusion within existing partnerships and/or the creation of new friends groups and/or partnerships. Target one improvement project on these rivers per annum.	Ongoing from 2021	Working Group	CVP and TLS
RS06 – Promote means to more effectively monitor and assess the value of the river system through mechanisms such as RMI monitoring; outfall safaris; Urban River Surveys and MORPH Surveys. Support the implementation of at least one per annum.	Ongoing From 2019	Working Group	CVP, BBP, EA, TW
RS07 – Target the implementation of two significant marginal habitat improvement projects per annum – each providing at least 50m of riverbank or marginal habitat improvement.	Annual from 2019	Working group	CVP, BBP, EA
RS08 – Investigate the potential to deliver large-scale river restoration in the Lower Crane catchment – incorporating an improved low flow regime. Target of delivering small scale improvements from 2019 with large scale potentially to follow.	Ongoing from 2019	FORCE, CVP, EA, LA	Working Group
RS09 – Target the removal or mitigation of one significant fish and/or eel migration barrier per annum.	Annual from 2019	Working group	CVP, BBP, EA, ZSL

RS10 – Evaluate the key issues regarding invasive species and target the removal or reduction of priority species in at least one river.	Annual from 2019	Working Group	CVP, BBP, EA, LA
RS11 – Target the distribution of public information on one significant benefit or concern related to rivers and streams each year – e.g. misconnections; hard standing; invasive species etc.	Annual from 2019	Working group	CVP, BBP, Citizen Crane group
RS12 – Work with LBRuT and others (such as the GLA and EA) to incorporate new and/or enhanced policy approaches to key concerns and opportunities such as river restorations; misconnections; hard standing; invasive species dark corridors etc – undertaking at least one per annum.	Ongoing	LA, Working Group, CVP and/or BBP	CVP and BBP
RS13 – Work with TW, LA and others (such as developers) to develop a biodiversity rich approach to SUDS schemes – implement one per annum from 2019	Ongoing from 2019	Working Group, TW, LBRuT	Developers, FORCE, BCL
RS14 – Work with LA, TfL and Highways England to better understand the impact of road run-off on the river ecosystem. Implement one remediation or improvement scheme per year from 2019.	Ongoing from 2019	Working Group, LBRuT, TfL, HE	FORCE, BCL
RS15 – In the absence of specific habitat plans for river floodplain habitats such as wet meadow and wet woodland; include these habitats in the Working Group discussions. Implement at least one habitat creation or improvement scheme per annum for these habitats.	Ongoing from 2019	Working Group	Other landowners and a range of partners

Relevant action plans

Local Plans

Tidal Thames, Reedbeds, Water Voles, Bats, Tower Mustard and Black Poplar. Dark corridors; ponds; and reptiles and amphibians – all since 2024

London Plans

The Tidal Thames, Rivers & Streams, Reedbeds.

Contact

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3.9 Tidal Thames habitat action plan for Richmond

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Aims

1. To form a Tidal Thames steering group of landowners and key stakeholders
2. To assess identified wildlife habitats and species of the Tidal Thames, to give us a baseline and identify areas of improvement – including updates to surveys more than 10 years old
3. To ensure no net loss of habitat diversity and ensure targeted net gain within the London Borough of Richmond upon Thames (LBRuT)
4. To ensure the improvement, regeneration and integration of Tidal Thames habitats
5. To contribute to strategic efforts to deliver biodiversity conservation targets for the Tidal Thames as a whole
6. To promote public education, appreciation and research of the Tidal (and non-tidal) Thames within LBRuT (with particular emphasis on unique value of the Freshwater Tidal habitat)
7. To obtain data mapping the riverbed (geomorphological) within LBRuT to identify opportunities for enhancement for fish and aquatic invertebrates
8. To obtain salinity and species data for the waterway
9. To improve connectivity between the Thames and its tributaries
10. To ensure communication between flood risk and diversity project planning.

Introduction

By the time the Thames reaches London it has flowed over 300 km from its source in the Cotswolds; it has however traditionally been known as “London’s River”, “the Royal River”, and “old Father Thames”. It has been a landscape of inspiration to the capital for two thousand years and the original meaning of the name ‘Thames’ tells us something about its character. The name is perhaps derived from the Celtic language root Tam, meaning ‘dark’ or more likely from a pre-Celtic root Ta meaning ‘melt, flow turbidly’.

The history of the river in LBRuT is no less important and is evident from finds of Stone Age tools on Eel Pie Island; flint implements and Celtic and Roman pottery on Ham lands. The river has been an inspiration to Alexander Pope and Turner. Its serpentine presence through the borough does much to define its life and character and is symbolised within several of the council’s logos. Between Hampton and Kew the Thames is known as the Arcadian Thames. LBRuT is unique among the London boroughs in extending both north and south of the River Thames.

The tidal limit of the Thames is within the borough, at Teddington Lock (although it is noted that this can be breached on extreme high tides), however it is considered freshwater with only a low salinity level at this distance from the sea (estimated at 3-5 parts per million). Freshwater Tidal is an internationally recognised important habitat. The western boundary of the Borough extends a further 12 km upstream on the north bank of the river. The London wide Tidal Thames HAP has selected the LBRuT boundary as its western limit as it also represents the western boundary of the Greater London Authority (GLA). This plan will also be extended to include the non-tidal reaches as one of its objectives.

The riverbanks within the Richmond Tidal Thames Habitat Action Plan (HAP) are:

Non-tidal

- The north bank upstream (12 km) of Teddington Lock, to the west end of Hampton Water Works – the interaction between tidal and non-tidal sections of the Thames are significant for species connectivity, migration, flow levels, and transmission of pollutants etc. The non-tidal sections of the Thames in LBRuT must be considered in management and project planning.

Tidal

- The north and south banks downstream (8 km) of Teddington Lock, to the confluence with the River Crane (the boundary with the London Borough of Hounslow)
- The south bank downstream (12 km) to the confluence with the Beverley Brook (the boundary with the London Borough of Wandsworth)
- The LBRuT boundary runs along the centre of the river except where it moves around islands. Some Islands, such as Taggs Island are included and others, such as Isleworth Ait excluded.

The lateral extent of the plan area includes:

- The riverbed and the 11 Thames islands within the borough (an updated Islands Management Plan is an objective of this HAP)

- The (short) tidal reaches of associated tributaries but excludes their main fluvial channels.
  (These will be included in a subsequent "Rivers and Streams HAP" for LBRuT)
- The banks, towpaths and other riverside pathways and associated flood channels, back channels and backlands. This includes rare marginal habitats of flooded forest and wet woodland.
- The floodplain. For example Petersham Meadows is within the current flood plain and Ham
  Lands, which may be returned to functioning floodplain as part of on-going projects like The Restoration of the Lost Floodplain and The River Thames Scheme.
- The LBRuT section of the river is part of the upper "freshwater zone" of the wider Tidal Thames, which stretches downstream through central London to the estuary, and coastal marshes of Essex and Kent.

Current on-going large scale projects that have relevance to the Tidal Thames include:

- The PLA Thames Vision and Master Plan
- Thames Water's Tideway Tunnel and ongoing management plans
- EA flood risk plans TE2100 and The River Thames Scheme Dachet to Teddington
- EA West London Communities Project (engagement programme for the intertidal flood zone)
- EA Catchment Management Plans
- Thames Marine Conservation Zone

Current status

Overview

The River is a valuable amenity to LBRuT residents and visitors and provides a mode of transport for some commercial and much seasonal leisure traffic, and is the setting for one of the western world's most significant historic and cultural landscapes; the Arcadian Thames. It receives much of our treated effluent and urban run-off whilst also providing a vital wildlife corridor for the migration of wildlife between urban parks and green space. Locally, these areas include; the London Wetland Centre in Barnes, Bushy and Home Parks, Ham Common and Lands, Marble Hill Park, Syon Park SSSI, Richmond Park SSSI and Kew Gardens World Heritage Site, Old Deer Park and Royal Mid Surrey Golf Course.

Ecologically the Thames today can be thought of as a recovering ecosystem. In 1957 it was considered almost biologically dead, whilst today its healthy fish stocks indicate its present status as a good quality urban water environment. It was recognised to be one of the cleanest rivers flowing through a European city in 2005. The main reason for this is the additional treatment of sewage effluent, before it is discharged to the tidal reaches, resulting from European and UK legislation. Over 100 species of fish are currently recorded in the wider Tidal Thames with reintroduced salmon running up-river beyond Teddington Lock in 1985 for the first time since the 1830's.

The tidal Thames is still far from being a natural ecosystem, with its controlled river course, little natural flood meadow and bank-side housing development. Its main ecological constraint is the hard engineering to stabilise the riverbanks, consisting of sheet piles, cobbled or concrete revetments. These both reduce the variability of the habitat and severely curtail the surface and

subterranean flood plain environment. A further impact is the Richmond Half Lock, which retains
an artificial high-water level over the bottom half of the tidal cycle in the river upstream. This benefits river navigation but reduces the upstream inter-tidal habitat. Benthic zone habitats are extended however, including several mussel habitats.

Although background water quality has improved, there remains the periodic outflow of untreated
effluent from combined sewer systems in response to high rainfall events, which result in reductions in water quality. Continued occasional major incidents should be expected without remedial action, particularly given an anticipated increase in rainfall extremes as predicted by 'climate change'. October 2004 saw such an event when a combination of sewer over-flows and antecedent dry weather conditions, resulted in a rapid lowering of dissolved oxygen in the river water and many thousands of fish were killed. Mogden STW was expanded in 2013. The additional capacity to hold storm water means there have been fewer discharges of sewage to the Thames but there is no additional space for expansion on site and current projections estimate the site has only a few years before additional capacity is needed to cope with increasing demand for sewage treatment.

If allowed to revert to the pre 2013 frequency of discharges – storm water discharges will severely impact water quality in this reach. Importantly, the River through LBRuT will not benefit directly from the Tideway Tunnel. There is also continued large-scale abstraction of fresh water for public water supply from above Teddington Lock. Although this is regulated by a variable minimum flow control at the lock, it still results in reduced freshwater inflows to the tidal reach throughout the year, and potential changes to river ecology during the low flow summer period.

There is potential here for working with Thames Water on sustainable drainage opportunities and public engagement on the relationship between urban drainage and the River. For example projects like *Connect-Right*, *Only Rain in Rivers* and *Unflushables* as well as sustainable drain and storage schemes.

Specific habitats

River channel

The river channel habitat is constrained artificially by its hard embankments, resulting in a greater depth and a faster water flow than if the channel was "natural". Although this is largely a tidal reach, the water quality is dominated by the inflow of freshwater from upstream. Marine salinity levels are understood to be low throughout the stretch, although may be elevated in extreme drought periods. Water levels vary according to freshwater inflows and the monthly tidal cycle. Low levels are mitigated, on the tidal reaches upstream, by the outflow regulation of Richmond Half Lock, and the fresh water upstream reaches are maintained by Teddington Lock. The in-stream habitat is subject to the seasonal changes of thermocline, oxygen levels and nutrient flows that in turn determine the algal base of the food chain. Algal blooms affect water clarity and colour and subsequent aquatic micro fauna.

In the wider Tidal Thames there are over 100 fish species present. The main river habitat in Richmond supports good fish diversity with over 20 species, probably best represented by bream
(Abramis brama) - in this 'bream region' of the Thames, with prized angling fish such as barbel (*Barbus barbus*) and introduced efficient predators like zander (*Percidea Stizostedion*). Some

marine species such as flounder (*Platichthys flesus*) use the stretch as a refuge for 3-4 yrs, after which they return to the sea and estuary where they spawn.

In terms of migratory species using the Tidal Thames, then these are European eel (*Anguilla anguilla*), sea trout (*Salmo trutta*) and occasional salmon (although the EA no longer specifically monitor for salmonids at the Moseley trap), and smelt.

It is also important to note that the upper Tidal Thames, which is freshwater, but tidal, is also an important nursery area for some species of juvenile marine fish, especially sea bass, some mullet and gobies. Sea Bass are an important commercially exploited species in the lower estuary, so the habitat they use through Richmond will be contributing to that marine fishery for bass. It is only the juvenile phase that spends time in the upper tidal areas. As they mature the bass drop back down the estuary and out to sea.

The freshwater fish population is dominated by dace, roach and bream. It is suspected, but not yet proven, that the weir pool habitats at Teddington and Richmond are important spawning areas for the rheophilic Dace. Preserving these areas will be important for these fish populations. It is important to note that the lack of large in-river waterweeds make the existence of marginal vegetation such as submerged tree roots like crack willow (*Salix fragilis*) and the tidally flooded bankside plants, very important refuges and attachment points for fish eggs during and after spawning.

The fishery and its associated invertebrate fauna, is predated by marine and freshwater birds including kingfisher (*Alcedo atthis*), grey heron (*Ardea cinerea*), cormorant (*Phalacrocorax carbo*)and a large number of wildfowl including both great crested grebe (*Podiceps cristatus*) and littlegrebe (*Tachybaptus ruficollis*). The reach is also visited regularly by otters *(Lutra lutra*), common seals (*Phoca vitulina*) from lower down the estuary, and even bottle-nosed dolphins (*Tursiops truncatus*) and habour porpoise (*Phocoena phocoena*) have been seen as far upstream as Twickenham.

River bed

There is a considerable seasonal suspended silt load in the river system. This is perhaps enhanced from time to time by dredging activities and flocculation downstream. However, due to the relatively fast flowing nature of the stretch, silt is only deposited in any quantity in minor low flow areas, especially on the Twickenham and Brentford side of the river, where islands interrupt the flow. These conditions provide important transition zone habitats for benthic fauna, including unionid mussel beds; specifically the painters mussel (*Unio pictorum*), the ducks mussel (*Anodonta anatina*), swan mussel (*Anodonta cygnea*) and the less common swollen river mussel (*Unio tumidus*); whilst also providing for the UK BAP priority species the depressed river mussel (*Pseudanodonta complanata*). Also found are invasive species such as the Chinese mitten crab (*Eriocheir sinensis*), the zebra mussel (*Dreissena polymorpha*), quagga mussel (*Dreissena bugensis*) and the Asiatic clam (*Corbicula sp*.). Non-biting midge larvae (*Chironomus sp*.), leeches (*Hirudinea*) and freshwater shrimps (*Gammarus pulex*) are a widespread and an important food source for fish and ducks. The other key riverbed inhabitants, with several species found in the Richmond reaches, are small orb (*Sphaerium sp*) and pea (*Pisidium sp*) mussels.

Banks

The combination of the hard banks and the Richmond Half Lock restrict the inter-tidal habitat within the main channel. Gravel and silt banks are exposed downstream of the lock and provide a good habitat for feeding waterfowl. In a few places, such as on the foreshore of RBG Kew and

the Old Deer Park, sea club-rush (*Bolboschoenus maritimus*) and grey club-rush (*Schoenoplectus tabernaemontani*) provide an important habitat that is used as a spawning ground. The channel embankments tend to be uniform with steep faces covered with protective hard rock blocks or sheet piles. This provides a restricted habitat with little marginal vegetation or opportunities for roosting. However the concrete and cobbled revetments are increasingly being colonised by willow (*Salix sp*.) and alder (*Alnus glutinosa*). There are no natural banks currently within the tidal reaches of the borough, such as the tidal flood meadows (protected as a SSSI) outside Syon House in Hounslow on the north bank opposite Kew Gardens, and which provide good habitat for a range of species including reed warblers (*Acrocephalus scirpaceus*).

Recent schemes are attempting to provide more habitat within the channel banks. Local volunteers have installed a softer defence system on the river-side of the flood bank at Kew, consisting of hand-built willow stake "living fences" for the retention of silt and the potential development of more natural bank-side habitats and known as "spiles". Recent improvement works at Teddington Lock incorporated soft materials into the new sheet piled banks to allow habitat for soft boring invertebrates and small fish.

The towpath, revetments and associated riverside vegetation forms an important corridor habitat and also represents a key connection to associated habitats such as floodplain and wet woodland. The riparian assemblages of plants in some locations in the borough are some of the best examples in the Tidal Thames and are especially important, as they are also rare on the engineered tributaries. However, being close to the towpath, they suffer from badly timed or heavy mowing that has considerably impoverished some habitats. Where they are well managed, a wonderful lush riverside border can still be found, often characterised by plants such as: Great water dock (*Rumex hydrolapathum*), water speedwell (*Veronica anagallis-aquatica*), hemlock water dropwort (*Oenanthe crocata*), marsh ragwort (*Senecio aquaticus*), water figwort (*Scrophularia auriculata*), purple loosestrife (*Lythrum salicaria*), yellow loosestrife (*Lysimachia vulgaris*) and amphibious bistort (*Polygonium amphibium*).

The private riverbank is typically in the form of short grassed gardens with some structures such as offices, water treatment plants or roads.

There are many large and valuable trees along the bank including; crack and weeping willow (*Salix x sepulcralis*), oak (*Quercus sp*.), beech (*Fagus sp*.), and poplar (*Populus sp*.). In both the public and private parts of the embankment these provide good quality habitats for invertebrates, birds and bats.

With increasing pressure on the banks from erosion, inundation, and traffic, there are on-going threats to the stability of the banks and subsequent paths/habitats/access points. Management of the culverts, banks edges and surfacing should be carefully monitored. In the autumn of 2024 a section of the Kew Towpath separating the Haha and the River collapsed. This has required a significant repair project and has sparked a review of other sections of the bank. Any considerations of bank stabilisation and management must include opportunities for nature-based solutions and habitat enhancement, both to improve biodiversity but also sustainability as the pressures from climate change and general use continue to increase.

Islands

There are eleven islands within LBRuT river reaches, ranging from about 10m to 600 m in length. These are largely shored up by lateral sheet piling or wooden camp-shedding. During high tides

and flood events parts of the islands are inundated. The islands provide an important range of inter-tidal habitats on exposed shores, shelves or bars at the foot of the sheet piling.

The islands also provide roosting habitat for waterfowl, and occasionally seabirds such as the common tern (*Sterna hirundo*). However, due to the vertical piling at low tide, and the foxes and cats that can be present on the larger Islands, ground nesting birds are often unsuccessful. An Island Management Plan was produced by the Thames Landscape Strategy in 2005. An updated management plan for the Thames Islands is proposed as a target of this HAP.

The lack of sites for waterfowl has seen interesting adaptations that include coots (*Fulica atra*) nesting in trees on the little Richmond Aits (ait being a local name for a Thames island). However it is clear that the only consistently successful nesting sites for water birds (apart from Canada geese), are the floating man-made rafts, mooring buoys or abandoned boats, that ensure that the nests survive the daily tides.

The many mature trees on the Islands, together with ivy (*Hedera helix*) cladding, provide important roosts and nesting sites for the less common species such as great spotted woodpeckers (*Dendrocopos major*), tawny owls (*Strix aluco*) and treecreepers (*Certhia familiaris*). Several bat species also depend on mature trees like broken crack willows with large trunks for roosting sites. As with much of London, sycamore trees (*Acer pseudoplatanus*) dominate some islands; this, especially when ivy clad, provides many good roosts, nests and foraging material. Willow (Salix spp.) species dominate other islands. Barges and other moored artificial structures can also provide good nesting and roosting habitat along the river.

Tidal tributaries, flood channels and flood plain

The north bank of the river, except for a short reach alongside Marble Hill House, is largely protected from inundation by a combination of the flood embankment and/or local topography. However, a significant part of the south bank includes backwater and flood channels and reaches such as Petersham Meadows, the lower sections of Ham Lands and Ham and Petersham riverside and the Old Deer Park are set within the 1 in 100 flood defences and include an important range of flood plain Tidal Thames Habitat Action Plan habitats, for example the tidally flooded wet willow woodland in Petersham and nearby backwaters. At present however, little is known of the ecology of these areas or how water moves about on the high spring tides (other than the ecology and hydrology surveys that were carried out on Old Deer Park over the course of 2021/2). Further studies are needed on the other sites for comparison. These are unusual tidal habitats within London and are considered to be of value for fish fry as well as specialised strandline invertebrates and flora. The tidal reaches of tributary rivers such as the Crane and Beverley Brook also provide potential refuge for fish fry. They are also important access points to the Thames for wildlife using these key green corridors to the north and south of the Thames. The floodplain areas of the Thames are inundated during periods of high-water level resulting from high tides and/or higher freshwater inflows. Parts of the adjacent land are designed as storage areas for flood waters and are only inundated on spring tides. This is facilitated by large sluice pipes passing through the flood embankment to fill back-water channels. The Old Deer Park flood channel creates an exceptional wet woodland / fen, whilst the Royal Botanic Gardens Kew HaHa provides valuable habitat heterogeneity, although it is liable to silting.

The upper reaches of the River Thames are fed with run-off from chalk downland and Cotswold limestone and this calcareous origin is considered to have an important role in the regulation of pH over its flooded and riparian habitat corridor downstream. The raising of the pH through the

calcified river water, especially in the modern acid precipitation context, is probably a contributing factor to the existence of rare molluscs (that prefer more alkaline environments for shell development), within the Tidal Thames corridor such as the two-lipped door snail (*Lacinaria biplicata*) and the German hairy snail (*Perforatella rubiginosa*), that are found in several regularly flooded sites within the Borough. More research is needed, but indications are that flood prevention has for example, seen previous flood meadows in Kew Gardens developing increasingly acid soils, indicated by a progression towards calcifuge plants. Petersham Meadows is a flood meadow, inundated typically on twice monthly spring tides or following upstream storm events. This is maintained as a meadow by grazing and provides good quality habitat for wet meadow flora.

The Environment Agency has investigated whether it would be possible to lower an area of floodplain that was artificially raised in the 1940's to provide additional flood storage in both their Floodscape proposal in the 1990's and, more recently, the River Thames Scheme Dachet to Teddington. It was considered in both these studies that at present the benefits of such a scheme were outweighed by the impact the work would have of the existing habitat and did not provide a cost/benefit project. The current considerations include further investigation of rewilding and nature-based solutions to increase the sustainability of these areas with evolving habitats due to the impact of climate change and increasing inundations

Wildlife corridor

One of the key aspects of the LBRuT stretch of the Thames is its functional role as a wildlife corridor locally and as part of the wider Thames corridor. The stretch links the river to other important sites such as the Kempton Park Reservoirs – an SSSI and Ramsar site, Barn Elms wetland site on the south bank, acid heathland of Richmond Park and Wimbledon Common to the south, Bushy Park and Hampton Court to the north. The corridor is an important link between the brackish and marine habitats along the Thames Estuary and the freshwater habitats of the Thames, as well as between the River Crane and River Colne. Its location as a key link along these wildlife chains, with access to a range of adjacent sites, increases its richness as an existing habitat as well as its potential if and when new habitat niches are developed.

Specific factors affecting the habitat

Sea level rise and climate change

Sea level rise is an anticipated effect of climate change and results from the combined impact of the thermal expansion of water and the melting polar ice sheets. The resultant effect is a sea level rise of 2 - 4 mm per year. This effect is anticipated to lead to the loss of some 10,000 hectares of foreshore and mudflat habitat in Britain over the next 20 years. In this borough, it may further reduce the inter-tidal channel bed habitat downstream of the Richmond half Lock.

A further effect of sea level rise is the increased high tides and the consequent higher flood risk to LBRuT. The Environment Agency also has made it clear that it wishes to reduce the operation of the Thames Tidal Barrier as a protective measure for the upper parts of the Tidal Thames. This will increase the periods and levels of inundation within the backwaters and associated floodplain habitat and is one reason for the proposed change in management on the floodplain.

The latest evidence on local climate change indicates that summers in the southeast of England are becoming warmer and drier whereas winters are becoming warmer and wetter. In addition, the variability of the weather is increasing, resulting in increased risk of both floods and

droughts. This pattern of change is already in evidence and is expected to continue with the main debate surrounding the intensity of these changes.

There are suggestions in the EA's TE2100 and River Thames Scheme Dachet to Teddington which could see a potential 40% rise in peak flood flow over Teddington Lock. This rise puts the borough at risk from fluvial flooding coinciding with high spring tide. Due to the amount of green space in the borough there are low flood defences and several examples of wide floodplain. The management floodplain in the borough will be of increased importance to ensure floodrisk mitigation long-term. The updating of the Thames Landscape Strategy and Thames Strategy Kew to Chelsea to support the TE2100 recommendations for the Riverside Strategy Approach is also a key strategic priority for the period of this HAP.

The broader impact of climate change on the Tidal Thames habitat is difficult to gauge. Increased flooding may be a benefit to some habitats. At the same time, the loss of floodplain and channelling of the river may combine with increased flooding to produce very rapid and turbid flow, perhaps resulting in the loss of other riparian and riverbed habitats. This loss can perhaps be ameliorated by sensitive managed retreat and floodplain enhancement schemes. At the other extreme, increased droughts and lower summer freshwater inputs may result in increased stress to the existing flora and fauna, whilst promoting the incursion of estuarial visitors and exotic species.

Flood mitigation and water management must continue to be a priority when deciding on projects and planning proposals.

Land ownership and management responsibility

The division of ownership and responsibility for the management and maintenance of the public reaches of the Tidal Thames bed, banks and backwaters is complex and divided between bodies such as the Local Authority, Port of London Authority and Environment Agency as well as public landowners such as The Royal Parks, RBG Kew, National Trust, English Heritage and others along specific reaches. This has resulted in relatively low land management efforts on these reaches, which may have been to the benefit of the associated habitats in the past, but also inhibits the delivery of potential habitat improvement measures and coherent overall habitat management. In response the Thames Landscape Strategy (which brings together a partnership of all major landowners) produces an annual Towpath Management Plan. Downstream a similar exercise is carried out by the Thames Strategy Kew to Chelsea.

There is even less known about the habitat and species within much of this area, although a plan for the islands has been produced by the Thames Landscape Strategy and is due to be updated through this HAP. It is hoped that further information and dialogue with private landowners will be encouraged through initiatives such as this HAP and other much larger local initiatives such as the National Archives in Kew and sports facilities. Significant landowners in this respect include Crown Estates for the Royal Mid Surrey Golf Club and Thames Water although private householders also manage several sections of the river frontage.

Development and planning controls

Any significant development proposed on either private or public land is controlled by the Local Planning Authority and will be subject to planning guidance under the council's Local Development Framework and local Village Plans, and the Greater London Authority's "London Plan" (current one 2021). The London Plan includes policies on the Thames including reference to the Thames Strategies and policies regarding support of River Restoration, managing flood

risk, the Mayor's Cultural Strategy for the River and target-based policies for Urban Greening. It is intended that this HAP and associated mapping and surveys will provide guidance to borough planners when considering prospective developments within and adjacent to the Tidal Thames area. From a habitat perspective it will be important for prospective developers to show that there will be clear net benefits to habitat and species strength and diversity from development and contribute towards borough wide net gain of specific habitats. They should also be able to provide targeted mitigation against any net loss by providing comparable replacement. Given the impoverished nature of much of the riverside habitat there is the potential for beneficial net impacts as long as enhancement measures are sensitively designed, and long-term management is incorporated.

Flood control structures

The main flood control structures in the borough are the system of embankments, walls and flood gates. These retain water within the active floodplain, associated sluices, pipes and back channels that release water into controlled back water areas on high tides, and let it back into the main channel on low tides. This system is primarily for the purposes of flood management, although it results in back waters, flood meadow and wet woodland habitat. However there is scope for reviewing the operation of this system, and the management of the associated flood plain, to better manage the existing habitat and/or provide additional good quality habitat within the back waters area.

These features also result in a constrained river channel, increased flow velocity and water depth and a combination of pools and glides but no riffle sequences within the river. As a consequence, there are no locations where the river is in turbulent flow downstream of Teddington Lock. This controls the distribution of oxygen within the river channel, which is consequently high immediately downstream of Teddington Lock but subject to reductions further downstream. The EA's TE2100 floodrisk plan must be engaged with to explore opportunities for diversity and access through delivery.

Floodplain management

As noted above, the management of the floodplain is closely linked to the design and operation of the flood structures, which control the amount and timing of water released into the floodplain area. The management of the floodplain itself is dependent upon the topography and the approach to managing the ground flora. The Old Deer Park for example is managed for recreation as a sports field and consists of close mown grass which, despite being inundated several times per year, has little habitat interest. Petersham Meadows is managed as open wet meadow by the introduction of cattle during the summer to maintain grass levels and control succession plants. This is an interesting habitat for flora and associated species, which is rare within London. The wet woodland adjacent to Royal Mid Surrey Golf Club appears to be essentially un-managed and has progressed over many years to a mature wet woodland habitat, which is also rare within London. Between Petersham and Teddington an interesting wet habitat is evolving on the low-lying areas and backwaters including wetlands and wet woodland. In 2008, Sir David Attenborough launched a scheme to identify enhancements to the floodplain – The Restoration of the Natural Floodplain.

EA floodplains

Relevant Thames Estuary 2100 policies:

Teddington Lock to Kew = P3 Continue with existing or alternative actions to manage flood risk. We will continue to maintain flood defences at their current level accepting that the likelihood and/or consequences of a flood will increase because of climate change.

In the future, areas of unprotected floodplain in west London will flood more frequently as water levels rise. The Thames Barrier will continue to provide tidal flood protection to West London to the same high standard as is enjoyed in all the other areas protected by the Barrier. But over the next 25 years we need to put in place new ways of managing fluvial flooding other than by operating the Thames Barrier.

Kew to Barnes = P5 Take further action to reduce the risk of flooding (now or in the future).

To keep up with climate change and reduce flood risk further, we and others will need to do more to manage and reduce both the likelihood and consequence of flooding, providing a level of flood risk management which is higher still than the standard currently provided. The commercial, economic and historic value of London, as well as the potential for loss of life in the unlikely event of a flood, justifies an increased standard of protection from the current 1:1000 year level to 1:10,000.

Accretion of the riverbed is occurring at Barnes and Putney. This may provide opportunities to improve the ecological capacity and appearance of these frontages. There is a risk of fluvial flooding from Beverley Brook which is exacerbated by high water levels in the Thames. There are two diversion culverts, although these are also affected by tide lock from high levels in the Thames. Floodplain management may also be required for groundwater flooding. This has not been considered in detail by TE2100 and further investigation will be needed in the future.

Barriers and locks

The Thames Barrier lies downstream of central London and well outside the Borough, but it has a vital role to play in the protection of the Borough from flooding. It is likely that, in the future, more use will be made of local spaces and less reliance placed on the Barrier. Other opportunities to develop wetland habitat as part of local flood management are possible Richmond Half Tide Weir retains artificially high-water levels for the lower half of the tidal cycle. This results in still water conditions for half the tidal cycle and reduced inter-tidal habitat exposure. This lock may have an impact on sediment movement but is unlikely to significantly impede fish migration as it is breached twice daily. Teddington Lock is actually a major weir structure with an associated lock for the movement of river transport. The impact of this structure on the migration of fish is not known at present. The Tidal Thames HAP is a good vehicle for considering fish passage (all species) between the main channel and the tributaries.

Eels are covered Under 'The Eels (England and Wales) Regulations 2009', which obliges owners of structures to mitigate their impacts on eel migration by installing eel passes. This has been done by the EA and ZSL at Kidds Mill Sluice (Duke of Northumberland's River), Ashlone Wharf (Beverly Brook) and Teddington Lock.

The passage of eels and other species of fishes into the Lower Crane for example, is currently restricted by a number of structures please refer to the Crane Valley Partnership report for more information. Further opportunities for fish passage and in-stream enhancement will be explored and implemented through this HAP.

Water quality

Whilst it is generally acknowledged there has been a major improvement in background water quality in the Tidal Thames over the last fifty years, however the last ten years have indicated a subsequent decline. A detailed analysis of the base data has not been undertaken. There is a constant high input of nutrients with resulting high biochemical oxygen demand (BOD) from the major treated effluent of Mogden Works - discharged to the Thames at Isleworth Ait; this deposits anoxic sediments to the local river reaches and has a detrimental impact on local river species. The river has no significant natural inputs of dissolved oxygen downstream of Teddington Lock and this makes it susceptible to oxygen sags in response to low flows, high temperatures and effluent inputs. There is relatively constant BOD loading from Mogden and other licensed discharges; in addition, there are peaks caused by the periodic discharge of dilute but untreated effluent and associated solid detritus from combined sewer overflows.

The fishery is particularly vulnerable to the operation of combined sewer overflows following summer storms, when the conditions combine and major oxygen sags can result leading to high fish kills. It is likely however that the cumulative effect of the 50 to 60 combined sewer discharges on an average year has a larger underlying impact on ecology and habitat.

Litter

Plastic bags and plastic sheeting are common in the Tidal Thames and often get lodged in trees where they look unsightly. Willow trees perform a useful 'raking' operation, preventing the passage of plastic to the sea and estuary. It is in the sea where research has shown they can be lethal to marine animals. Underwater, they 'open-up' and are mistaken as jellyfish and other prey items by marine turtles, for example. Leatherback turtles (*Dermochelys coriacea*) are recorded in the Thames Estuary.

There are on-going schemes to reduce litter in waterways both nationally and internationally. Within the Thames these schemes include "One-Less" to reduce plastic water bottle usage, PLA's Cleaner Thames Campaign, and local volunteer foreshore clean-ups. Litters picks have identified grot spots for maximum litter removal and specific kinds of litter that make it into the River, such as wet-wipes and sanitary products that have been flushed. Project opportunities exist to address some of these issues within the borough and will be followed up through the Richmond Biodiversity Partnership and HAP stakeholder meetings.

Water quantity

Abstraction of fresh water for public water supply, combined with the effects of climate change, has resulted in extended periods, particularly in the summer, of low freshwater inflows to the tidal reaches of the river. This reduces the oxygen content in the river as well as promoting increased saline intrusion and potential changes to the habitat. The potential for the Tidal Thames to be used for carbon capture through the installation of reedbeds and wetlands has yet to be fully explored.

River transport and recreation

The commercial traffic along the river is minor but there is significant recreational traffic by motorised and un-powered craft. Large washes resulting from certain motorised boats can have a significant impact on the river habitat and shoreline erosion. The combination of bank erosion by mitten crabs (see below) and large rolling washes, can be observed as accelerating the erosion. The river is vulnerable to dredging activities due to the high-quality shellfish habitat and its sensitivity to dredging and associated sediment movements. Any organisation proposing to

dredge within or local to the Borough should first seek clarification as to the likely impact upon these and other habitats. There has also been concern expressed regarding the potential impact of dredging down-stream, particularly if tidal conditions result in an influx of sediment rich water into this part of the river.

The river is well used by walkers and cyclists along the banks and whilst these uses are largely benign, there is a problem with refuse in the river and its impact upon larger animals, such as seals, turtles and dolphins, within the downstream reaches. There is some recreational fishing within the reach but no commercial fishery.

There is potential for increasing access to the river for recreation, but this must be done in a controlled and sensitive manner and address areas where access is causing damage to the banks and/or foreshore.

Problem species

The Chinese mitten crab is recognised as a problem species in the Tidal Thames, largely as a result of its habit of burrowing into marginal banks. Given the lack of suitable habitat in this borough it may be less of a problem at present but remains an issue if this habitat is re-introduced to LBRuT. Zebra mussel (*Dreissena polymorpha*) and quagga mussels (*Dreissena rostriformis bugensis*) are also potentially devastating to native ecological communities as well as having an economic cost through damage to infrastructure.

ZSL with TLS have been monitoring the freshwater bivalve communities at Twickenham and Petersham, during the draw-off, since 2007 with the first Thames quagga being found in these surveys in 2014.

Japanese knotweed (*Polygonum cuspidatum*) is a major problem species in the marginal habitat adjacent to the river. Himalayan balsam (*Impatiens glandulifera*) is also found extensively on river embankments and flood plain of the Borough and can result in mono-cultural habitat with little floral species diversity.

Lack of knowledge

One of the main issues in the Tidal Thames is the fragmentation of responsibilities for the river and no central repository for knowledge regarding the habitats and species present. There is considerable potential for improvements in river and river-side management for the benefit of habitat and species diversity. This fragmentation of responsibility and consequent lack of knowledge is a major hindrance to the development of improved management for the system. In an ideal world this Action Plan will inform/show a way forward for other neighbouring Local Authorities. The PLA Vision for the Thames has a Biodiversity Group which has begun working on this and Thames Landscape Strategy, as well as other members of the Richmond Biodiversity Partnership are members of this group. .

Current action

Legal status

The Tidal Thames within London is not covered by any statutory nature conservation designation. It is however recognised by the GLA as a “Site of Metropolitan Importance for Nature Conservation”. This non-statutory designation nonetheless is a valuable protection at GLA and local level in planning terms.

There is also a long-term aspiration for the Tidal Thames to be covered within the Marine Conservation Zone, whist its candidacy/inclusion is on-going it is something to consider as a potential opportunity for the future.

There are a number of other sites adjacent to the river with Metropolitan status including Barn Elms Reservoirs, Bushy Park and Home Park, Ham Lands, and Stain Hill and Sunnyside Reservoirs. Further sites designated as having Borough Importance include the Old Deer Park, Royal Botanical Gardens, Lonsdale Road Reservoir, Petersham Meadows and Petersham Lodge Wood.

Opportunities for increased protection could be found with the improvement of such sites, for example Kew HaHa for connectivity with the Syon SSSI on the opposite bank and its potential as a unique habitat for terrestrial/aquatic invertebrates, bi-vales and molluscs.

Mechanisms targeting the habitat

Although, or maybe because, there is no overall authority for the Tidal Thames, there are many initiatives at both a local and a regional level which either directly or indirectly impact upon the habitat. There is an active volunteer community with multiple organisations willing to take part in project work and surveying. There is need for overall co-ordination of these groups to make the most of delivery. Currently co-ordination is aided by groups including Habitats & Heritage and Thames Landscape Strategy in consort with LBRuT.

Your Tidal Thames

Catchment partnership for the Tidal Thames - Teddington to the sea.

Thames Landscape Strategy Hampton to Kew

The “Thames Landscape Strategy” was established in 1994 for the Thames corridor between Hampton and Kew and the Borough is one of the key partners. The Strategy is ongoing, working with local groups and communities to develop management and regeneration schemes for the Thames landscape and supports funding activities for these plans. ‘London’s Arcadia’ is one of the main schemes with £3.3m of Heritage Lottery funding for the riverside area between Twickenham and Richmond Lock in the early 2000’s and Rewilding Arcadia in 2020’s, looking at floodplain management and nature-based solutions where water is the rewilding element rather than specific species.

Thames Strategy Kew to Chelsea

The “Thames Strategy Kew to Chelsea” was launched in June 2002 and sets out a vision for the management of the river and its corridor downstream of Kew Bridge to Chelsea. A project manager works with the local stakeholders to realise the objectives of this strategy.

Restoration of the Natural Floodplain and the Riverside Strategy Approach

The Restoration of the Natural Floodplain project was launched by the Thames Landscape Strategy in 2008 to propose ways to naturalise the floodplain for the benefit of people, wildlife and water. There is the potential to develop managed floodplain habitats as part of the scheme although it will also result in the loss of some woodland habitat. Kew towpath, including Old Deer Park, Kew Haha, Royal Mid Surrey Golf Course, RBG Kew, Ham and Petersham, and Marble Hill Park also have potential for largescale floodplain habitats including vertical foreshore, fen beds, wet woodlands (willow carr/ black poplar), and saltmarsh/meadows. This has subsequently evolved into the updating of the Thames Landscape Strategy flood management projects and Rewilding Arcadia. These projects are now recognised in the updating the Thames

Landscape Strategy and Thames Strategy Kew to Cheslea (in collaboration with the Thames Estuary Partnership) as the basis of the Joint Thames Strategy – a programme to align the Thames Strategies and their partnerships with the EA TE2100 Plan and the Riverside Strategy Approach.

Thames Tideway Strategic Study

The Thames Tideway Strategic Study is a collaborative study, managed by Thames Water, investigating options for improving the current problem of discharges from combined sewer overflows. This scheme is almost completed now in 2024, but it does not directly address the local problems resulting from Mogden and other local CSOs, which are all upstream of the proposed tunnel. Thames Water has proposed measures to reduce problems and also intends to implement local solutions for Mogden. The details of these schemes have not been viewed to date. The impact of material entering the Thames is of concern to all parties but consideration should also be given to the impact of any potential abstraction of water from the Thames and how it could affect salinity levels and species. Impacts of Thames Water activities upstream of the tideway should also be considered. Not just the direct impact to the water (e.g. water quality, salinity levels and flooding) and but also the opportunities for wildlife; for example bird overwinter places in the reservoirs and converted gravel pits surrounding the borough and Thames.

Port of London Authority; Thames Vision

The Thames Vision (http://www.pla.co.uk/About-Us/The-Thames-Vision) is a 20-year framework for the development of the Thames. It was developed though stakeholders to set out a collective ambition for the River, including trade, transport, leisure, environment, heritage and culture. The habitat of the tidal Thames is considered quite strongly in this Vision (along with anthropogenic activities) and the creation of a biodiversity group through the stakeholder engagement has created a mechanism for delivery.

Planning Controls

Planning developments are controlled by the borough UDP, to be superseded by the Local Development Framework, and the London Plan. No net loss, net gain for biodiversity should be implemented along the banks of the Richmond's Thames estuary. There will be a list of appropriate projects within the Action plan that can funded by developments that will provide options developers whilst also enhancing the area for wildlife. Ultimately the planning process should seek not to be prohibitive to development if appropriate mitigation can be sort against negative impacts. The addition of the Biodiversity Net Gain into the Environment Act and planning legislation will hopefully assist in this mitigation although there are limited opportunities for the borough in terms of riverside application. However, there may be opportunities through the Habitat Unit "Bank" to see improvements along the river. It is recommended that this be considered in the local BNG planning.

Towpath Plans

The Towpath Group produced a detailed audit of the south bank of the river between Kew Bridge and Beverley Brook. A schedule of physical improvements and proposals for improved management for the benefit of biodiversity and river-side users are following from this audit. This has included LBRuT commissioning tree strategies for the Barnes/Kew and Ham sections of the towpath.

A movement strategy is also being developed to look at uses and opportunities for recreation and travel along the towpaths. The local stakeholder groups (including members of the Richmond Biodiversity Partnership are consulting.

Zoological Society of London

The Zoological Society of London (ZSL) conducts annual invasive species surveys in November in Richmond, collect marine mammal sightings from members of the public throughout the entire Tidal Thames and are planning an ambitious project to work with local community groups to monitor and map key fish nursery sites within the tributaries and creeks of the tidal Thames.

Flagship species

These special plants and animals are characteristic of the Tidal Thames in LBRuT; many are also listed in the London Plan or the UK Plan (this list is not exhaustive of the potential for the borough).

Common tern	*Sterna hirundo*	Summer visitor, breeds on derelict structures and islands.
Grey heron	*Ardea cinerea*	Particularly associated with the islands, Inundations and backwaters.
Purple loosestrife	*Lythrum salicaria*	A wetland plant characteristic of riverbanks particularly important for bumblebees.
Two-lipped door snail	*Lacinaria biplicate*	A spire shelled mollusc. Its habitat is soil surface (usually with ivy cover) of occasionally flooded riparian land in the shade of closed canopy woodland.
German hairy snail	*Perforatella rubiginosa*	A small mollusc with small bristles. Confined to the Tidal Thames in the UK, it inhabits strandline detritus in the shade of closed canopy woodland and riparian vegetation.
Flounder	*Platichthys flesus*	A sea fish which spends its juvenile months in the tidal Thames, which provides a refuge area for fry spawned in the North Sea.
European eel	*Anguilla anguilla*	This iconic London Species is resident and migratory in the Upper Tidal Thames. It is monitored in several off-Thames locations and indirectly during the draw-off mussel surveys. It is generally recognised that the eel population is decreasing in the main Thames but the off-stream populations and introduction of eel passes to in-stream obstacles is encouraging. The population is in need of further study in the Richmond borough.
Great crested grebe	*Podiceps cristatus*	A crested diving bird feeding on fish. Once almost extinct in UK, several pairs are breeding in LBRuT, dependent on manmade rafts.
Depressed river mussel	*Pseudanodonta complanata*	A jade green bivalve freshwater riverbed mussel found in the upper reaches of the Tidal Thames. A UK BAP Priority species.
Daubenton bat	*Myotis daubentonii*	Medium sized bronzy coloured furry bat. Often called the 'water bat' as it feeds on insects over smooth water.
Nathusius's pipistrelle	*Pipistrellus nathusii*	Nathusius' pipistrelle is a rare bat in the UK, though records have increased in recent years. Four long distant migratory records have been found: one bat ringed in Britain was rediscovered in Holland, a bat from Latvia was recaptured in Sussex and two bats from Lithuania were recaptured in Kent. This species of Bat uses the River Thames as part of its migration into Southern England.
Salmon	*Salmo salar*	Salmon were re-introduced in the 1980's and up to 500 fish were monitored passing through on their way from the sea to upstream spawning areas (2010-15). The monitoring is no longer carried out but there could be an aspiration for salmon in the future.
Black poplar		A rare native wetland specialist tree that unfortunately easily hybridises with nonnative species of poplar.

Loddon lilly/Large summer snowflake		This species is now only found in the Thames tributaries such as the River Loddon but there are records of this plant being found near the Isle of Dogs on the banks of the Thames there.
European sturgeon		The sturgeon has been historically recorded in the Thames – with a healthy population noted in medieval times. There has been some discussion about the re-introduction of the sturgeon into the Thames and would be supported by this plan should this project develop further.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for the Tidal Thames			
Action	**Target Date**	**Lead**	**Other Partners**
TT01 – Maintain Eel Pie Island and Hampton Court sand martin nesting bank. Scope out potential locations for additional nesting banks.	On going	TLS	HRP
TT03 – Hydro-geographically map the riverbed; identifying opportunities for diversifying and enhancing fish and aquatic invertebrates. Map the riverbed to determine any areas of pollutant or sediment contamination.	2028	PLA	EA
TT05 – Identify locations where fish passes are feasible. Install fish passes.	Ongoing	ZSL	
TT06 – Setup salinity monitoring at, at least 3 set/fixed locations (to be determined) within the boroughs. Using a refractometer and at least 2 set depths. At least once a month in year one, than to be determined. If already done by EA, obtain data.	Year 1 then ongoing	EA	
TTP08 – Nesting areas for waterfowl on eyots & aits in the Thames in line with the Islands Management Plan.	Ongoing	LA Landowner	
TT09 – Update the Thames Landscape Strategy Islands Management Plan	2028	TLS	LA/PLA
TT11 – Maintain communications with private landowners along the Thames and encourage them to manage their land for biodiversity	Year 1	TLS	
TT13 – Investigate funding for mapping of invasive plant species to determine spread and gauge impact on natives.	Ongoing		
TT14 – Ensure communication with surrounding boroughs to have continuity.	Ongoing	TLS	

TT15 – Increasing connectivity of the tideway to other surrounding habitats through anthropogenic/development usage of existing and potential corridors (opportunities for new connections from development).	Ongoing	LA	
TT16 – Increasing the connectivity between habitats and species who use the Thames as part of their life cycle (birds/bats/eels/fish).	Ongoing	Landowners	
TT19 – Seek sustainable drainage opportunities through engagement and development/planning process.	Ongoing	LA,	
TT20 – Engagement to affect cultural change regarding *Unflushables*, *Only Rain In Rivers*, and *Connect Right*.	Ongoing	Thames Water	TLS, H&H
TT21 – Scope suitable locations to install 10 artificial vertical foreshore m2 panels as a pilot study.	2028	TLS	PLA, LA
TT23 – Investigate improvements to the Thames Young Mariners' lagoon and its connections to the wider habitats of Ham Lands. (Ask Thames Young Mariners to join partnership)	Scope 2027 Ongoing if scoping successful	TLS	Surrey County Council, LA
TT25 – Re-instate and promote the intrinsic connections between Kew Gardens and the River Thames.	2019-2021	TLS	LA, RBG Kew, Crown Estate, PLA
TT26 – Scope a project and begin survey programme to extend the wetland vegetation on the northern edge of the Old Deer Park recreation ground. Soften the boundary of the wetland with adjacent close mown grass areas.	2026	TLS	LA, Crown Estate, PLA
TT27 – Ham and Petersham Backwaters Project Develop project. Investigate funding opportunities for survey work.	2027	TLS	LA, EA
TT28 – Investigate new ways to implement TLS Towpath Management Plan by including of community partners.	Ongoing	LA	
TT29: Expand Thames Action Plan to include the non-tidal Thames to connect with recent Kingston BAP and potential for Spelthorne			

Relevant action plans

Local Plans

Reedbeds, Bats, Grassland, Black Poplar, Ancient and Veteran Trees, Rivers and Streams, Water Vole.

National Plans

Mudflats, Sub-littoral Sands and Gravel, Twaite Shad, Salmon, Depressed River Mussel.

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3.10 Reedbeds habitat action plan for Richmond

Reedbeds and Bittern at WWT London Wetland Centre © Gary Gray

"Over most of this century the Pen Ponds and its associated reedbed has been a focal point for naturalists, particularly ornithologists. The reedbed, a formerly totally enclosed area, often called the Sanctuary or reserve, has or should have the widest diversity of wildlife anywhere in the Park."

(Barry Marsh, 'The Pen Ponds Reedbed', *The Richmond Park Magazine*, Autumn 1998)

Aims

1. To ensure the protection and optimal management of reedbeds in London Borough of Richmond upon Thames (LBRuT).
2. To demonstrate the value of reedbeds and to promote their creation and restoration in LBRuT's environment.

Introduction

Reedbeds are areas of shallow water dominated by a tall wetland grass called common reed (*Phragmites australis*). The UK's largest native grass, common reed is a particularly conspicuous

species, with cane-like stems that last throughout the winter. Reedbeds in LBRuT occur at the margins of all kinds of water bodies and alongside several other habitats, including wet woodlands and willow-dominated scrub.

Historically, the Thames Estuary and basin would have supported extensive reedbeds. Most of LBRuT's natural reedbeds are today confined to a few principal sites, with most owing their existence to planting and restoration programmes undertaken during the course of the 20th century. These man-made reedbeds are associated with a variety of current and post-industrial structures, including restored gravel workings (e.g. M82 Richmond Park's Pen Ponds: from gravel extraction in the 1600s) and redundant reservoirs (e.g. BI 2 Lonsdale Road Reservoir [or Leg o' Mutton] LNR and M87 London Wetland Centre / Barnes Waterside Pond). Over the course of the last decade, the demand for alternative water treatment applications within London has added further small-scale reedbeds, especially within the most built-up sectors of the capital, to perform multi-functional roles including filtration of nutrients, removal of harmful pollutants and storage of urban run-off and floodwater. There is opportunity for this type of reedbed to become part of the matrix of LBRuT's reedbeds, if the local authorities see a demand for these structures over the course of the 21st century.

Despite the small size of LBRuT's reedbeds, they remain home to many of London's more interesting and regionally uncommon wildlife. Secretive birds such as the water rail, reed and sedge warblers, the rapidly declining water vole, and a host of both drab and colourful invertebrate species, are dependent on the dense cover provided by reedbeds. Historically, London rarities such as the harvest mouse would have undoubtedly utilised this habitat. The current status of this small mammal in the borough is now uncertain and quite possibly has become extinct; however, some of LBRuT's larger reedbed sites might provide opportunities for introduction programmes for the species. Relative newcomers to LBRuT include the enigmatic bittern and Cetti's warbler. The bittern has spent recent winters in reedbeds (e.g. Richmond Park's Pen Ponds, Lonsdale Road Reservoir LNR and London Wetland Centre) only a few miles away from Westminster.

Current status

Across the UK, up to 40% of reedbed habitats were lost between the years of 1945 and 1990. Reedbeds are therefore considered a nationally scarce habitat and are a priority habitat for conservation in the UK Biodiversity Action Plan (Maddock 2008; http://jncc.defra.gov.uk/pdf/UKBAP_BAPHabitats-44-Reedbeds.pdf). They are an important habitat for several nationally rare breeding birds in the UK, some of which have bred in Greater London (for example Cetti's warbler and bearded tit). Within the Thames catchment, reedbeds were assessed by the Environment Agency in 2000 to cover 228 ha across 79 sites.

The extent of larger reedbeds in London is estimated at 43.5 ha (0.03% of the Capital's surface area). The total reedbed area is 144.3 ha or *c*. 0.1% of the Greater London area (Waller *et al*. 2017). The largest continuous areas in London occur in the Roding Creek (LB Newham) and the Ingrebourne Valley (LB Havering). LBRuT has five principal sites, notably London Wetland Centre (3.5 ha), Lonsdale Road Reservoir LNR (0.5 ha), Home Park (1 ha), Bushy Park (0.5 ha) and Richmond Park's Pen Ponds (0.5 ha). LBRuT reedbeds thereby form *c*. 5% of the Greater London reedbed audit.

Stands of smaller reedbeds under 0.5 ha were not included in the original LBRuT reedbeds audit, and such areas represent an important additional resource (estimated at forming a further 1 ha of reed cover). These include many of the marginal reedbeds recently established in London's large Victorian ponds, aimed at reducing the highly eutrophic conditions of these urban wetlands (e.g. L11 Kew Pond and L12 Barnes Green Pond). Other examples include the small reedbeds in M76 Crane Park Island

LNR and M87 Barnes Waterside Pond (used to be part of the Barn Elms Reservoir site), which despite their sizes respectively support a thriving population of water voles and reed warblers.

The transient nature of reedbeds underlies the importance of regular re-surveys to retain an accurate overview of the habitat resource across the borough; for example, reedbeds discovered from the GLA audit in 2001 (e.g. damp pastures east of M84 Hampton Court Park and an abandoned filter bed in the Hampton Treatment Waterworks close to M85 Stain Hill Reservoirs), as well as drying out reedbeds that run the risk of being lost (e.g. on M83 Ham Lands LNR).

To counter their decline, there is growing pressure nationally to plan for the creation of reedbeds wherever this might be appropriate, often backed by financial incentives. Good examples of habitat creation within the borough include the London Wetland Centre, at Lonsdale Road Reservoir LNR, Crane Park Island LNR, Beverley Brook on Barnes Common and at Ashlone Wharf, Bushy Park and Richmond Park's Isabella Plantation. Future planned reedbed restoration (e.g. Richmond Park's Pen Ponds) and creation schemes (e.g. M31 River Thames and BII 9 Beverley Brook) might well reverse the decline of what was a trademark feature of both the borough's and London's landscape.

Other pond sites in the borough, which have been identified as containing small reedbeds would include M82 Richmond Park's Dan's Pond and Holly Lodge Pond, M82 Palewell Common, M84 Bushy Park, BI 1 Royal Botanic Gardens Kew, L3 Pensford Field and L13 Ham Pond. Furthermore, there are a few schools in the borough with ponds containing reeds including Sheen Common Vineyard School, Collis School and Hampton Wick School.

Specific factors affecting the habitat

Sea level rise

The projected rise in sea level may lead to a net attrition of created reedbeds proposed for the Arcadia project (e.g. Marble Hill House) along the tidal reaches of the River Thames, through physical erosion and changes in salinity. Opportunities for flood defence realignment (and associated reedbed creation) are severely limited on the Tidal Thames in most of Greater London, although in LBRuT there have been past proposals for such a scheme in part of Ham Lands.

Development and habitat loss

Extensive reeds would have marked every major tributary's floodplain, delta and creek mouth, prior to the widespread land drainage and flood defence schemes essential to the development of the modern city. The majority of LBRuT's reedbeds are afforded some protection as part of London SINCs and under the borough's Local Plan (Core Strategy; http://www.richmond.gov.uk/media/11612/core_strategy-3.pdf). Although development is unlikely to directly have an impact on reedbeds, one or two have had past developments occur in close proximity to them e.g. Barnes Waterside Pond.

Water quality

Pollution of freshwater affects reedbeds, and can result in amphibian and fish kills, the accumulation of toxins in the food chain, and excessive eutrophication, causing the reeds to die back. The high volume of storm-water runoff from the non-absorptive surfaces of the built environment is an additional source of pollutants particularly associated with the urban situation. This could not only have an impact on any newly created reedbeds on the River Thames as part of the Arcadia project, but also on reedbeds in water bodies that take top-up water directly from the River Thames e.g. Kew Pond, Lonsdale Road Reservoir LNR and London Wetland Centre.

Water quantity

Many London watercourses experience low freshwater flows in summer due to over-abstraction upstream. On the tidal Thames and creeks, this raises salinity levels further upstream, which could damage freshwater plant communities (e.g. any reedbed creation on the Thames as part of the Arcadia project). Low flows can also dry out marginal vegetation, increasing the speed of natural succession with the onset of scrub and woodland colonisation (e.g. the dry reedbed on Ham Lands LNR).

Management issues

The RSPB identified management neglect as the major contributing factor leading to reedbed losses across the UK at the tail end of the 20th century (Hawke & José, 1996). Inappropriate management includes lack of intervention in wet woodland colonisation. For example, the cause of the diminishing area of reedbed at Pen Ponds and along the River Crane has been identified in part due to encroachment into the reeds of alder / willow carr. More advice on reedbed management can be found elsewhere (White 2009, https://www.rspb.org.uk/Images/Reedbed_management_tcm9-255077.pdf ; Sussex Wildlife Trust 2013, https://assets.sussexwildlifetrust.org.uk/create-and-manage-reedbeds-2.pdf).

Problem species

Reedbeds are particularly vulnerable to problems caused by invasive, non-native species. These include overgrazing of recently planted or cut-over reeds by Canada geese, and bank destabilisation by Chinese mitten crabs (which have been found in a number of water bodies located adjacent to the River Thames).

Recreational activities

Water-based recreation is increasing in popularity, including angling and waterborne transport. Unless managed carefully, this can disturb reedbeds and their wildlife, for example by disrupting breeding birds. During summer, increased public access could leave drier reedbeds more vulnerable to deliberate or accidental destruction by fire.

Public perception

Small, urban reedbeds are likely to be perceived as lacking any substantial biodiversity value, particularly as their associated wildlife is typically elusive. Reedbeds may even be viewed as unsightly (trapping wind-blown or tidal rubbish, and blocking views to open water). Some anglers may forget the importance of reedbeds as fish spawning grounds and view them as a hazard, which entangles fishing line and prevents clear line casting. Furthermore, landowners tend to see no economic benefits for retaining reedbeds within an agricultural context, although the Countryside Stewardship Scheme has subsidised reedbed management in a number of the London boroughs.

Current action

Legal status

All of the larger reedbeds identified in the LBRuT audit, as well as most of the smaller examples, are included within Sites of Importance for Nature Conservation (SINC). There will remain some smaller reedbeds that are not protected through the planning system, especially those within wetland creation schemes in recently completed developments.

Some reedbed sites receive statutory protection as Sites of Special Scientific Interest (SSSI) and/or Local Nature Reserves (LNR). SSSIs with important reedbeds include the London Wetland Centre, Home Park & Bushy Park and Pen Ponds in Richmond Park, with the latter location also lying within a

National Nature Reserve. Meanwhile, Lonsdale Road Reservoir, Ham Lands and Crane Park Island have been notified as LNRs.

Specially protected species often associated with the habitat in LBRuT include not only kingfisher and water vole, but also less frequently grass snake and great crested newt. Both the bittern and Cetti's warbler are now regular wintering species at the London Wetland Centre, with occasional wintering records of bearded tit also being made at the same site over the past decade. Cetti's warbler is now also part of the regular breeding bird assemblage at the site.

Mechanisms targeting the habitat

These current actions are ongoing. They need to be supported and continued in addition to the new action listed under Section 7.

Management, creation and guidance

In most protected sites, there is a clear priority to maintain the integrity of their reedbed habitats by monitoring both water level and quality. None of LBRuT's reedbeds are large enough to be harvested traditionally. However, some rotational cutting is undertaken in nature reserves both for the benefit of the reedbed faunal assemblage and to prevent loss of reedbed habitat from encroachment by wet scrub or woodland (e.g. the London Wetland Centre, Lonsdale Road Reservoir and Crane Park Island Nature Reserve). There are also examples of organisations that have put resources into reedbed restoration projects, for example Pen Ponds reedbed in Richmond Park.

Many smaller reedbeds have been planted to improve the biodiversity and water quality of more established urban wetland features, such as in ponds of some of the borough's formal greens (e.g. Barnes and Kew Greens) and gardens (e.g. Isabella Plantation in Richmond Park). Habitat creation schemes have also included restructured watercourses (e.g. Beverley Brook on Barnes Common and Ashlone Wharf). Others are planned to form part of wider landscape restoration schemes alongside the River Thames, such as the Thames Landscape Strategy's Arcadia project. Boardwalks have been constructed to allow access and improved interpretative opportunities at a number of sites e.g. the London Wetland Centre.

Several agencies have produced guidance documents to encourage the management and creation of reedbeds, including the RSPB/EN leaflet `Reedbed Management for Bitterns` and the handbook `Reedbed Management for Commercial and Wildlife Interests` (Hawke & José, 1996). Also, 'Reedbed Conservation in London' (Bullock & Hunter 2007).

Bittern Recovery Project

In 1996, English Nature launched its Action for Bittern (Species Recovery) Project, with EU LIFE funding available to landowners and NGOs for reedbed management and restoration. Further impetus to this recovery came about through projects including 'Bringing Reedbeds to Life: Creating & Managing Reedbeds for Wildlife' (White et al. 2013). Bitterns are now showing signs of recovery in some parts of the UK. They have regularly over-wintered in LBRuT's reedbeds for the past 15 winters (e.g. Richmond Park's Pen Ponds and the London Wetland Centre), and creation of new reedbeds elsewhere in the borough would serve to enhance habitat continuity.

SUDS and Bioremediation Schemes

Another driver for reedbed creation is the growing interest in Sustainable Urban Drainage Systems (SUDS) and bioremediation schemes. However, their wildlife value can often be compromised by the temporary nature of the schemes. Nevertheless, they remain important steppingstones along wildlife corridors for species strongly associated with the habitat.

Policies requiring SUDS schemes within new developments are now often feature in planning policy documents and guidance.

Flagship species

These special plants and animals are characteristic of reedbeds in LBRuT.

Water vole *Arvicola terrestris*	The "water rat" of the literary classic "The Wind in the Willows" is often mistaken for the brown rat. However, the water vole has a blunt nose, a shorter hairy tail and a pair of small ears tucked away within its fur. It is Britain's fastest declining mammal, yet some of its UK strongholds are associated with London reedbeds. Good populations occur in reedbeds at Crane Park Island LNR and London Wetland Centre. With establishment and restoration of reedbeds at Bushy Park and Home Park, it is hoped that water vole populations might return to the Longford River.	 ©Paul Gregory
Bittern *Botaurus stellaris*	A secretive and rare bird that breeds in large, secluded reedbeds. However, smaller reedbeds, including Pen Ponds and London Wetland Centre, can provide important refuges for over-wintering bitterns from both the UK and the continent. They feed on fish, amphibians, small mammals and large insects, especially among the reedbed margins.	 ©Maria Zuckschwert
Reed warbler *Acrocephalus scirpaceus*	Although they can be hard to spot among the reeds, the noisy chattering song of these summer visitors can be heard in the borough's larger reedbeds e.g. Pen Ponds, Lonsdale Road Reservoir and London Wetland Centre. Although they are attracted to quite small reedbeds, they do need undisturbed areas of dense vegetation in which to build their nests. They feed on the abundant insect life of the wetland edge habitat.	 ©Mike Waite
Common eel *Anguilla Anguilla*	Eels are an important food source for many animals, in particular herons and bitterns. Eels are one of a number of fish for which reedbeds provide important shelter on the edge of the open water. They breed in the sea and the young migrate up the Thames and streams and overland to colonise Richmond's freshwater bodies where they grow for at least 15 years before maturing.	 ©Nick Giles

Ruddy darter *Sympetrum sanguineum*	A beautiful dragonfly with bright crimson-red males. It is scarcer than the closely-related common darter, but occurs in some of Richmond's wetlands inhabiting shallow, still water where there is an abundance of bulrushes amidst reeds and other emergent plants.	 ©Rich Bullock
***Twin-spotted wainscot** *Archanara geminipuncta*	This species is representative of a large community of resident reed-feeding wainscot moths. It spends the winter as an egg. The caterpillar then feeds (head upwards) and pupates within reed stems. Adults fly from August to mid-September and have a distinctive pair of white spots on their forewings.	 ©Tim Freed
Common reed *Phragmites australis*	The key species of the reedbed habitat - tall stands of reeds, with large purplish flower-heads, which rustle in the slightest breeze. Reedbeds provide shelter, nest-sites and food for a very wide range of wildlife.	 ©Nigel Reeve

*Some additional notes:

Other moths partly or wholly dependent on common reed in the London area that would also benefit from the action plan would include: the macro-moths Southern wainscot, large wainscot, fen wainscot, silky wainscot and brown-veined wainscot, and the micro-moths *Schoenobius gigantella* (Nationally Notable) and *Chilo phragmitella*. There are also a number of moths that would benefit from the presence of bulrushes, yellow iris, and other emergent plants that grow within and around reedbeds. These would include: the bulrush wainscot, Webb's wainscot and the small rufous. The inclusion of willow would benefit the cream-bordered green pea and lunar hornet clearwing.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions targeting reedbeds *(Targets / Strategic Goals for reedbeds have been adapted from JNCC and Defra 2012.)*			
Action	**Target Date**	**Lead**	**Other Partners**
Target / Strategic Goal 1 (biodiversity benefits and ecosystem services; reduce biodiversity pressures; biodiversity sustainability): To increase LBRuT's overall reedbed habitat coverage.			

RB01 – Promote use of reedbeds to developers, planning authorities and schools	Ongoing	LA	Landowners, developers, WWT
RB02 – Create a map of all reedbeds across borough to identify gaps and use for promotion to the public	2025	LA	Working Group
RB03 – Increase overall coverage of reedbed in the borough via new reedbed creation, preferentially in areas of deficiency	Ongoing	LA/TLS	EA, landowners, RBGK, developers, TRP, FG, HRP, TW
RB04 – Increase reedbed coverage in the borough via the extension of existing reedbeds, and improving their conditions and management where needed	Ongoing	LA/TLS	EA, FG, WWT, TRP
RB05 – Where possible create reedbed corridors to improve connectivity	2027	LA/TLS	EA, FG
Target / Strategic Goal 2 (safeguarding biodiversity): To ensure all reedbeds of ≥20m^2 within LBRuT are under appropriate management and enhancement.			
RB06 – Undertake condition assessment of all reedbeds where required to help feed into management plans, and to assess suitability for species re-introductions eg. water vole	2025	LA, GiGL	HRP, TRP, TLS, WWT, FG, RBGK
RB07 – Ensure management plans are produced for all newly created reedbeds and that existing management plans are suitable	2026	TLS	LA, EA, landowners, developers, HRP, TRP, RBGK
Target / Strategic Goal 3 (mainstreaming, knowledge & capacity): provision of cultural and ecological interpretation at all key reedbed locations to raise and enhance public awareness, knowledge and understanding of reedbeds.			
RB08 – Incorporate the importance of reedbeds into annual events based around other species where appropriate, and relating various walks and talks to reedbeds and their significance	Ongoing	Working Group	RBGK
RB09 – Publish a promotional leaflet on LBRuT's key or accessible reedbeds using mapped area of reeds	2026	LA	FG, RBGK, Working Group
RB10 – Promote the potential for introduction / recovery programmes for future flagship species, which utilise larger reedbeds, but are now rare or extinct in LBRuT e.g. water vole, Harvest Mouse, Grass Snake, Marsh Sow-thistle, White Stork etc.	Ongoing	WWT	EA, GLA, LA, LWT, TRP, TLS
RB11 – Promote benefits of SuDS and filtration effects of reedbeds to the public and developers	Ongoing	Working Group	RBGK, FG

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4 Species action plans for Richmond upon Thames.

4.1 Amphibians and reptiles species action plan for Richmond

The uncoiling rush and sliding olive of a grass snake, the still, unblinking cinnamon eye of a silver-grey adder...

The slow, deliberate posturing of a dragonised male smooth newt, the perverse fervour of spawning common toads as they roll in cold ecstasy on a spring night...

(Chris Packham, 2013)

Aims

1) Establish a working group to develop a strategy for the protection and management of amphibians and reptiles and their habitat in the London Borough of Richmond upon Thames.
2) Spearhead the recovery of amphibian and reptile populations in the London Borough of Richmond upon Thames.
3) Encourage research, education and promote public awareness about amphibians and reptiles.
4) Ensure biodiversity is conserved through appropriate management and species mapping.
5) Raise the awareness of amphibians and reptiles to encourage greater levels of community driven conservation and appreciation across the borough.

Introduction

Herptiles (amphibians and reptiles) remain some of the most enigmatic and overlooked of our native wildlife, despite being well-adapted to thrive alongside us in the urban environments of Greater London. Whilst most people are familiar with our more widespread amphibians such as the common frog and the smooth newt, many are unaware that wild reptiles exist anywhere in the UK, let alone on their own doorstep.

In the UK there are 13 species of native reptile and amphibians, nine of which are found in Greater London. The remaining four are rare species with more highly specific habitat requirements, and whilst these are not found within the capital, they exist on a number of sites in the south and east of England. The natterjack toad was lost from the last of its London sites in the early 20th century.

In addition to our native species, a number of non-native herptiles exist in scattered populations across the capital, some of which are confirmed to be reproducing successfully in our climate.

Table 1 below presents a list of native and non-native herptiles in the UK and their status within both Greater London and the London Borough of Richmond upon Thames.

Table 1: Amphibians and reptiles of the UK, Greater London and Richmond upon Thames

			Occurrence		
		Species	***UK***	***Greater London***	***Borough***
Native	***Amphibians***	*Common frog (Rana temporaria)*	✓	✓	✓
		Common toad (Bufo bufo)	✓	✓	✓
		Smooth newt (Lissotriton vulgaris)	✓	✓	✓
		Palmate newt (Lissotriton helveticus)	✓	✓	✓
		Great crested newt (Triturus cristatus)	✓	✓	✓
		Natterjack toad (Epidalea calamita)	✓		
		Pool frog (Pelophylax lessonae)	✓		
	Reptiles	*Common lizard (Zootoca vivipara)*	✓	✓	✓
		Slow worm (Anguis fragilis)	✓	✓	✓
		Grass snake (Natrix helvetica)	✓	✓	✓
		Adder (Vipera berus)	✓	✓	***?***
		Sand lizard (Lacerta agilis)	✓		
		Smooth snake (Coronella austriaca)	✓		
Non-native	***Amphibians***	*Edible frog (Pelophylax esculentus)*	✓	✓	✓
		Marsh frog (Pelophylax ridibundus)	✓	✓	✓
		Midwife toad (Alytes obstetricans)	✓		
		Alpine newt (Mesotriton alpestris)	✓	✓	
		Italian crested newt (Triturus carnifex)	✓		
	Reptiles	*Wall lizard (Podarcis muralis)*	✓	✓	
		Aesculapian snake (Zamenis longissimus)	✓	✓	
		Red-eared terrapin (Trachemys scripta elegans)	✓	✓	✓
		Green lizard (Lacerta bilineata)	✓		

Reptiles are often associated with open, dry grasslands and heathlands, however in urban and semi-urban areas, habitats of particular importance are brownfield sites, allotments, hedgerows, railway embankments, road verges, mosaic of scrub and grassland habitats and even private gardens. Grass snakes will commonly be found in areas close to wetland habitats.

Amphibians require both terrestrial habitat and aquatic breeding habitat for the viable survival of a population. Damp and densely vegetated land is favoured, particularly where there is good connectivity to unpolluted standing water bodies in an early to middle stage of succession. Some of the more commonly occurring species such as common frogs and smooth newts can thrive almost entirely within a network of back garden land where several small ponds may exist.

Of crucial importance to all urban herptile populations is habitat connectivity. These species have varying habitat requirements depending on the time of year, and mobility between hibernation, sheltering, foraging, basking and breeding sites is required. Some, such as common toads and grass snake are known to routinely travel up to several kilometres between sites.

All reptiles and amphibians are cold-blooded (ectothermic), meaning that they are reliant on environmental temperatures to regulate their metabolism. Reptiles will typically 'bask' in direct or partial sunlight, whereas amphibians rely more heavily on the ambient absorption of heat from their surrounding environment. In the colder months, typically between mid-October and March, amphibians and reptiles in the UK enter a period of hibernation involving reduced metabolism, activity and food intake.

The species - amphibians

Common frog (Rana temporaria)

The common frog is one of only two native frog species in the UK and is our most widespread and well-known amphibian. Frogs typically have smooth, moist skins and long back legs which allow them to move around by jumping. The common frog can be variable in colour. Perhaps most commonly encountered as a shade of olive green or brown, individuals can in fact change colour in response to variations in light and temperature. It is most easily differentiated from other non-native frog species in the UK by its rounded snout and dark patch behind they eye, along with the absence of a dorsal stripe.

Common frogs can be seen between February and October and are often found in gardens, particularly where ponds are present nearby. Between February and April, they visit ponds or other standing/slow moving water courses to breed, laying spawn in dense mats known as 'rafts' in the shallowest, sunniest part of the pond. Each raft of spawn can contain as many as 2,000 eggs.

Following breeding, most adult frogs will disperse from the pond and spend the rest of the year in damp terrestrial habitats. The tadpoles usually hatch approximately 2-3 weeks after spawning, and leave the pond as froglets during damp weather between June and September.

Between mid-October and February, common frogs will hibernate in sheltered, frost-free locations close to the pond or even in the mud at the pond-bottom, where temperatures remain stable and they can absorb oxygen through their skin.

Sites with common frog populations in the borough include East Sheen Common, Kew Gardens, Richmond Park, Bushy Park and Ham Common Woods. Many frogs survive in networks of small garden ponds.

Common toad (Bufo bufo)

Common toads, unlike most frogs have dry, warty skin and shorter back legs which they use to walk or run, rarely jumping unless threatened. They can also be identified by their copper-coloured eyes behind which two large paratoid glands are present, visible as raised lateral ridges.

Breeding occurs between February and April, usually in larger, deeper water bodies than those preferred by common frogs, including lakes and gravel pits and even occasionally canals and slow-moving rivers. Part of the reason they are able to thrive in such water bodies more readily is that they are less prone to fish predation, due to the toxins produced by the tadpoles. They migrate en masse on warm, wet nights, sometimes travelling up to 2km to reach their favoured breeding ponds, and this is why so many casualties are often seen on busy roads in both urban and rural areas. During migration, males will often seek out the much larger females along the way, and if given the chance, will mount the female's back, holding tightly with their front limbs in a grip known as 'amplexus'. This is aided by the presence of rough swellings on their thumbs called 'nuptial pads'.

Males usually outnumber females in breeding ponds, and large groups of males all trying to hold on to a single female are a common occurrence. Once a successful male has seen off any competition and mounted a female in the breeding pond, the female will begin to lay long strings of spawn below the surface of the water, tangled tightly amongst rocks, debris and aquatic vegetation, with the male simultaneously fertilising the spawn as it is laid. Toad spawn can often be much harder to spot than frog spawn. Jet black tadpoles usually emerge after 2 weeks, leaving the pond as toadlets in another mass migration during June or July.

Outside of the breeding season, toads spend most of their time on land, and can be found in a wide range of habitats including woodland, hedgerows, grassland and gardens. They are more tolerant of drier conditions than frogs or newts, and as such often travel much further from breeding ponds. During the day they will take refuge under logs, debris or rocks, emerging at night to feed on invertebrates.

Well-known common toad populations in the borough include Kew Gardens, Bushy Park, Richmond Park and Ham Pond.

Smooth newt (Lissotriton vulgaris)

Smooth newts are the UK's most widespread and frequently encountered newt species. They are regulars of garden ponds, preferring small, fish free waterbodies for breeding, where many hundreds of newts can occupy a relatively small area. They will also readily use wet ditches.

Smooth newts are approximately 10cm in length, with breeding males easily distinguished from females by their brownish-grey colour with prominent dark spots on the flanks, a dark eye stripe and a continuous wavy crest extending to the tip of the tail. Other distinguishing features are a faint blue line along the bottom edge of the tail and fringes along the edge of the fingers. In contrast, a female smooth newt is usually a uniform light-olive colour with small speckles, and a faint yellow stripe along the bottom of the tail and no crest. Both sexes have a spotted underside with a central orange stripe running from the neck to the tip of the tail.

Like all newts in the UK, males arrive at the breeding ponds first and form 'leks', territorial courtship displays involving a range of behaviours such as rocking, leaning, fanning and tail-whipping, designed to demonstrate mating eligibility and waft pheromones towards the arriving females. Once mating has taken place, each female will lay between 150 to 300 jelly-coated eggs individually with their hind feet, wrapping each one carefully inside the leaf of an aquatic plant for protection. Unlike common frog and toad spawning, which is a relatively abrupt and continuous process, newt egg laying takes place over a protracted period of several weeks, the rate of which is influenced by water temperature and other environmental factors.

Outside of the breeding season they are found on land in hedgerows, woodland, scrub, grassland and gardens, however they may also remain in ponds or seek out new ponds to forage for aquatic invertebrates, in particular water fleas *(Daphnia spp.)* which make up a significant part of their diet.

Sites with smooth newt populations in the borough include Kew Gardens, East Sheen Common, Richmond Park, Ham Common Woods, Twickenham Golf Course, Richmond Park Golf Course, London Wetland Centre, Hatherop Park and Barnes Common.

Palmate newt (Lissotriton helveticus)

The palmate newt is superficially quite similar to the smooth newt in size and colour; however, it is more commonly found in habitats with acidic soils and breeds in shallow, soft-water pools. The key distinguishing physical characteristics of this species are most prominent in the males, who, unlike smooth newts, have no crest along the back, but instead have webbed hind feet and a filamentous tip at the end of the tail. A palmate newt will also most often have a translucent throat which lacks spots or flecks, and an overall greater dearth of spots or flecks on the belly. The females of the two species are much more difficult to tell apart, however two pale nodules are present on the underside of the hind feet of a female palmate newt, which are absent in smooth newts.

Larvae and eggs are also very difficult to tell apart between smooth and palmate newts, however some anecdotal evidence suggests that palmate newt eggs are often laid more loosely in the leaves of aquatic vegetation.

Only one site in the borough has confirmed records of palmate newt, which is Fulwell Golf Course, however it is anticipated that more populations do exist, and it must be acknowledged that the species is commonly under-recorded/mis-identified because of its similarity to the much more common smooth newt. There is a large amount of potentially suitable habitat within the borough, particularly large acid grassland areas with woodland such as Richmond Park, Bushy Park and Barnes Common.

Great crested newt (Triturus cristatus)

The great crested newt is the largest of our native newt species. It is also known as the 'warty newt' because of the numerous, white-tipped bumps on its skin. Much larger than the smooth or palmate newt, growing to 16cm in length, sometimes larger, it is characterised by its infamous bright orange belly adorned by black spots which grow larger as the animal ages. The pattern of these black spots can also be used like a unique fingerprint to identify individual newts.

During the breeding season, males develop a large, jagged crest along the back and tail, with a break at the base of the tail. Females tend to be a slightly more olive-green colour than the black males and have no crest. Males have a whitish stripe in the centre of the tail, and whilst this is absent in females, the base of the tail is orange. All subadult and juvenile great crested newts appear as a miniature version of the females before the secondary sexual characteristics are developed.

Once great crested newts reach adulthood, they are able to secrete toxic chemicals from their skin which offer them some protection from predators, however in their aquatic larval stage they are particularly vulnerable to predation by fish, due to their large size and behavioural tendencies to occupy the open water column away from immediate shelter. For this reason, fish and great crested newt populations rarely co-exist successfully in water bodies.

They have a preference for larger, deeper water bodies with a neutral or slightly alkaline pH. Optimal conditions are ponds that are approximately 400-800m^2 in area, have a central depth of between 1 and 3.5m, are free of fish and waterfowl, with 60% or less of the pond perimeter shaded, 70-80% cover of macrophytes and good water quality. Of critical importance is also the proximity of other suitable ponds, which are capable of together supporting a viable 'metapopulation' (group of associated populations) in the longer term, meaning that individual populations are less susceptible to habitat changes or years of high mortality/poor breeding success as they can recover overtime through recruitment from other nearby populations. Outside of the breeding season, the majority of a

great crested newt population will remain within 250m of the natal pond, and therefore an abundance of high-quality terrestrial habitat for foraging, shelter and hibernation is also a key requirement.

Whilst the European range has contracted and populations have suffered dramatic declines over the last 50 years, the Southeast of England remains a stronghold for the great crested newt, with a number of significant colonies fairly widespread across Greater London. Known extant great crested newt populations in the borough are confined to Bushy Park and the surrounding area of Richmond Park. Approximately 100 individuals are believed to have been introduced to Kew Gardens circa 2000, however this population is not thought to have survived, following the negative results of eDNA testing carried out in 2024 at waterbodies at Kew Gardens and the neighbouring Royal Mid-Surrey Golf Course. A small number of records also exist from between 2013 and 2017 in what is described as a large ditch adjoining the southern embankment of the railway line behind Montrose Avenue in Whitton. This site is referred to as '*Whitton Railsides'*. Little is known about this waterbody or the status of the population.

The species - reptiles

Common lizard (Zootoca vivipara)

The common lizard is the UK's most common reptile. They are one of the most northerly distributed reptiles in the world and in the UK can be found in most regions of the Scottish Highlands. The common lizard is also known as the viviparous lizard (hence the latin name *vivipara*, which means 'to birth live young'. This strategy is a direct adaptation to their climate which allows the species to reproduce in colder climates by incubating eggs within the body.

Common lizards prefer dry, tussocky grasslands with ant hills, hedgerows, brownfield sites and heathland. They are mobile predators, capable of catching fast moving prey such as flies, crickets and spiders. They are a diurnal species and can be seen on sunny days basking on pieces of wood, rocks and bare ground, which absorb and retain heat from the sun, darting away at the first sign of danger. When they bask, the muscles in their torso act to spread the ribcage and flatten out the body, allowing them to absorb heat over as great a surface area as possible.

Male common lizards have a spotty/freckled pattern, compared to the stripy females, who also have a narrower head. Males also have a distinctive swelling at the base of the tail. Juvenile common lizards are jet black. Common lizards, like most lizards have the ability to detach their tail in response to a threat from predators, which is used as a decoy defence mechanism. The tail will eventually regenerate; however, they will lose the ability to detach their tail in defence for a second time.

Common lizards are recorded at Hampton Heath, London Wetland Centre, Crane Park, Barnes Common and Richmond Park, primarily in the north-western area.

Slow worm (Anguis fragilis)

Slow worms are commonly mistaken for snakes but are actually legless lizards. Unlike snakes, they have a flat forked tongue, eyelids, an external ear structure and the ability to drop their tails to escape predation. They are the UK's longest living reptile, surviving up to 30 years in the wild with records of up to 54 years in captivity.

Slow worms are most commonly a silvery-grey through to dark brown/red colour. Males are often more uniform in colour and can have blue flecks across the dorsal surface. The head of the male is bulkier and more pronounced than the female. Females have a lighter dorsal colour, contrasted by dark flanks and sometimes a dark vertebral stripe. Juvenile slow worms represent miniature versions of the female adult.

Slow worms exist on a diet primarily consisting of slow-moving invertebrate prey such as slugs, worms, snails and spiders, and are crepuscular in nature, emerging at dusk and dawn to feed. During the day, they can be found basking in warm, humid, sheltered locations, often underneath features which absorb heat, such as logs and rocks, but also under human-made materials such as wooden panels, pieces of metal, roofing felt, plastic and root barrier membranes. For these reasons, they are often attracted to and encountered in gardens and allotments.

Slow worms are London's most common reptile and can be found in various locations within the borough, with known populations in Hatherop Park, Oak Avenue Local Nature Reserve, London Wetland Centre and Marsh Farm Allotments. It is anticipated however that a significant number of additional populations may exist on private residential land, allotment sites and golf courses which are as of yet unrecorded.

Grass snake (Natrix helvetica)

The grass snake is the UK's most commonly encountered snake species and is adapted to a variety of habitat types – however it has a particular affinity for wetland and riparian habitats. In many grass snake populations, fish and amphibians make up a large part of their diet.

Grass snakes are the only native snake in the UK to lay eggs as opposed to giving birth to live young. A female grass snake will lay between 10-40 white leathery eggs during the months of June and July, often in sheltered locations within rotting vegetation that supplies a constant source of heat. The young hatch in late summer or early autumn.

Grass snakes can be identified by their greenish colour, yellow and black collar, 'piano key' belly pattern and dark, barred markings on the flanks. Females are, on average, larger than the male, with a bulkier head and shorter tail in relation to body length. An adult grass snake can reach over 1m in length, occasionally up to 2m.

Grass snakes are highly transient creatures, often moving great distances throughout the landscape between various breeding, foraging and overwintering sites, however in urban environments, there movement can be somewhat more restricted. Known grass snake populations exist at Crane Park Island, Richmond Park, Bushy and Home Park, Hampton Court Park and Hatherop Conservation Area.

Adder (Vipera berus)

The adder is the UK's only venomous snake. They are found primarily in dry grassland, heathland and woodland edge sites, often in areas with acidic soils. An adder's venom is not lethal to humans, however is deadly enough to kill their target prey, such as small mammals and birds. Common lizards also make up a significant proportion of an adder's diet, and these two species often co-exist.

Adders are stocky snakes, much less elongated than grass snakes, and are distinguished by their characteristic zig-zag dorsal pattern and red iris with a vertical pupil. Like grass snakes, the male will

have a proportionally longer tail than the female, however the key visual difference between the two sexes is the colour, which is most noticeable immediately post-slough (shedding of the skin). Males are a bright silver/grey colour and have a jet-black dorsal zig-zag pattern, whereas females are a reddy-brown through to orange colour, with a dark-brown dorsal zig-zag pattern.

According to GiGL, the most recent accepted record of adder in the borough is from 2014, located in Richmond Park. One other record exists from Hampton Court Park, dated 2005. There is a known and well-studied population of adders at Hounslow Heath in the neighbouring borough of Hounslow.

Current status

Overview

Our native amphibian and reptile populations have suffered long-term declines since the 1950's. Several factors are partially responsible for this, including pollution and pesticide use in the 1960's and 70's, however the primary driver for this has been habitat loss, accelerated by agricultural intensification and development. In towns and cities, urban sprawl has led to the direct loss of many former sites, and the fragmentation/isolation of others. However, urban environments have increasingly acted as oases for reptiles and amphibians, with garden ponds, allotments, railway embankments, brownfield sites and reservoirs, alongside other artificial environments compensating somewhat for the depletion of traditional rural habitats.

Today, populations of the majority of reptile and amphibian species are stable, thanks to legal protection and continued conservation efforts, however much work still needs to be done to reverse the long-term trends of decline, and at a local level communities remain at risk of extinction from the prevailing pressures discussed further in *Section 6*. In the context of those species which are found or potentially present in the borough of Richmond, two species are listed as 'Near Threatened' by national extinction according to the IUCN Red List assessment of amphibians and reptiles at Great Britain and Country Scale (Amphibian and Reptile Conservation, 2021). These are the common toad and adder, for which the population trends continue to show an alarming decline.

Great crested newt populations are now considered to be relatively stable in the short-term, following severe losses suffered in the 20th century, however localised extinctions continue to occur, particularly in urban environments where isolation threatens the long-term survival of metapopulations. In the borough of Richmond Upon Thames, great crested newts are only known to occur at a handful of sites, however recent data is not available for some of these. eDNA analysis carried out during spring 2024 indicates that a population introduced to Kew Gardens in the year 2000, last recorded in 2017, is no longer extant.

Distribution at key sites in London Borough of Richmond upon Thames

Table 2: List of known native reptile and amphibian populations at key sites in London Borough of Richmond upon-Thames

Site name	Common frog (*Rana temporaria*)	Common toad (*Bufo bufo*)	Smooth newt (*Lissotriton vulgaris*)	Palmate newt (*Lissotriton helveticus*)	Great-crested newt (*Triturus cristatus*)	Common lizard (*Zootoca vivipara*)	Slow worm (*Anguis fragilis*)	Adder (*Vipera berus*)	Grass snake (*Natrix Helvetica*)
Barnes Common		✓	✓			✓			
Bushy Park		✓	✓		✓				✓
Busy Park Allotments							✓		
Crane Corridor						✓			✓
Crane Park Island		✓	✓						✓
East Sheen Common	✓	✓	✓						
Fulwell Golf Course	✓		✓	✓					
Hatherop Park			✓				✓		✓
Hampton Heath	✓	✓	✓			✓			
Ham Lands									
Ham Pond		✓							
Hampton Court Park/Home Park	✓	✓	✓					?	✓
Kew Gardens		✓	✓				✓		✓
London Wetland Centre			✓			✓	✓		✓
Marsh Farm Allotments							✓		
Oak Avenue LNR							✓		
Richmond Park	✓	✓	✓	✓	✓	✓		?	✓
Royal Mid-Surrey Golf Course		✓	✓						✓
Twickenham Golf Course	✓								
Whitton Railsides	✓				✓				

Specific factors affecting the species

Habitat destruction and fragmentation through urban development & agricultural intensification

The largest cause of population decline has been the destruction and fragmentation of habitat. Many habitats are often lost to development and agricultural intensification, in particular 'fringe' sites bordering core areas of reptile and amphibian habitat which offer resilience to 'nucleus' populations in the event of pressures such as increased human disturbance, high predation or catastrophic events such as wildfires.

Fragmentation of habitat is a fundamental factor contributing to the loss of biodiversity, in that genetic exchange, and therefore species survival, is threatened. It also prevents necessary species migration due to such things as resource depletion, population displacement, breeding or climate change. Most reptiles and amphibians are animals of low mobility, and larger metapopulations often find themselves isolated on 'islands' separated by developed land, intensive agriculture and busy roads, which restrict intermigration.

Unsuitable management or degradation of habitat

In the countryside, many traditional ponds used as a water source for livestock have been infilled or fallen into late stages of succession due to lack of management. Of those that remained, eutrophication from artificial fertilisers and herbicides led to widespread pollution in the mid to late 20th century. Ornamental ponds, village ponds, urban/road drainage ponds and those built specifically for wildlife have succeeded traditional agricultural ponds as breeding sites for amphibians.

Habitat structure and connectivity is of more consequence to reptiles and amphibians than specific habitat type, and cessation of grazing, particularly in heathland and unimproved grasslands has resulted in habitat succession from semi-open habitats to scrub and woodland. This has been augmented through intentional afforestation for timber. In urban areas, these semi-open habitats may fall into unsuitable condition both through lack of management or through over management, for example intensive cutting of meadow areas in parks and common land.

In recent years, increased public pressure from footfall and dog activity has led to degradation of habitats, and in response to this, many local authorities have chosen to invest money into Sustainable Alternative Natural Greenspaces (SANGs), to reduce pressure on key wildlife sites.

Climate change

Temperature and rainfall both strongly influence reptile and amphibian behaviour, and therefore a changing climate has the potential to induce asynchronous annual lifecycles, resulting in significant vulnerabilities at critical stages such as during hibernation emergence, the breeding season and larval development (for amphibians).

The impacts can directly affect the behaviour of amphibians and reptiles themselves, and lead to detrimental changes to their ecosystem, including habitats and sources of prey. *Figure 1* below summarises some of the main ways in which climate change can affect amphibian and reptile populations in the UK.

Figure 1: A summary of how climate change can affect amphibian and reptile populations.

Dry winters

Low water table, dry ponds

Reduced amphibian breeding success

Warm and wet winters

Early emergence from hibernation

Food scarcity

Extreme hot, dry summers

Dry ponds

Less metamorphosis

Wildfires

Cold springs

Amphibians and reptiles caught in late frosts

Food scarcity and high mortality

Roads

Our native amphibians are migratory animals, moving between terrestrial habitats and breeding ponds in the early spring and back again during the late spring/summer. Common toads will travel great distances of up to 2km to reach their breeding ponds, and travel *en masse* during the first warm wet nights of late February or March, bravely surpassing any obstacle in their way. For this reason, many toads are unfortunately killed on busy roads, when their dusk migration coincides with the evening rush-hour in the early spring. Road deaths are responsible for a huge proportion of toad mortalities each year, and in some cases may even wipe out entire colonies.

The vast numbers of toads and other amphibians killed on roads has initiated a vast national response of local people forming 'toad patrols' – groups of volunteers heading out on spring evenings to physically help toads across busy roads to reach their breeding ponds.

Persecution and predation

Unfortunately, persecution can still be an issue, affecting snake populations in particular. Adders are still killed out of fear or ignorance where they exist in close proximity to human habitation. Today, such direct persecution is less common than it once was, however, deliberate arson attacks that destroy large swathes of grassland, scrub and heathland habitat are becoming all too frequent. The nearby Hounslow Heath suffers from regular incidents.

Reptiles and amphibians have evolved alongside various natural predators in their native range, however when populations are put under other human pressures, such as habitat loss, fragmentation and degradation, the impacts of predation on their long-term survival becomes more critical. This may also be a result of predator populations being put under increased geographical pressure by human activity.

Predators that reptiles and amphibians have not evolved alongside are domestic pets, such as cats and dogs. The impact of dogs to reptiles is perhaps more a case of habitat disturbance than direct attack or predation, whereas cats will quite effectively hunt out large numbers of slow-worms, lizards and frogs from allotments and gardens.

Diseases and infestation

A variety of pests and diseases exist which affect our native amphibians, leading to poor-health, decreased survival rates and decreased breeding success.

Snake fungal disease (Ophidiomyces ophiodiicola) originates from North America and is known to affect snake species. It was first detected in the UK in an infected grass snake in 2015. Symptoms of the disease include facial swelling, skin lesions and abnormal behaviour patterns which reduce survival.

The primary diseases which prevail in the UK's amphibians include Ranavirus and chytrid fungus, which cause severe physical symptoms and mass mortality events. The vectors for these diseases are the introduction of non-native fauna to watercourses, including fish and other amphibians, and the movement of amphibians, amphibian spawn and aquatic plants between waterbodies. The conveyance rates of these diseases are also believed to be exacerbated by climate change.

Introduction and/or colonization by invasive species

Introduction of non-native or invasive species can have varied impacts on native populations. Non-native species can be vectors of infectious diseases, they may compete for territory and resources, or even directly predate on native species. In some cases, distinct but closely related non-native species are able to interbreed with our native species and produce hybridised offspring, which can impact the genetic continuity of populations.

Legal status/policy

All wild, native amphibians and amphibian spawn are protected under UK law

- **Great crested newt, natterjack toad and pool frog** – Protected in the UK under Schedule 5 of the Wildlife and Countryside Act 1981, making it illegal to kill, injure, capture, disturb or sell them, or to damage or destroy their habitats. They are also listed as a European Protected Species under Annex IV of the European Habitats Directive, which gives them further protection under UK law via the Conservation of Habitats and Species Regulations 2017 (as amended post EU exit).
- **Smooth newt, palmate newt, common frog and common toad** – Protected in England from sale and trade under the Wildlife and Countryside Act 1981.
- **Wild amphibian spawn** – Protected from sale/trade.
- **Native reptiles** – All native reptiles in the UK are protected under Schedule 5 of the Wildlife and Countryside Act 1981, meaning that it is an offence to kill, injure, sell or trade them.
- **Sand lizards and smooth snakes** – The sand lizard and smooth snake are the UK's two 'rare' reptile species, confined primarily to lowland heathland, and in the case of sand lizards only, coastal sand dunes. These two species are afforded further protection under Schedule 5 of the Wildlife and Countryside Act, meaning that it is also illegal to disturb these species or damage or destroy their habitats. They are also listed as a European Protected Species under Annex IV of the European Habitats Directive, which gives them further protection under UK law via the Conservation of Habitats and Species Regulations 2017 (as amended post EU exit).
- **Natural Environment Rural Communities Act 2006** – **Section 40** of the Act places a duty to conserve biodiversity on all public and statutory authorities in the UK. All local authorities, community, parish and town councils, police, fire and health authorities and utility companies must have regard for the purposes of conserving biodiversity in a manner that is consistent with the exercise of their normal functions.
    - **Section 41** provides a list of species and habitats for which their conservation must be afforded consideration within the exercise of local authority functions, which includes **all native reptiles, common toad, great crested newt, natterjack toad** and **pool frog.**
- In addition, to protective legislation, some sites of significant importance to herptile assemblages or individual species have protective designations such as Natural England's Sites of Special Scientific Interest (SSSI) or Special Areas of Conservation (SAC's).
    - Of our native herptiles, seven qualify as individual species whose most important sites may qualify for SSSI notification on their own merit. Sites of high importance to the remaining species may be designated as a SSSI based on their overall value to reptile or amphibian assemblages. See *Table 3* below:

Table 3: British herptiles SSSI interest feature selection.

Species	SSSI Selection
Common frog *(Rana temporaria)*	Amphibian assemblage only
Common toad *(Bufo bufo)*	Can be notified as a single species qualifying SSSI feature and/or as part of an amphibian assemblage
Smooth newt *(Lissotriton vulgaris)*	Amphibian assemblage only
Palmate newt *(Lissotriton helveticus)*	Amphibian assemblage only
Great crested newt *(Triturus cristatus)*	Can be notified as a single species qualifying SSSI feature and/or as part of an amphibian assemblage
Natterjack toad *(Epidalea calamita)*	Can be notified as a single species qualifying SSSI feature and/or as part of an amphibian assemblage
Pool frog *(Pelophylax lessonae)*	Can be notified as a single species qualifying SSSI feature and/or as part of an amphibian assemblage
Slow worm *(Anguis fragilis)*	Reptile Assemblage only
Common lizard *(Zootoca vivipara)*	Reptile Assemblage only
Grass snake *(Natrix helvetica)*	Reptile Assemblage only
Adder *(Vipera berus)*	Can be notified as a single species qualifying SSSI feature and/or as part of a reptile assemblage
Sand lizard *(Lacerta agilis)*	Can be notified as a single species qualifying SSSI feature and/or as part of a reptile assemblage
Smooth snake *(Coronella austriaca)*	Can be notified as a single species qualifying SSSI feature and/or as part of a reptile assemblage

Sites of the highest significance to the conservation of the great crested newt, listed under Annex II of the European Habitats Directive, are afforded strict protection as SAC's.

Actions

Most of these actions are specific to this habitat. Please note that the partners identified in the tables are those that have been involved in the process of forming the plan. It is not an exclusive list and new partners are both welcomed and needed. The leads identified are responsible for co-ordinating the actions – but are not necessarily implementers.

Specific actions targeting reptiles and amphibians			
Action	**Target Date**	**Lead**	**Other Partners**
R&A01 – Create a heatmap of reptile and amphibian presence in the borough.	2025	LA	H&H, LARG
R&A02 – Engage and train local volunteers to take part in survey work to assess perceived gaps in reptile and amphibian distribution in the borough.	2026	LARG/ARG UK	LA
R&A03 – Carry out survey work to obtain current data on the status of historically recorded populations.	2028	LARG	Working Group, RBP, LA, RBGK, TRP, WWT

R&A04 – Undertake a habitat audit of key reptile and amphibian sites in the borough on a three-yearly basis. Utilise FWHT's Priority Pond Assessment (PASS) for pond habitats.	Ongoing	Working Group	RBP, LA, RBGK, TRP, WWT
R&A05 – Following audit, recommend and implement habitat management and enhancement as necessary to prevent degradation of herptile habitats.	2027	Working Group	LA
R&A06 – Contact local allotment committees to raise awareness of reptiles and amphibians and provide information and advice on their conservation.	2025	Working Group	RBP
R&A07 – Build at least 2 new medium to large sized hibernacula per-year in LBRuT.	Ongoing	Working Group	Landowners
R&A08 – Build a GIS database of ponds across the borough. Encourage residents to send in records of their own garden ponds to help build the database.	2027	H&H	LA
R&A09 – Share pond data with ZSL and GiGL for the Great London Pond Project.	2027	H&H	ZSL/GiGL
R&A10 – Assess the feasibility of establishing five new publicly accessible ponds in the borough to provide amphibian habitat.	2026	Working Group	LA, Other Landowners
R&A11 – Contact landowners with historic or current records of adder and great crested newt populations with a view to obtaining up-to-date data and establishing a programme of long-term monitoring.	2025	LARG	H&H, Working Group, Landowners
R&A12 – Disseminate information to landowners and general public to encourage positive habitat management and creation.	2025	H&H	Working Group
R&A13 – Install a minimum of two new positive interpretation panels in the borough (one for reptiles, one for amphibians) at a suitable publicly accessible site.	2026	Working Group	LA, Landowners
R&A14 – Identify sites or areas which have potential for habitat creation, enhancement or expansion in order to benefit reptiles and amphibians, with a focus on improving connectivity between populations.	2026	Working Group	Landowners
R&A15 – Assess the feasibility of reintroductions of reptile and amphibian species within their former range in the borough, in particular adder and great crested newt.	Ongoing	LARG	Working Group, LA

Relevant action plans

Local Plans

Standing water, Acid Grassland, Hedgerows, Private Gardens, Rivers and Streams, Neutral Grassland, Broadleaved Woodland.

London Plans

Woodland, Wasteland, Standing Water, Reedbeds, Private Gardens, Parks and Urban Spaces, Heathland, Chalk Grassland, Acid Grassland.

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4.2 Bats species action plan for Richmond

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Aims

1. To reverse the current population declines of bats in London Borough of Richmond upon Thames
2. To redress public misconceptions about bats and secure their status as culturally valued species.

Introduction

Bats are highly adapted nocturnal mammals – the only mammals to have evolved powered flight. Often thought of as flying mice, they are in fact more closely related to humans than to rodents, and form a special group of their own: the *Chiroptera*, meaning 'hand-wing'. Bats are generally only seen briefly at dusk and their seemingly furtive nocturnal habits have, over generations, resulted in popular misconceptions and even a misplaced fear of them. Modern horror stories, films and the media quoting fiction as fact have not helped to improve this tainted public image.

British bats only eat insects. Serving as natural insecticides, they consume huge numbers and variety of prey – a single pipistrelle can eat 3000 midges in a night. With the loss of natural roost sites in trees and woodlands, many bats have adapted to living in buildings. Some favoured householders may therefore be surprised to discover these unexpected lodgers for a short period during the summer, when female bats need somewhere warm to raise their young. Their reliance on buildings for roosting greatly focuses conservation efforts on people's tolerance and goodwill. Bats are an excellent

indicator of the quality of our environment, as their complex ecological requirements leave them highly sensitive to environmental changes. Their serious decline should be of major concern to us all.

All of the Borough's bat species are dealt with collectively in this plan because:

- Those currently concerned with the conservation of bats deal with all species;
- All bat species and their roosts are equally protected by law;
- The conservation problems faced by all bats are believed to be generally similar, so measures proposed here are likely to be of benefit to a number of species.

Current status

Eleven bat species are known to occur in Richmond upon Thames and at least six are thought to breed. Common and soprano pipistrelle are by far the most widespread, while the noctule, brown long-eared bat and Daubenton's bat are more localised but regularly recorded. Two species with patchy distributions in the UK, Nathusius' pipistrelle and Leisler's bat, are regularly recorded in the borough. Serotine and Natterer's bat are occasionally recorded, the latter confirmed as a breeding species in 2009. Whiskered/Brandt's bat is also strongly suspected to occur in the borough. Important sites in the Borough for bats include the London Wetland Centre in Barnes, the River Crane valley, Richmond and Bushy Parks, Stain Hill reservoirs, as well as various sites within the River Thames corridor, such as Petersham Lodge Woods and Lonsdale Road reservoir.

Worryingly, a repeat survey undertaken in 1999 found that there has been a significant decline in Greater London's bat populations since the mid-1980s, particularly for the noctule and the serotine (Guest *et al*., 2000). A study in 2017 again showed a decline for noctule between 1999 and 2016 (Mayfield *et al*., 2017) and also an even more dramatic decline for serotine over the same period. Some of the probable causes of this are summarised below.

Current bat species listed as priority species under the UK Post-2010 Biodiversity Framework are:

- Greater horseshoe — Last recorded in Greater London in 1953, historic status in RuT unknown
- Lesser horseshoe — Last recorded in Greater London in 1953, historic status in RuT unknown
- Barbastelle — Recorded in Greater London in 2017, the first record since 1968; last recorded in RuT in 1946
- Bechstein's bat — Not recorded in Greater London, historic status in the region unknown
- Noctule — Regularly recorded in RuT, though evidence of a decline in Greater London
- Soprano pipistrelle — Regularly recorded in RuT, including known breeding roosts
- Brown long-eared bat — In RuT mainly recorded in Royal Parks and Home Park, including known breeding roosts

Specific factors affecting the species

Loss of maternity roost sites in buildings or trees

Destruction of, disturbance or damage to vulnerable maternity roosts can result from entrenched attitudes towards maintenance and management, a lack of public awareness and understanding of bats, as well as continued ignorance of the legislation protecting them.

Loss of and disturbance to other roost sites

Hibernation and other seasonal roost sites can be disturbed or damaged for the same reasons as above. These sites include buildings (mainly their roof spaces), trees, bridges and various underground structures, such as cellars, and disused tunnels.

Loss of feeding habitats

Changes in land use (including development) can result in the loss of insect-rich feeding habitats such as wetlands, woodlands and grasslands.

Disturbance to commuting routes

Flight paths to and from feeding areas and roosts may be disturbed through the loss of flight line features such as green corridors, or through introduction of new features such as artificial lighting.

Bats require an urban gradient of less than 60% of built or lit surfaces, in order to move freely. Vegetation removal must be mitigated by Green Infrastructure on new buildings including green roofs.

Current action

Legal status

All species of bat are protected in the UK through their inclusion on Schedule 5 of the *Wildlife and Countryside Act*, 1981 (as amended by the *Countryside and Rights of Way Act*, 2000), and on Schedule 2 of the *Conservation of Habitats and Species Regulations 2017 (as amended)*. The latter further implements European legislation protecting bats. Bats are also protected from cruel ill-treatment by the Wild Mammals (Protection) Act, 1996.

The UK is a signatory to the *Agreement on the Conservation of Bats in Europe (EUROBATS)*, which came into force in 1994, set up through the *Bonn Convention on the Conservation of Migratory Species of Wild Animals*, 1979. While this is not strictly a legal instrument, as a signatory the UK is obliged to abide by such agreements.

Mechanisms targeting the species

Volunteer Bat Roost Visitors

The London Bat Group trains volunteers to become licensed Volunteer Bat Roost Visitors in London, working in liaison with Natural England and the Bat Conservation Trust to provide free advice to owners of bat roosts (particularly those in houses). Participants are active within the London Borough of Richmond.

Awareness-raising

The place of bats in London life is promoted regionally and locally by organisations such as the London Bat Group, London Wildlife Trust, the Wildfowl and Wetlands Trust at Barnes, The Royal Parks and the Borough Council through a programme of guided walks, illustrated talks, training and articles. The Bat Conservation Trust, Natural England and the London Bat Group have produced various publications, including a series of specifically targeted leaflets aimed at promoting best practice in relation to bats within the building, pest control and arboricultural professions.

Survey and Research

London Bat Group volunteers based within the Borough participate in national and local surveys and research, including the Bat Conservation Trust's National Bat Monitoring Programme.

Actions

Please note that the partners identified in the tables are those that could be involved in the process of implementing the plan. It is not an exclusive list and new partners are both welcomed and needed. The leads identified are responsible for co-ordinating the actions - but are not necessarily implementers.

Richmond bat SAP actions			
Action	**Target Date**	**Lead**	**Other Partners**
RB01 - Promote best tree work practice with links to appropriate websites information such as BCT's 'Bats In Trees' & other appropriate publications.	Ongoing	LA	BCT, LBG, TRP, HRP, WWT, Kew
RB02 – Promote BCT's arborist/ecology courses to arborists and ecologists who work in the borough.	Annual	BCT	RBP
RB03 - Maximise the roosting opportunities for prospecting bats by encouraging land managers and property owners to follow good practice guidelines	Ongoing	LA	LBG, TRP, TCV,
RB04 - Distribute "Bat Awareness in the Borough of Richmond upon Thames: Guidance Document" to major roofing contractors & pest control companies	Ongoing	LA	LBG, BCT,
RB05 – maintain annual borough participation in NBMP at least 10 sites	Annual	BCT	LBG
RB06 – Identify potential sites for roost and hibernaculum creation opportunities	Ongoing	Working group	LBG, LA, RBP
RB07 –Create or promote new roost opportunities (including bat box schemes) on 2 additional sites a year	Annual	Working group	LBG, WWT, TCV, TLS, TRP
RB08 - Run a training course in use of bat detectors and/or running bat walks	Biennial	LBG	BCT, WWT, TRP
RB10 – Ensure woodland and tree management includes actions to protect bat roosts and enhance habitat.	Onoing	TRP, Kew, HRP, WWT, LA, Marble Hill Park	Working group
RB11 – Promote availability of LBRuT bat detectors for public to borrow to encourage interest in bats and recording	Ongoing	H&H	
RB12 – Write up results of monitoring surveys (including Warren Footpath and TRP) and share results with working group to plan next actions. Identify additional sites for monitoring.	2025 and ongoing	Working group	LA, LBG, TRP
RB13 – Ensure guidance on bat safe roofing membranes is promoted to roofing contractors, landowners, and is included in planning application responses. See http://www.batsandbrms.co.uk/ for latest info on research and best practice.	Ongoing	LA	Working group

RB14 – Promote reduction in night-time lighting through development and implementation of a council lighting and biodiversity policy and guidance document. Mechanisms that can be used include curfews, light dimming, part-night lighting, reactive lights etc.	Ongoing	LA	Working group

Relevant action plans

Local Plans

Ancient & Veteran Trees; Broad-leaved Woodland; Dark Skies; Hedgerows; Lowland Acid Grassland; Gardens and allotments; Rivers and Streams; Reedbeds; Tidal Thames.

London Plans

City of London Biodiversity Action Plan 2021–2026; London Environment Strategy & Priority Species List.

National Plans

Local Nature Recovery Strategy; UK Biodiversity Framework

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4.3 Hedgehog species action plan for Richmond

Aims

1. To attempt to prevent population decline of hedgehogs in the London Borough of Richmond upon Thames (LBRuT) through promotion of suitable habitat creation, habitat enhancement, and mitigation.
2. To raise public and organisational awareness and concern about this culturally valued species.

Introduction

The hedgehog (*Erinaceus europeaus*) is an icon of national wildlife in the UK and is a UK Biodiversity Action Plan (BAP) priority terrestrial mammal species. A review of hedgehog population data suggests that we have lost at least fifty percent of rural hedgehogs and up to a third of urban hedgehogs since the year 2000. The loss is far greater in rural than in suburban areas, and recent trends suggest that urban populations are stabilising and possibly even recovering, showing that urban and suburban areas represent an opportunity to protect this treasured mammal (PTES & BHPS, 2018 and 2022). As individual residents and visitors we can slow down or even reverse the decline by simple actions that cost little. Organisations should work together to conserve habitats and raise public awareness. Companies and local government also have a role in protecting green space and enhancing biodiversity. Through concern for hedgehogs and their habitat, we will help to maintain the balance of nature for wildlife more generally in LBRuT, which is a suburban environment with large green spaces.

Hedgehogs, our only spiny mammal, tend to live on the edges of woodland, in hedgerows and private gardens. They are active mainly at night, roaming over distances of around two kilometres. During the breeding season males can travel up to three kilometres in search of a female. Their young, known as hoglets, are born between May and September in litters of up to five. Over half of hedgehogs will die before their first birthday and only four in a thousand live as long as seven years. Hedgehogs hibernate between November and March, although most animals will move nest (hibernaculum) at least once over winter.

Current status

Hedgehogs rely on inter-connected green spaces with a sufficient range of habitats for nesting and foraging, with a minimum of 90 hectares of land. The total area of LBRuT is 22.6 square miles, 51% of this being occupied by parks, golf courses and other open green land. Domestic gardens dominate the remainder, taking up another 19% in 2005 (Private gardens HAP, 2019). Richmond is a relatively green borough. However, the pressures on hedgehog habitats are similar to towns and suburbs everywhere. In London between 1998-9 and 2006-8 vegetated land in private gardens declined by the equivalent of two and a half Hyde Parks each year (LWT, London Garden City, 2010).

Estimating the population of hedgehogs is very difficult, as it is for many wildlife species. Central London has almost no hedgehogs, but some suburban neighbourhoods have more animals per hectare than anywhere else. It seems likely that LBRuT's hedgehog population is greater than in many other boroughs. This plan includes action to improve estimates of the distribution and if possible the size of local hedgehog populations.

Specific factors affecting the species

Many hazards can be controlled by simple responses and these are summarised in the Appendix below. For example, garden fences that have no gaps at ground level restrict the movement of hedgehogs. Hedgehogs are completely reliant on access to inter-connected patches of habitat where they can forage and find refuge (State of Nature, 2016). Loss of habitat to building development is a threat that requires a broader policy response.

Paving front gardens for parking reduces green space for all wildlife. Manicured gardens do not favour hedgehogs: they prefer long grass, compost heaps and wood piles for nesting and foraging. Busy roads that separate green spaces are a threat to life. Open ponds and swimming pools can be a hazard. Whilst hedgehogs are good swimmers, they can drown if there is nowhere for them to climb out. Slug pellets and pesticides can harm hedgehogs by entering the food chain and by reducing the number of invertebrates available as prey. Rodenticides can cause harm if a hedgehog feeds on an animal that has died from this cause.

Although badgers prey on hedgehogs, the two species have lived together in the wild for thousands of years. Badgers are not thought to be a main reason for hedgehog population decline (Wildlife Trusts, 2017).

Current action

Legal status

The hedgehog has partial protection under Schedule 6 of the Wildlife & Countryside Act 1981 (as amended). The hedgehog is included in the UK BAP Priority Species list, which is an important reference for species that are threatened and require conservation action. Hedgehogs are protected from cruel/ill treatment by the Wild Mammals (Protection) Act, 1996.

Mechanisms targeting the species

Public awareness

Raising public awareness is important so that people know how their actions may affect wildlife and why wildlife is important. See Appendix for key messages. Organisations in all sectors have a role to play in this. Examples include promoting take-up of wildlife surveys and encouraging people to record sightings. Increasing public concern for wildlife and biodiversity also encourages media interest, which can be harnessed to promote awareness. Horticultural organisations including allotments associations can promote good practice to members.

Education

Schools and colleges can enable children and young people to be future leaders in wildlife friendly gardening and nature conservation more generally. Voluntary and specialist organisations can support this through curriculum development and delivering educational sessions. Adult and community learning organisations can promote awareness for adults. Universities, FE colleges, secondary and primary schools can take part in the 'Hedgehog Friendly Campus' scheme, funded by the British Hedgehog Preservation Society and delivered by SOS-UK (About us | Hedgehog Friendly Campus).

Built environment

Partnerships can help conserve a place for nature in a growing and changing city and suburbs. Key partners are environmental organisations, housing and transport developers, social housing providers and planners. An example is the partnership between PA Housing (formerly Paragon) and the People's Trust for Endangered Species (see https://ptes.org/hedgehog-street-inspires-community-garden/). The Hedgehog Street website has a list of companies offering hedgehog friendly fencing (Companies offering hedgehog friendly fencing - Hedgehog Street) and Habitats & Heritage have produced a guide on incorporating hedgehog holes into fencing which is aimed at developers, landscapers and fencing installers (Incorporating Hedgehog Holes Into Fencing).

Open green spaces

As well as managing open green spaces for wildlife and biodiversity there is an opportunity to promote good practice and raise awareness through information for visitors.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions targeting hedgehogs			
Action	**Target Date**	**Lead**	**Other Partners**
RBPH01 – Promote wildlife friendly gardening and good practice advice for owners or leaseholders of greenspaces.	2025 and ongoing	H&H	RBP
RBPH02 – Develop leaflet and web page with tips to improve habitat. Link to national and other local resources.	2026	H&H	

RBPH03 – Promote London Hedgehog Forum and set up local online group for members of public to engage with hedgehog sightings, information and citizen science opportunities. Encourage people to report sightings of live or dead hedgehogs to the BIG Hedgehog map.	December 2025 and ongoing	H&H	
RBPH04 – Encourage and support partners, landowners and community groups to carry out hedgehog surveys. Focus on areas which don't currently have data. Report results to GiGL.	December 2026	H&H	RBP
RBPH05 - Develop communication tools, e.g. online briefings, for members of public interested in surveying and protection	December 2026	H&H	RBP
RBPH06 – Identify areas where hedgehog presence data is lacking using GiGL data, London Hogwatch data, and the BIG Hedgehog Map	December 2025	H&H	RBP, GiGL, ZSL
RBPH07 – Promote best practice in fencing design and installation with private sector.	2025 and ongoing	H&H	RBP
RBPH08 – Raise public awareness through fairs and other events.	2025 and ongoing	BCL	RBP members, H&H
RBPH09 – Install road signs warning of hazards to Hedgehogs from traffic based on data.	2025 and ongoing	LA	RBP
RBPH10 – Identify 'hedgehog highway' areas to be developed or expanded	2025 and ongoing	H&H, BCL	RBP
RBPH11 – Encourage planning applications to enhance green connectivity and prevent or mitigate deterioration of habitat, e.g. gardens	2025 and ongoing	LA	RBP
RBPH12 - Promoting better understanding of challenges, risks and diseases faced by hedgehogs and encourage reporting dead or diseased hedgehogs to Garden Wildlife Health	2025 and ongoing	H&H	TRP

Relevant action plans

Local Plans

Gardens and Allotments Habitat Action Plan.

London Plans

All London Green Grid. All London Green Grid SPG

National Plans

National Conservation Strategy for Hedgehogs in the United Kingdom. National-Hedgehog-Conservation-Strategy-Jan-25.pdf

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Appendix: public awareness.

Raising awareness about needs and threats is one of the most important aspects of protecting hedgehogs. For further information, please consult www.hedgehogstreet.org. Key messages:

Make hedgehog highways: Hedgehogs need to be able to roam for food and nesting. Get together with your neighbours, cut a hole in your fence or dig an underground tunnel between gardens about the width of an adult's hand. This helps other kinds of wildlife, too, including frogs, toads and newts that help to control the population of slugs.

Do not use slug pellets or pesticides: Hedgehogs need invertebrate prey such as slugs and beetles. The website www.wildaboutgardens.org.uk is useful for details of natural pest control methods such as nematodes for slugs. Slug pellets can also kill hedgehogs if ingested as the pellets are highly toxic, regardless of whether the pellets are organic or not organic. Hedgehogs can be harmed if they eat rodents that have died by poisoning.

Make water safe: Hedgehogs are good swimmers but need an escape route. Make a ramp from a plank covered in chicken wire or create shallow areas at the edge so they can scramble out.

Provide nesting sites: Fallen leaves make the perfect nesting material, so do not clear all these away in winter. Log and leaf piles and wilderness areas are good for nesting and hibernation as well as habitats for food species.

Grow a wide variety of plants: Attract prey for hedgehogs by growing a wide variety of plants. If you grow plants that flower in the different seasons of the year this will help bees and other insects as well.

Know the hazards: Check for hedgehogs before lighting bonfires, strimming and mowing the lawn. Keep plant netting, tennis nets, litter and household rubbish above ground level so they do not get entangled. Promptly clear harmful litter such as cans and plastics. Let light into your garden for ten minutes before you put your dog out at night: Hedgehogs avoid light and will have time to get clear.

Feed appropriately: In cold or dry weather hedgehogs will benefit from a dish of shallow water and meat-based dog or cat food. Do not give them milk, which they will drink but cannot digest. Bread does not nourish them.

Make grey space greener: Paved areas are not hospitable for hedgehogs. Rubber car parking grids are an eco-friendly alternative driveway option as they allow for drainage and would provide a greener area for Hedgehogs to move along and feed. You can make 'grey' paved areas more wildlife-friendly by simple actions. Even planted containers will help sustain Hedgehogs' food supply. Hedgerows in domestic gardens are beneficial. See RSPB and the Royal Horticultural Society, "Greening Grey Britain" references.

Report sightings and problems: Make a report when you see a hedgehog to help monitor populations. You can report live, dead or roadkill hedgehogs and follow sightings on the BIG Hedgehog Map BIG Hedgehog Map and report dead or diseased hedgehogs to Garden Wildlife Health Garden Wildlife Health

4.4 House sparrow & song thrush species action plan for Richmond

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"From one-two decades ago it was possible to listen to half a dozen thrushes, now it is rare to hear more than one. The tendency… has been towards a greater artificiality, it saves for trouble and makes for prettiness to cut down decaying trees. To drape them in ivy and make them beautiful in decay would take some thought and care."

(W.H. Hudson on West London Song Thrushes, Birds in London, Dent & Sons, 1928)

The House Sparrow and Song Thrush Species Action Plan outlines background information for the house sparrow and the song thrush separately in sections 2 and 3. Section 4 identifies combined actions that will be taken to help reverse the decline of these two species in LBRuT and to raise public awareness.

Aims

1) To reverse the current population decline of house sparrows and song thrushes in London Borough of Richmond upon Thames (LBRuT).
2) To increase public awareness of these birds and their status as valued species.

House sparrows

Introduction

House sparrows are one of the most common and widely dispersed bird species. They are native to most of Europe, the Mediterranean Basin and Asia and have been introduced to many other parts like the Americas, Africa and Australia. Their distribution is closely associated with that of human settlements living in urban areas as well as farmland.

However, the once common house sparrow (*Passer domesticus*) has declined in many cities across Europe since the late 1970s and is now listed as a species of conservation concern. According to a BTO study (2002) in garden habitats across Britain the species has declined by around 58% between 1970 and 2002.

House sparrows are very social birds that will breed, feed, roost and bath in groups. Colonies of about 20 to 40 individuals are common. They are also considered sedentary, though in the autumn large

flocks may form to move 1 to 2 km away from their colonies to feed on sites where food is more abundant (BTO 2002).

Pairs will return to breeding colonies in the winter. House sparrows tend to nest in cavities like roof eaves, but may also nest in dense bushes. Up to four broods may be raised per breeding season with an average of 4 to 5 eggs per brood (BTO 2002).

Adult house sparrows feed mainly on seeds from grains and weeds but being very adaptable, they will eat other available foods like leftovers and crumbs. They are also frequently seen feeding from garden tables and feeders. The young are mainly fed on invertebrates like aphids and caterpillars; so an abundance of these is important for survival of the brood.

Current status

Public perception of decline

Evidence that this once abundant bird has declined dramatically in recent years has been coming in from many sources. It is now a common experience to find that house sparrows have disappeared, or become far less prevalent, in many places where they were formerly abundant, and this now applies both in the centre of London and in many of the suburbs as well as some of the surrounding towns. The issue has attracted media attention and frequent inquiries from the general public. On 1st December 1997 a question was put in the House of Lords "Whether there has been a reduction in the numbers of sparrows in London; if so, to what is this reduction attributed?". On 15th May 2000 the Independent offered a £5,000 reward to anyone who could solve the mystery of the disappearing house sparrow.

Scientifically based studies

Summers-Smith (2003) reviewed available data for house sparrows in the UK and identified that the decline in urban areas started as early as the 1920s, with three distinct phases. This is evidenced by available data from London's Kensington Gardens, which found 2,603 birds in 1925, down to 885 in 1948, 544 in 1975 and only 8 in 2000. Initially, a steep decline in the 1920s has been attributed to the replacement of the horse with the internal combustion engine and the consequent loss of food to house sparrows. Then, a more gradual decline between 1945 and 1975 was followed by a rapid decline from the early 1990s to 2001. A number of factors that could explain this decline have been put forward and it is likely that a combination of these, and possibly other factors, have resulted in the latest decline:

- increased predation by domestic cats
- loss of nesting opportunities
- pollution from unleaded petrol contributing to a decline in aphids
- increased use of pesticides in parks and gardens.

Nevertheless, the decline in urban areas across the UK hasn't followed a clear pattern, with some cities such as London, Edinburgh and Dublin experiencing a decline as opposed to Manchester which did not (BTO study, 2002).

The BTO study (2002) also found that houses with gardens were strongly preferred to any other habitat type, which suggests that conservation measures targeting house sparrow breeding colonies in urban areas should focus on improving urban gardens.

Additional evidence is available from various national surveys.

In the BTO Garden Bird Feeding Survey, the house sparrow has fallen from being the fourth most common visitor to garden bird tables in the 1970s to ninth place in 2016 (recorded in 97% and 84% of gardens in the 1970s and 2016/17 respectively). The average number recorded in individual gardens in rural areas has fallen by about 50% between 1978 and 1993; in urban areas the data is less clear-cut, but there is a statistically significant decline from about 1986 onwards. These declines, however, are considerably smaller than those observed in Kensington Gardens, Wimbledon Park and suburban Glasgow.

The National Breeding Birds Survey shows a statistically significant decline of 7% between 1994 and 1998 (and 4% in 1997-8 alone). Within London, the decline has been more substantial, with a fall of about 50% between 1994-1999.

Specific factors affecting the species

As yet, it is not possible to identify one single factor as the cause of decline, although there are several theories. It is easy to see how some of the various factors outlined below could have significant impacts in particular localities, and it is of course possible that more than one factor is at work. Research is needed to try to identify which are the most important factors. Only then will it be possible to put in place any effective remedial measures.

Predation

The recent increase in domestic cat, sparrowhawk and magpie numbers has been put forward as a possible explanation. Nesting birds have been found in close proximity to predators, so these are not a limiting factor. Though predators are likely to have an impact on house sparrow populations in urban areas, they are unlikely to cause such a steep generalized decline. However, they can cause significant declines in local populations that are already under pressure (BTO 2011).

Disease

Declines on the scale now being seen in the house sparrow have been attributed to disease in some other species. A virus or *Salmonella* infection has been suggested. However, few if any diseased birds have been observed, although any corpses would most probably be quickly disposed of by carrion-feeders.

Food supply for the young

A lack of aphids to feed the young chicks has been proposed, though as pointed out in the BTO study (2002), nest record data in Britain shows an improvement in breeding performance in urban areas.

Pollution

Pollution in general might affect sparrows, particularly in urban areas. Additionally, the increased use of lead-free petrol has been presented as a possible explanation for a reduction in the abundance of aphids, which, if confirmed, could impact food supply for the chicks.

Changes in agricultural practice

Changes in agricultural practice may affect the London house sparrow population especially in late summer/autumn, when birds leave their nesting territories in residential areas and move off in seed-feeding flocks. No doubt some London birds disperse into the surrounding countryside. At this time, changes in agricultural practice, such as the switch to autumn sowing of cereals, and lack of stubble

as autumn/winter feeding habitat may have some impact. Additionally, if surplus birds from nearby rural populations have traditionally augmented the London population from time to time, a fall in breeding success in rural populations could reduce the number of immigrants into London.

Reduction of seed harvest in autumn

In both central London and the suburbs, there has been a marked reduction in brownfield sites in recent years, as vacant land is recycled more quickly into new development than in the past.

Changes in roof design

This may be an issue in some areas of older housing stock which are undergoing renovation, as modern roof repairs may prevent access to the roof space for birds. However a decline has also been noted in areas where roof replacement is less widespread.

Pesticides used in roof treatment

In addition to re-structuring, roofs are often subject to pesticide treatment. Whilst it is recognised that certain pesticides are harmful to bats, no such issue has been recognised for birds.

Current action

Both BTO and RSPB carry out annual garden bird surveys, which include data on house sparrows. These surveys are based on citizen's sightings, so comparisons can be difficult, but they certainly contribute to knowledge of species distribution and variations.

BTO also carried out a national survey on house sparrows in urbans areas between 2002 and 2004. The survey highlighted that houses with gardens were the most common type of habitat close to nesting sites. This could be explained because gardens provide both foraging and nesting conditions for sparrows (particularly suitable for a species with a small foraging range). Greenspace in the UK was the least preferred habitat, likely due to their rather open and homogeneous composition.

The exact status of the sparrows in LBRuT needs to be determined, although it is likely to occur and breed wherever there is suitable habitat, including gardens. Some attempt has been made to informally determine sparrow numbers at a number of specific sites in London and within the borough:

- SWLEN's Park House Gardens project
- RSPB and London Biodiversity Partnership surveys in 2002 and 2012 "Where have all the sparrows gone?"
- Friends of Richmond Park Breeding Birds survey 2016
- RSPB annual Big Garden Birdwatch

These surveys help to build a database on house sparrow numbers throughout the years and because they are mostly based on citizen science, they also promote awareness of house sparrow importance.

Legal status

Sparrows and their nests are fully protected under the EU Birds Directive and the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird. It is an offence to intentionally damage or destroy the eggs, young or next of a sparrow while it is being built or in use. It is therefore essential to ensure nests are not destroyed if hedge trimming or tree felling has to be carried out in the breeding season.

Mechanisms targeting the species

Awareness of house sparrows is promoted regionally and locally by organisations such as the RSPB, London Wildlife Trust and Friends of Richmond Park, through a programme of guided walks and articles.

As there are indications that this species is increasingly seeking refuge in gardens, useful on-going information about this species can be obtained from national surveys such as the BTO/RSPB Garden Bird watch.

These actions are ongoing. They need to be supported and continued in addition to the new actions listed under Section 6.

Relevant action plans

Local Plans

Broad-leaved woodland HAP, Ancient and veteran trees HAP, Private gardens and allotments HAP.

National Plans

England's 2020 Biodiversity Strategy: https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services

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Song thrush

Introduction

The song thrush (*Turdus philomelos*) was once a common and widespread species throughout the United Kingdom. Both sexes are alike, with adult birds having warm brown back and upper parts and distinctive blackish-brown spots on the yellowish-white lower throat and breast. At around 20-23cm the song thrush is the second smallest of the six thrush species regularly occurring in the U.K. and the smallest of the three resident species. In the London Borough of Richmond upon Thames (LBRuT) it is only likely to be confused with the significantly larger mistle thrush and, in the winter, with the slimmer redwing.

The song thrush has a most distinctive loud and proclaiming song, which has endeared it to generations. This is heard throughout the day but most regularly before dawn and after sunset. The clearly uttered lively phrases and repetitions make the song thrush one of the most beautiful of our native songbirds. Breeding territories (typically around 0.2 – 2.6 hectares) are often established in late winter, making the song thrush one of the first birds to herald the approach of spring. In mid-January the suburban dawn chorus is often dominated by the calls of this species.

Song thrushes can potentially be found in any habitat where there is a mixture of woodland, bushes and hedgerows, a preference that often brings this species into parks, allotments and gardens. Song thrushes nest low down in any suitable cover, but typically in shrubs, amongst creepers on walls or on the ground amongst thick vegetation. Song thrushes feed primarily on worms, slugs, snails and fruit.

The song thrush may be either a resident, a partial migrant or a passage migrant to the U.K. Some of our breeding birds are considered fairly sedentary, particularly those dwelling in gardens, but half the adult breeding population and two-thirds of first-year song thrushes are considered to be migratory, wintering in north-west France, northern Spain and Portugal to the Balearics. In addition, considerable numbers of nocturnal travelling song thrushes cross the North Sea each autumn to overwinter in the U.K from Scandinavia, Germany and Russia.

Current status

National status

The once common song thrush is now a Red List species. Numbers have been in rapid, more or less continuous decline over the last 40 years. Long-term monitoring carried out by the British Trust for Ornithology shows that the population in England declined by more than 50 per cent between 1970 and 1995. This decline was most pronounced on farmland, where the population decreased by about 70 per cent. Because of this decline, the song thrush is listed as a bird of serious conservation concern (red). However, there has been a partial recovery in numbers during the last decade (RSPB, online).

In 1970 the Common Bird Census (CBC) estimate of the U.K. population was just over 3 million breeding pairs, which represented a significant recovery following a harsh winter in 1962-63 that had reduced the population to just over 2 million pairs. However, since 1970 the CBC estimate has steadily dropped to just over 1.1 million breeding pairs in 2000 (RSPB/WWT/BTO 2003). Since then, a slight recovery was observed; the BBS trend 1995 – 2015 shows a 22% increase (Hayhow et al. 2017). After a dip in numbers around 2007-2011 numbers are slowly rising again and have now reached levels observed in the mid-1980s.

Despite a slow recovery in populations, habitat specific trends show that in urban and suburban habitats song thrush populations have declined between 1995 and 2011 (Robinson et al. 2016).

Regional status

National trends of decline seem to have been reflected within the London area, and song thrush is a London BAP Priority Species. However, while there is some recovery on the national level, a significant decline of 34% has been observed in London between 1995 and 2013. The Breeding Bird Survey for London, conducted in 2014, shows a 20% increase from 2013-2014 and there has been an increase in territories at some of the sites; this increase for Song Thrush followed a statistically significant decrease between 2012 and 2013. (London Natural History Society 2016).

Below are breeding records from the Breeding Bird Survey for London (London Natural History Society, 2016, p. 131) for sites where five or more were recorded (no. of territories/singing males in brackets), plus all Inner London breeding records and some of the higher counts.

- **Essex:** Belhus Woods CP (10). Mar Dyke Valley (5). Orsett Fen (6). Rainham Marshes (6). Wanstead Flats, 50+ on Oct 14th.
- **Hertfordshire:** Beech Farm GP (5). Hatfield Aerodrome (6). Northaw Great Wood (7). Rye Meads (15).

- **Middlesex:** Hampstead Heath, 50 on Oct 15th. Home Park (12). Horsenden Hill (17). Tottenham Marshes (18). Wormwood Scrubs (15).
- **Kent:** Longfield Gallops, 27 on Oct 16th. Sutcliffe Park, 28 on Dec 25th.
- **Surrey:** Arbrook Common (5). Epsom Common (10). Molesey Heath (9). Richmond Park, 120 on Oct 31st. West End Common (5). Wimbledon Common (c40).
- **In London:** Hyde Park/Kensington Gardens (3). Regent's Park, 18 singing on Jan 25th.

Local status

In 2015, a song thrush survey was circulated to specific groups and individuals to invite interested parties to send in any sightings in LBRuT green spaces, with an invitation to send in records up until 30th June 2015. This initiative was a way of re-animating communication and awareness of the song thrush in the Borough. Responses to the survey were very limited; personal comments from several resident birdwatchers indicated a lack of birds.

Table 1 Song thrush territories at Sites of Metropolitan, Borough and Local Importance for Nature Conservation in LBRuT:

Site	Territories (year in brackets)	Territories (year in brackets)	Territories (year in brackets)
Barnes Common	6 (2004)	9 (2010)	
Bushy and Home Parks*	9 (unknown)		
Crane Corridor	23 (2005)		
East Sheen & Richmond Cemeteries	4 (2005)		
East Sheen Common		4 (2011)	7 (2015)
Ham Common			
Ham Lands	26 (2005)	11 (2009)	
Kew Gardens			
London Wetland Centre	6 (2004)	5 (2010)	9 (2016)***
Old Deer Park			
Richmond Park**		41 (2008)	44 (2015)
Palewell Common			

* including the Royal Paddocks Allotments
** Richmond Park - distribution of territories in 2008: Enclosed - 22 (enclosed woods, lodges, gardens and small enclosures), Boundary - 14 (beside Park boundary wall, adjoining other green spaces and gardens), Unenclosed - 5 (unenclosed woods, including one in wood with extensive Rhododendron).
*** London Wetland Centre Breeding Bird Survey 2016

In addition to the territories mentioned above, the survey found that song thrushes were active along the River Thames corridor from April to June 2015 from Orleans House Grounds, to Marble Hill Park, to the grounds of Richmond Palace, along the river down to Kew Gardens, and in the St Margarets Lake and River Pleasure Gardens. Observations showed that song thrush territories are in wooded areas in

green spaces and generally in the densest and least disturbed part of the habitat. They are found in Orleans House Grounds along the wall by the road on both sides of the Grounds. They are also found in Marble Hill Park in the two central fenced off woodland zones (inaccessible to the public) between the 'ice house' and the Main House, along the wooded area running up the left hand side of the public park on the north-west side of the park from the Main House to A305 running parallel to Montpelier Row (as confirmed by Andrea Arthan, Marble Hill Park Ranger) There are further territories in the trees and shrubs along the Thames towpath between Richmond Bridge and Kew Gardens (Richmond / Kew side of the river).

A full survey of Richmond Park by the Richmond Park Bird Recording Group (RPBRG) in 2015 found 44 Song Thrush territories, a similar number to that found in the last full survey in 2008 (41), which suggested a stable population within the park. The distribution within the park has changed slightly due to management work in a few of the park's woodlands. The necessary removal of rhododendron from the park's largest wood over the last few winters has led to the loss of territories. However, these were offset by new territories in woods where the planting and development of understorey has taken place.

Surveying at the London Wetland Centre indicates stable populations at the site.

A survey of (East) Sheen Common by Jan Wilczur in 2015 found 7 territories, an increase from the 4 found in 2010. This may be within the natural variation of the population but shows that this relatively small woodland is important for song thrushes within LBRuT.

From Jan Wilczur's recent observations, song thrushes are not thriving in, or even occupying, gardens in LBRuT. They seem to be most successful in woods, parks and green spaces along the river that contain areas of dense shrubs and open areas. Such areas may appear 'untidy' but are in fact safe havens for song thrushes and other wildlife. (Bramble undergrowth is important for shelter, and prevents access to dogs, deer and humans.)

There are additional data available from Green Space Information for Greater London (GIGL). However, these were not included in this Species Action Plan, as these records do show a strong bias of recording effort; data possibly show where people have gone looking for song thrushes rather than the actual distribution of the bird across London (personal communication Maria Longley (GIGL), 29th January 2018).

Specific factors affecting the species

Changes in survival in the first winter, and also the post-fledging period, are sufficient to have caused the population decline. The environmental causes of this are unknown but are likely to include changes in farming practices, particularly land drainage and possibly increased pesticide usage. (Robinson et al. 2016)

Habitat loss

During the breeding season song thrushes need nest sites low in dense vegetation. Over-management of suitable habitat, including reductions in shrub cover or removal of hedgerows, are likely to be detrimental to song thrush numbers by reducing the supply of suitable nest sites and exposing nests to predators. While habitat loss has been most significant in agricultural areas (note that there is a

significant amount of farmland within West London, to the west of LBRuT) there is anecdotal evidence that a reduction in urban shrub cover may well be affecting song thrush populations throughout the London region. As our opening quote from D.H. Hudson in 1928 suggests, this issue is not a new one.

Food supply

Research indicates that a number of combined factors may be affecting the regular food supply of song thrushes, leading in turn to pressures on fledgling birds in particular; about half of all song thrush fledglings die within their first 45 days, and two-thirds within 70 days (Robinson et al. 2004). The number of broods may also be affected: song thrushes on intensive arable farmland make only 2-3 nesting attempts per year, compared to 4-5 attempts for birds in a stable population (RSPB, online):

Greater use of pesticides in the countryside and in gardens has reduced available food. Note that the reduction in song thrush numbers in agricultural areas has resulted in gardens becoming an increasingly important habitat. Certain molluscicides such as slug pellets not only reduce the number of available slugs, but are also known to be toxic to song thrushes.

Periods of cold, snowy weather in winter and hot, dry weather in summer lead to difficulties for song thrushes in locating sufficient earthworms and soil-dwelling invertebrates.

Changes to habitat such as land drainage have reduced foraging habitat.

Cropping methods and rotations have led to a decline in organic matter in the soil, which in turn leads to a reduction of song thrush food supply.

Other factors

Several other factors have been suggested for declining song thrush numbers, although it seems unlikely that these are as significant as habitat loss and food supply decline:

Increased predation by corvids, sparrowhawks, foxes and cats.

Research has however indicated that magpie and sparrowhawk numbers on 250 study farms across lowland Britain are not connected to a reduction in song thrush numbers. Further, the proportion of song thrush nests that are predated has actually fallen during the last 30 years (RSPB, online).

Hunting in Southern Europe.

This could potentially affect breeding age song thrushes who migrate to hunting areas in the winter but the precise effect is hard to quantify.

Increased competition from blackbirds.

This has been suggested as the blackbird is a more aggressive thrush species sharing the habitat and food supply of the song thrush (Simms 1998). However, BBS data shows similar trends for the blackbird population over the period 1994 to 2003 (slight national increase, significant London decrease) suggesting that this is unlikely to be a major population driver (RSPB, online).

Current action

Legal status

Song thrushes and their nests are fully protected under the EU Birds Directive (EC/79/409) and the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird. It is an offence intentionally to damage or destroy the eggs, young or nest of a

song thrush while it is being built or in use. It is therefore essential to ensure nests are not destroyed if hedge trimming or tree felling has to be carried out in the breeding season.

The song thrush is a priority U.K. BAP species. It is also a Red List species (high conservation concern) (Robinson et al., 2016).

Mechanisms targeting the species

These current actions are ongoing. They need to be supported and continued in addition to the new actions listed under Section 6.

Until CBC results indicated that the song thrush was in decline it was assumed that the national song thrush population was relatively stable. The high profile of the song thrush as a familiar and widespread species has resulted in considerable focus on numbers throughout the U.K. Examples of activities are listed below:

National research

The song thrush is currently abundant enough to be fairly accurately monitored across the U.K. using the Breeding Bird Survey.

As there are indications that this species is increasingly seeking refuge in gardens, useful ongoing information about this species can be obtained from national surveys such as the BTO/RSPB Garden Birdwatch.

Local census work

Local data on song thrush numbers can be extracted from all the main national surveys, and may indicate trends without providing comprehensive local information.

In LBRuT, a song thrush survey was circulated to specific groups and individuals in 2015. This invited interested parties to send in any sightings in LBRuT green spaces to RBP. In addition, informal monitoring of song thrush numbers has been undertaken at several specific sites. Information about song thrush numbers can also be extracted from a number of "standard walk" surveys being conducted in LBRuT (Richmond Park, Ham Lands, Barnes Common, Crane Valley).

Information dissemination

As well as pushing the plight of the song thrush in national media, the RSPB has produced an advisory sheet containing guidance for landowners which can be found online.

The Richmond Biodiversity Partnership produced a song thrush leaflet to inform residents about the bird in LBRuT and suggested reducing molluscicides and providing nesting habitat in private gardens.

Relevant action plans

Local Plans

Broad-leaved Woodland, Ancient and Veteran Trees, Hedgerows, Private Gardens.

London Plans

The London Plan, London Plans include Woodland, Heathland Habitat, Wasteland Habitat, Churchyards and Cemeteries, Private Garden, Parks, Squares & Amenity Grassland, Woodland Audit, Open Landscapes with Ancient/Old Trees Audit, Heathland Audit, Churchyards and Cemeteries Audit,

Railway Linesides Audit, Farmland Audit, Private Gardens Audit, Parks, Amenity Grasslands and City Squares Audit, Urban Wastelands Audit and Hedgerows Audit.

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The London Wetland Centre Breeding Bird Survey 2016 map

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for house sparrow and song thrush			
Action	**Target Date**	**Lead**	**Other Partners**
HS&ST01: Determine which groups and organisations are collecting data on song thrush and house sparrow and request data.	Dec 2025	H&H	BTO, RSPB, LNHS, GIGL, RBP, SDBWS, WCC. WWT, Surrey Bird club
HS&ST02: Collate data from GiGL to create a heat map of the two bird species and identify where further surveying is required to establish baseline data.	Dec 2025	LA	
HS&ST03: Recruit volunteers to the RBP and provide any necessary support to aid surveying.	Dec 2025	H&H	
HS&ST04 – Establish appropriate survey techniques for conducting easily repeatable sparrow and song thrush population monitoring and set up ongoing borough wide reporting.	Mar 2026		
HS&ST05 – Co-ordinate community awareness actions to encourage species sightings (this is tied to GA04).	Ongoing	Working group	H&H
HS&ST06 – Use monitoring data to identify areas of potential sparrow and song thrush habitat and support local land managers to implement habitat management improvements that could boost local populations. Eg areas under minimal maintenance.	Mar 2026	Working group	
HS&ST07 – Distribute sparrow nesting boxes in areas identified as having potential for new house sparrow habitat.	Ongoing	Working group	LA
HS&ST08 – Work to include safeguards within the planning framework to ensure that survey and mitigation are included whenever sparrow and song thrush populations might be affected.	Ongoing	Working group	
HS&ST10 – Raise public awareness of sparrow and song thrush conservation and importance – press releases, web pages and leaflets, social media campaigns, walks and talks.	Annually	Working group	

Contact

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4.5 Native black poplar species action plan for Richmond

Specimen of native black poplar
collected from Richmond Park in 1929
© Royal Botanic Gardens Kew

Aims

1) To contribute to the conservation of native black poplar in the UK through protection, maintenance and promotion of the population in the London Borough of Richmond upon Thames (LBRuT).
2) To undertake research in order to further understand the genetic diversity of the native Black Poplar population within LBRuT.
3) To raise awareness and increase knowledge of the native black poplar.

Introduction

The native black poplar (*Populus nigra* ssp. betulifolia) was formerly a component of floodplain woodland but now occurs as isolated specimens in wet meadows, along hedgerows, beside ponds, near to rivers and in amenity plantings. It has not reproduced naturally for many centuries and its current distribution reflects the once common practice of striking cuttings for use mainly around farms. It has been in decline for the last 200 years and is now one of the rarest trees in the UK. There are so few native black poplars left that it is unlikely that they will pollinate each other, instead the large numbers of introduced cultivated trees will pollinate them. Consequently, due to this and to the loss of the specific habitat conditions required for germination, there are rarely any new truly native black poplars. Our surviving trees are an even aged population: most have reached old age and mortality rates are high for a variety of reasons.

Current status

Current status - national

There are an estimated 7000 native black poplars in Britain, chiefly occurring south of a line from the Mersey to the Wash. Many of these are believed to be genetic clones so probably considerably less distinct genotypes exist. The tree has strongholds in Cheshire, the Vale of Aylesbury, East Anglia and Greater London. The genus is dioecious (either male or female) and female trees are particularly rare, with an estimated 600 nationally (Forestry Commission, 2004). Britain's intensively managed rivers

have lacked suitable habitats for centuries and consequently, the current population reflects former planting preferences rather than any natural distribution pattern.

Planting has been restricted to vegetative cuttings, and this is the main reason why genetic diversity is low. In addition, there was very little planting of new trees until the late 1990s. Hybrid crosses of the European black poplar (*Populus nigra ssp. typica*) and the American cottonwood (*Populus deltoides*) have been extensively planted in place of the native tree over the last 200 years. There has been much misidentification of hybrids as natives and *vice versa*. A large number of street trees in Manchester have recently succumbed to a disease called poplar scab (*Venturia populina*); it is not clear at present whether the disease will affect other parts of the country, especially eastern areas where the drier climate and wider spacing between trees could limit its ability to spread.

Current status – local

The number of native black poplars in LBRuT is the highest of all London boroughs, with 10 female and 11 male of unique clones identified (Jamie Simpson, personal communication). The Royal Botanic Gardens at Kew has a selection of trees grown from cuttings taken from across the country and Richmond Park has veteran females as well as new plantings. The population on the Thames at Barnes is the most important due to its many veteran females of unique clones which because of their location and spacing, are likely to be the relic of a natural population. There are a number of veteran and mature trees scattered across other areas of LBRuT. In c. 2001 an ongoing propagation programme was initiated by the Royal Parks using cuttings taken from within Richmond Park. These trees have been planted within the park and distributed via local organisations for planting along the Thames and in Local Authority parks. There are concerns that cuttings are sourced from too small a selection of parent trees (of common genetic material). At present not enough planting is being undertaken to maintain the population and genetic diversity within LBRuT.

Specific factors affecting the species

Habitat loss and degradation

Loss of both natural river systems and unstable floodplain sediments results in an absence of suitable habitat for natural regeneration. The widely dispersed population makes site-based conservation more difficult. An additional problem is the removal of fallen trees that would otherwise survive in situ or regenerate from the stump.

Premature death

This may result from the introduction of pests and diseases due to human or climatic factors, removal due to risk management concerns or poisoning of stumps preventing natural regeneration

Reproductive problems and degradation of gene pool

Widely available and commercially preferable hybrids have been planted in preference to native stock for the last 150 years. This, combined with the lack of native male trees in close proximity to native females, means that many new trees are hybrids rather than true native black poplars. The are f remaining mature/ semi-mature trees for continuity and most are at the end of their lifespans.

Public ignorance

Lack of identification skills and general ignorance of the importance of individual specimens.

Current action

Legal status

Section 13 of the Wildlife and Countryside Act 1981, as amended, prohibits the unauthorised uprooting of any wild plant species. Native black poplars are not on Schedule 8 of the Act (those protected from any picking, uprooting or destruction) and only benefit from the general protection mentioned above. Some trees may be protected using Tree Preservation Orders under the Town and Country Planning (Trees) Regulations 1999. These are normally only served where it is known that a tree is under threat from felling. Some trees may lie within Conservation Areas associated with villages and flood meadows and would be afforded some protection. A Felling licence (Forestry Act 1967) may be required if a landowner wishes to fell a number of trees. Where a native Black Poplar grows within a hedgerow, the Hedgerows Regulations Act 1997 would afford some protection to the tree and hedge.

Mechanisms targeting the species

Propagation of trees

RBG Wakehurst Place has undertaken hand pollination at Richmond Park resulting in 26 trees being grown and identified by genetic testing as native black poplars. These will be given back to Richmond Park. Royal Parks propagation programme has been distributing trees. The RBG Kew has also undertaken propagation of all of the Barnes population unique clones and planted them within the gardens or the towpath

Collection and dissemination of information

Conservation information will be disseminated to owners of trees on an ad hoc basis by Jamie Simpson (clones and trees planted within gardens or on the towpath).

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for black poplar			
Action	**Target Date**	**Lead**	**Other Partners**
BPT01 - Develop a process and funding to ensure newly identified NBP individuals are surveyed to record established survey metrics and that a DNA profile taken.	Ongoing	LA	
BPT02 - Explore opportunities for collaborating with regional and national action plans and projects focusing on NBP conservation		LA	
BPT03 - Establish a plan and funding to monitor and manage the site environment around known individual NBP to ensure longevity and clonal diversity.	June 2025	LA JS	
BPT04 - Use recorded coordinates of NBP individuals and log onto LA tree management system	Jan 2026	LA	JS

BPT05 - Engage the PLA to help develop links between the towpath action plan and NBP SAP and to provide guidance on managing the towpath in a way that mitigates threats to NBP.	2025	LA	
BTP06 – Develop a process to ensure that schemes involving suitable habitat to host NBP are identified potential sites for planting the species, this for example could be emerging towpath action plans and flood resilience schemes	Ongoing	LA	
BPT07 – The use of Tree Preservation Orders to protect existing veteran and mature trees and unique clones where deemed appropriate by the local authority.	Ongoing	LA	
BPT08 – Produce NBP materials to educate borough community and visitors of the contextual importance of NBPs within Richmond, London and the UK.	2026	H&H	JS

Relevant action plans

Local Plans
Broadleaved Woodland HAP; Ancient and Veteran Trees HAP; Tidal Thames HAP.

London Plans
Black Poplar SAP; Tidal Thames HAP; Grazing Marsh and Floodplain Grassland.

National Plans
Wet woodland; Rivers & Streams.

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Contact

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4.6 Pollinators species action plan for Richmond

Bumble bee on cotoneaster © Tasha Hunter

Aims

1. Ensure the needs of pollinators are represented in local plans, policy and guidance.
2. Understand current pollinator habitat within the London Borough of Richmond upon Thames (LBRuT).
3. Protect, increase and enhance the amount of pollinator habitat in LBRuT.
4. Encourage appropriate management of pollinator habitat.
5. Increase awareness of pollinators and their habitat needs with local residents, businesses and other landowners.

Introduction

There are at least 1500 species of insect pollinators in the UK. The honey bee normally lives in hives managed by beekeepers. Others, like many species of bumblebees, solitary bees, moths, butterflies and hoverflies live in the wild (DEFRA 2014a).

Pollinators work by transferring pollen from plant to plant while they forage for food, allowing fertilization of the plants to occur. Some crops, like raspberries, apples and pears, particularly need insect pollination to produce good yields of high quality fruit. If pollinator populations were to decline, it would be much harder and costly for farmers to produce crops at the scale that is required for today's demands.

Pollinators are also responsible for the diversity of plants and wildflowers, creating our beautiful countryside and gardens. The abundance of fruits and seeds go on to support the healthy ecosystems and the higher food webs (DEFRA 2014a). It is also well documented about the importance of the natural world on human health and well-being (DEFRA 2014b). Butterflies and moths are not as important to pollination as the bee and fly species.

A local environment abundant in flower-rich habitats will help support sustainable pollinator populations and making places more attractive for people to live, visit and work in.

Current status

Due to a lack of standardized monitoring for establishing abundances for many insect species (with the exception of butterflies and moths). It can be difficult to compare abundances and trends in different areas and an aim of the National Pollinator Strategy to establish a standardized system (DEFRA 2014a)

What can be ascertained is the loss or extinction of a species that has occurred and the charity Buglife (2019) provides the following statistics:

- *Half of our 27 bumblebee species are in decline.*
- *Three of these bumblebee species have already gone extinct.*
- *Seven bumblebee species have declined by more than 50% in the last 25 years.*
- *Two-thirds of our moths and 71% of our butterflies are in long term decline.*
- *Across Europe 38% of bee and hoverfly species are in decline; only 12% are increasing.*

Over 97% of all flower rich grasslands (the size of Wales) have been lost in England since the 1930's and this is mirrored in other parts of the UK (DEFRA 2014a).

Pollinators need many of the things humans need – food, shelter and nesting areas. Pollinators need food (nectar and pollen) throughout the season from March through until September. Many plants and trees can provide these food resources, including many so called 'weeds' such as dandelions and thistles. In addition to flowers, many pollinators need other food resources to support their different life stages – for example butterfly and moth caterpillars need particular plants to feed on.

For shelter and nesting, dense vegetation such as tussocky grassland, scrub, mature trees, and piles of wood and stone can provide essential habitat for hibernating pollinators. Many species overwinter as adults including queen bumblebees, and some butterflies and hoverflies, others as eggs, larvae or pupae. Old burrows and dense vegetation are used by bumblebees, with sunny slopes and dry ground used by ground-nesting bees such as mining bees.

Where possible the RBP and Richmond Council will join forces and participate in other local, regional or national pollinator programmes or projects. More joined up collaborative action for pollinators will help ensure a future for these very important species. Key national initiatives include Buglife's B-Lines programme (Buglife 2019a) which aims to create a network of wildflower-rich areas across the UK.

Specific factors affecting pollinator populations

The most significant factors leading to these declines in pollinator numbers include:

Habitat loss

The most significant cause of decline is the loss and degradation of habitats which provide food, shelter and nesting sites for pollinators. The loss of wildflower-rich grasslands is one of the most important issues. Over 3 million hectares of these habitats have been lost in England alone since the 1930s, the loss being attributed to more intensive farming and urban/industrial development.

Fragmentation of habitat

Remaining habitat is being lost due to development of brownfield sites and demand for housing.

Pesticides

There is growing evidence that the use of pesticides is having harmful effects on pollinators including honeybees, wild bees and butterflies. Wider effects throughout ecosystems are also of concern and pesticides have been implicated in other declines such as farmland birds and soil organisms. The use of 26 neonicotinoids is of particular concern. These are systemic pesticides which can be applied as a seed dressing (the preferred delivery mechanism) or spray and have a high toxicity to insects.

Alternative strategies are being trialled that may reduce the negative impact upon pollinators of pesticides. These include biological controls for oak processionary moth and mechanical alternatives including steaming and Rootwave to tackle invasive species such as Japanese knotweed. Further research and investment into these would be a benefit.

Climate change

Long term changes can deprive pollinators of food supplies at times when they need them, increase their exposure to parasites and diseases, or change habitats so that they are no longer suitable. Climate change will see an increase in non-native invasive species which may also affect native pollinators through predation or put more pressure on valuable food sources. There may be gains as well as losses but a resilient network of good pollinator habitat across the area is needed for them to be able to adapt and take advantage of changes.

Current action

Legal status

There is currently no legal status attached to pollinators however the Government's National Pollinator Strategy for England (DEFRA 2014a) set out a 10-year plan (2014 - 2024) to help pollinating insects survive and thrive across England. The Strategy outlines actions to support and protect the many pollinating insects which contribute to our food production and the diversity of our environment. It is a shared plan of action which looks to everyone to work together and ensure pollinators' needs are addressed as an integral part of land and habitat management.

In particular, the Strategy asks local authorities to take a lead across many of their work areas and duties, including their role in local planning and also as managers of public and amenity spaces, brownfield sites, schools, car parks, roadside verges and roundabouts.

Research and recording

Although there is an understanding on honey bees there is little know about other pollinators. The National Pollinator Strategy identifies ongoing research is a priority action for the Government and other organisations (DEFRA 2014a).

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions targeting pollinators			
Action	**Target date**	**Lead**	**Other partners**
PS01 – Carry out a review and update existing local policies (LBRuT Local Plan & Nature Conservation Policy).	2025/6	LA	H&H, RBGK, RBP
PS02 – Within the planning process ensure greenspaces in new developments are made pollinator friendly.	Ongoing	LA	
PS03 – Review existing habitat mapping to identify gaps for key pollinator habitats present in LBRuT. Consider wider regional strategies such as beeline and cross borough collaboration.	2025	H&H, LA	
PS04 – Survey habitats, including brownfield, parks, verges etc. to assess their importance for pollinators.	2026	H&H, LA	
PS05 – Use Section 106 & CIL agreements to ensure any local landscaping projects are pollinator friendly.	Ongoing	LA	
PS06 – Identify and liaise with landowners (for eg TFL, RHP) of roundabouts and verges to discuss mowing regimes, pesticide/ herbicide use, planting strategies that can be used to improve benefit to pollinators and increase resilience to climate change.	2025	LA/H&H	
PS07 – In partnership with private gardens HAP encourage public use of 'bee and bug hotels', pollinator friendly plant species, ponds etc in private gardens through workshops, talks and awareness days.	2026	H&H/TLS	
PS08 – Review Council pesticide policy and emerging alternatives and make recommendations.	2030	LA	
PS09 – Increase the coverage of Council owned 'pollination stations' by 2% per year, to be included within national initiatives such as Buglife's B Lines.	Ongoing	LA	H&H

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Contact

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4.7 Stag beetle species action plan for Richmond

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Aims

1. To protect, conserve and enhance nationally significant populations of stag beetle (*Lucanus cervus*) in London Borough of Richmond upon Thames (LBRuT).
2. To ascertain the reasons for uneven distribution of stag beetle populations across LBRuT.
3. To increase public awareness of the importance of stag beetle and that of the dead wood habitat.

Introduction

The vernacular names of billywitches, oak-ox, thunder-beetle and horse pincher give an indication of the mythology that has evolved around the stag beetle. Ancient associations with storms and magical powers led to the beetles being both feared and revered.

The stag beetle is Britain's largest terrestrial, ground-living beetle, reaching up to 7cm in length. Featuring shiny chestnut-and-violet wing-cases, the stag beetle is characterised by possessing large mandibles (jaws), which are antler-shaped in the male, giving them their common name. These 'antlers' are used for fighting other males, whereas the female's mandibles are smaller.

The stag beetle requires dead wood to complete its lifecycle. The eggs are laid underground in the soil next to logs, or stumps of dead trees and the larva (or grub) will spend up to seven years in the wood, slowly growing in size. 'Artificial' wood is also utilised, especially sunken fence posts. Perhaps

surprisingly, London is nationally significant for stag beetle populations as the capital reported 30% of the 1998 national records. Adults emerge from mid-May until late July. Males emerge earlier and appear to be more active as they search for females to mate, and can often be seen flying on sultry summer evenings an hour or two before dusk. Adults are short-lived, as many are predated within days of emerging.

Current status

The stag beetle has been recorded across most of London but the key boroughs are all in south and west London - particularly in Croydon, Lewisham, Bromley, Greenwich, Southwark, Lambeth, Bexley, Ealing, Hounslow, Richmond, Kingston, and Wandsworth. There are also clusters of records in places such as Winchmore Hill and Hornchurch.

Gardens appear to be the most important habitat for the beetle in London, perhaps this could be a reflection of more sightings in these areas as more people are likely to be in their gardens when beetles are likely to be active. Domestic gardens may be crucial to the conservation of the stag beetle in the capital given that many experts believe they do not fly far to find a mate. However, the increasing density of urban housing may militate against future domestic gardeners' contributions. The significance of parklands in areas such as LBRuT is unclear as until recently there have been no systematic surveys in parks. The area of historic deer park of Richmond Park is designated as a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI), and Bushy Park is designated as a SSSI, these are in part due to the presence of a diverse deadwood beetle fauna associated with the ancient trees found throughout the parkland. Many of these beetles are indicative of ancient forest areas where there has been a long continuous presence of over-mature timber. Richmond Park is at the heart of the south London centre of distribution for stag beetle (Natural England, 2005).

Specific factors affecting the species

Reduction of dead wood

In earlier centuries dead wood would have been reduced through the intensive management and loss of woodlands. Although some 'tidying up' still continues in woodlands and parks, managers are now much more aware of the need to retain dead wood as part of the woodland ecosystem and this will have benefited stag beetle at a local level. Similarly, changes in the management of parks have led to the retention of dead wood, although this policy was always maintained in Richmond Park. It is surprising how quickly a fallen tree, even a hardwood such as oak, rots away completely.

Loss of habitat to urban development

Habitat has been lost in London through suburban expansion in the inter-war years. Although the introduction of the Green Belt led to the restriction of suburban expansion, many of London's open spaces including woodland have been developed. Development will continue to result in the loss of stag beetle habitat, especially as there is a lack of awareness of the beetle's presence on sites as the adults are only visible for a few weeks a year.

Direct human impact

Adult stag beetle are attracted to the warm surfaces of tarmac and pavements, making them particularly vulnerable to being crushed by traffic or human feet. Public fear and misunderstanding of the species also leads to intentional killings of the beetles and their larvae.

Predation

Predators such as crows, magpies, cats, foxes, and others may have an adverse impact at the most vulnerable stage in the beetle's life cycle, when adults are seeking to mate and lay eggs. Indeed, it has been suggested that the rise in magpie and, to a lesser extent, carrion crow numbers in the last decade has had a significant impact on stag beetle populations.

Current action

Legal status

The stag beetle is listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) but only to prevent trade. A major threat to stag beetle, especially in Europe, has been from private collectors, although this legislation aims to stop the species from being collected for sale at entomological fairs. It is also listed under Appendix III of the Bern Convention on the Conservation of European Wildlife and Natural Habitats 1979, and Appendix II of the Habitats Directive. Wimbledon Common, Richmond Park and Epping Forest are all designated SACs partly to help protect their stag beetle populations.

Mechanisms targeting the species

These current actions are ongoing. They need to be supported and continued in addition to the new action listed under Section 7.

Survey and research

In 1998, 2002, and 2006-2007, the Stag Beetle Focus Group conducted a national survey, collecting thousands of records for the species and providing an updated and considerably more accurate picture of the UK distribution.

The London Wildlife Trust piloted a survey in south London in 1997, which contributed to the 1998 national survey and continued surveying in key areas in 1999 and 2000. It has also actively promoted the species to the media, hosted a website recording form for stag beetle and a garden wildlife survey form for several species including the stag beetle as well as stimulating public interest in the beetle through press releases, newspapers, radio, TV and other media.

Richmond Park Stag Beetle Project

The Richmond Park Stag Beetle Project was set up in the early 2000s because Richmond Park was previously under surveyed. Wimbledon Common is not in LBRuT but it shares a boundary with Richmond Park across the A3 and both sites are SACs so a joint survey covering both areas was considered to be a good idea.

Advice

In 1998 PTES produced '*Stags in Stumps'*, a leaflet aimed at land managers. Managers have since begun to take account of the species in site management plans, and it is likely this will develop further. In addition, wildlife gardening campaigns by London Wildlife Trust, local authorities and others have promoted stag beetle and dead wood conservation. In 2003 PTES published another leaflet, '*Stag Beetle Friendly Gardening',* to promote these aspects, and London Wildlife Trust produced '*Stag Beetle; an advice note for its conservation in London'* specifically aimed at the capital, which also covered survey and planning issues.

Introduction of loggeries

In LBRuT RBP has encouraged landowners, managers, schools and members of the public to introduce loggeries and nest boxes.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions for Stag Beetles			
Action	**Target Date**	**Lead**	**Other Partners**
SBR01 – To run 2 public awareness events, training members of the public in monitoring and recording.	2028	TRP	H&H, EN, LA, PTES, W&PCC
SBR02 – Promote the retention and/or use of natural and artificial SB habitats by landowners & public.	Annually	Working Group	LA, TCV
SBR03 – Identify 25 key sites for new stag beetle loggeries/buckets.	2025	Working Group	LA, TCV
SBR04 – Install at least 4 loggeries per year in LBRuT.	Annually	Working Group	LA, TCV
SBR05 – Encourage members of the public to support the People's Trust for Endangered Species (PTES) "Great Stag Hunt" survey.	Annually	Working Group	LA, RP & WC SBP & LNHS
SBR06 – Promote monitoring for a better understanding of the beetle's ecology and lifecycle.	Annually	Working Group	As above + Site managers
SBR07 – Create a stag beetle display stand to display at least at one relevant event or venue per year (i.e., Springtime Safari, etc.).	2027	Working Group	Site Managers, H&H
SBR08 – Promote 2 public walk per year and an annual press release to keep stag beetle conservation on the local agenda.	Annually	Working Group	Site Managers & Community Groups
SBR09 – Support carrying out of local research on the effects of habitat and environmental factors on stag beetle populations within Richmond.	Annually	RP & WC SBP	Working group

Relevant action plans

Local Plans

Ancient and Veteran Trees; Acid Grassland; Broadleaved Woodland, Private Gardens.

London Plans

Woodland; Open Landscapes with Ancient/Old Trees; Private Gardens; Railway linesides; Churchyards and Cemeteries; Hedgerows.

National Plans

Stag Beetle

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4.8 Swift species action plan for Richmond

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Aims

1. To encourage and ensure the maintenance of habitable conditions for swifts in the London Borough of Richmond upon Thames (LBRuT).
2. To contribute to the prevention of a further decline of the swift in the UK.
3. To increase awareness of ways to accommodate swifts, e.g. through nestboxes.
4. To encourage the reporting of swift sightings through Citizen Science.

Introduction

The common swift (*Apus apus*) is a medium-sized migratory aerial bird which is a superb flier. It is plain sooty brown, but in flight against the sky it appears black. Swifts have elongated, cigar-shaped bodies, long, scythe-like wings and short, forked tails. They are often confused with swallows and house martins. Swifts visit the UK in the summer, arriving in the last week of April or early May, and

staying only long enough to breed. They are most numerous in the south and east. Autumn migration to Central Africa begins in late July or early August. No other bird spends as much of its life in flight. In horizontal flight they are the fastest bird on the planet.

Estimates for the world population vary widely, with some estimates suggesting a population of 25 million and others up to 165,000,000 birds. Historically, swifts nested in ancient forests, but they adapted to man-made sites as their habitat shrank.

Swifts are known for their call which resembles a loud scream. Groups of swifts can form 'screaming parties' of 10-20 individuals in the summertime.

Current status

Due to their propensity for flight it is rather difficult to accurately estimate the number of breeding pairs and non-breeding individuals. Their monitoring is complicated by the difficulty of finding occupied nests, by the weather-dependent and sometimes extraordinary distances from the nest at which breeding adults may forage, and by the often substantial midsummer influx of non-breeding individuals to the vicinity of breeding colonies. Since swifts do not normally begin breeding until they are four years old, non-breeding numbers can be large. While there were approximately 85,000 pairs in 1990, there were anywhere from 20,000 to 100,000 pairs in 2000 (British Trust for Ornithology, 2010). Another estimate is 87,000 breeding pairs in 2009 (Musgrove et al 2013). Swifts are estimated to have seen a 68% decrease in their breeding numbers in the UK between 1995 and 2023, causing their placing in the red category of the UK Red List (ibid.).

The Breeding Bird Survey (BBS) of 2016 identified a 51% decline in swift sightings within 1046 squares (the mean number of squares per year on which the species was recorded from 1995-2015) from 1995 to 2015. 2015-2016 saw a 7% decline (British Trust for Ornithology, 2016).

Specific factors affecting the species

Habitat loss - nest sites

Swifts originally nested in caves, tree-holes and cliffs, but adapted to the urban environment and now nest in high man-made structures, under tiles, in the eaves, in lofts, spires and towers. Old buildings (pre-1944) are more conducive to swift nesting, while modern or re-roofed buildings tend to be impossible for swifts to nest in. Some buildings include anti-swift mechanisms such as swift-proof eaves or netted eaves to deny access. Renovation of old buildings should generally not be carried out during breeding season, due to the swift's nest-site fidelity—a swift will keep returning to the same nest. If it is not accessible one year, the swift might never return.

Loss of nesting sites through renovation can be mitigated through the inclusion of nest-boxes or "swift bricks". Swifts need an unobstructed flight path in front of their nest, which needs to be situated at a minimum height above ground level of 4-7 meters, with little exposure to direct sunlight. A method to attract swifts is to play swift calls near potential nests.

Food supply - Insects

Green spaces, especially in urban areas where swifts nest, are important in maintaining a steady food supply. Swifts exclusively feed on airborne spiders and flying insects, preferably at heights over 50m. This way of feeding could become harder to maintain due to drastically declining insect numbers. Studies suggest that bird species that depend on aerial insects for feeding themselves and their offspring have suffered much more pronounced declines in recent years than other perching birds that largely feed on seeds.

The main reason for the decline in insect numbers is thought to be a change in land use. Monocultures that create “biological deserts” decimate the insect population, as does the extensive use of insecticides, especially neonicotinoids. They are the most widely used insecticide in the world. Studies have shown that while the allowed levels do not directly kill insects, in the case of the honey bee, the insecticide severely affects its ability to communicate and navigate, thus negatively affecting its ability to reproduce.

Other factors - migration route

Little is known at present about all the factors contributing to the decline in UK breeding swifts. It is possible that fewer birds are surviving to return to the UK each year. New information from swifts carrying geo-locators helped reveal where they go in winter, and that a possible factor contributing to their dwindling population numbers is deforestation happening in Africa, where they spend much of the winter.

Current action

The species is listed as 'red' on both the UK and Irish national 2021 Red Lists in Birds of Conservation Concern (red being of high concern, amber being the next most critical group, and green being of least concern).

Swift Conservation is a national organisation that provides resources, services and information about swifts. Other groups, such as Action for Swifts, document others’ experiences and procedures, as well as helpful links and links to swift webcams. Swifts Local Network is an initiative aiming to connect UK-based groups and individuals working on swift conservation.

London Biodiversity Partnership has not identified the swift as a species under particular threat in its ‘London’s BAP priority Species’ list. The swift is also not a national UK BAP species. The London Borough of Camden has identified the Swift as a "Flagship Species for the Built Environment" and is taking action to arrest its decline. The Walthamstow Wetlands in London, which is Europe's largest urban wetland nature reserve, has retrofitted a Victorian chimney to house 50 openings and nesting sites for swifts. The London Borough of Southwark recently asked Greenspace Information for Greater London (GiGL) for a species alert map with GIS layers displaying a 500 meter buffer around house sparrow and swift records in Southwark. Any renovation or new build planning application falling within these zones is automatically asked to try and include nest boxes for swift and/or sparrow species.

Europe-wide conservation actions are not known, mostly due to the fact that the swift is listed as a Species of Least Concern by BirdLife International. The European population has remained stable between 1980 and 2013, and does not reflect regional changes such as the decline in the UK. This means that most conservation efforts are regional or national at the most.

Legal status

In the UK, swifts and their nests are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird. It is an offence to intentionally take, damage or destroy the eggs, young or nest of a swift whilst it is being built or is in use. The Act allows for fines or prison sentences for every bird, egg or nest destroyed.

Mechanisms targeting the species

Awareness-raising

Organisations that promote the inclusion of swifts in urban life in London are Swift Conservation, Action for Swifts, Concern for Swifts, Forest Hill and Lewisham Swift Group, Chiswick Swift Project, and Islington Swifts Group.

Swift sightings are recorded by the Breeding Bird Survey (BBS) and the RSPB Swift Survey. The RSPB also has a project called 'Swift Cities' that forges a partnership between local people, organisations and businesses to help protect the swift.

The British Wildlife Helpline provides extensive information on how to care for a swift short term and how to administer first aid as well as contact information for helpful organisations.

Survey and Research

RSPB has conducted a Swift Survey since 2009 that the public can contribute to by reporting swift nesting sites.

Ebird.org operates a very up-to-date species map that contains a rich database of sightings, including several swift sightings in LBRuT from 2017. To access it, go to ebird.org, click on the "Explore Data" tab at the top, click on Species Map and type in common swift.

National Research

As mentioned above, the Avian Population Estimates Panel estimated the population of swifts in the UK to be around 87,000 breeding pairs in 2009 (Musgrove et al. 2013). Nationwide research has been scarce, in part because swifts are so difficult to monitor.

Local Census Work

There is no organised local census work being done; the only available information on breeding pairs in the LBRuT can be obtained through the RSPB Swift Survey and the ebird.org species map.

Information dissemination

Swift Conservation: talks, leaflets, DIY nest boxes

RSPB: games for children, videos, links/advice

Oxford Museum of Natural History: leaflet

British Wildlife Helpline: extensive advice

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions targeting swifts			
Action	**Target Date**	**Lead**	**Other Partners**
RS01 – Create advisory note for LA planning officers with advice on when to consider swifts in a development and how to mitigate loss.	2025	LA	H&H
RS02 – Compile and provide an advisory note for LA /landowners on the identification/ maintenance/ creation and enhancement of swift nests on buildings and disseminate.	2025	Working Group	LA
RS03 – Contact neighbouring London Swift groups for advice and support on plans for conserving Swifts.	Ongoing	Working Group	H&H
RS04 – Create heatmap of current Swift nesting sites to allow for more targeted surveying.	Early 2026	LA	Working Group
RS05 – Identify areas/buildings for further surveying based on heatmap and existing population/nesting data.	Late 2026	LA/ Working Group	H&H
RS06 – Assess possibility of a Citizen science survey on identified buildings for their suitability for swift nesting and produce recommendations.	2026	H&H	Working Group
RS07 – Carry out surveys on identified buildings and produce recommendations.	2026	H&H	Working Group
RS08 – Change planning so that developers must show evidence of Swift incorporations.	2027	LA	Working Group

Relevant action plans

Local Plans
Private Gardens Habitat Action Plan.

London Plans
Chiswick Swift Project, Forest Hill and Lewisham Swift Group, Islington Swifts Group, Swift Conservation.

National Plans
Not listed in updated UK BAP of 2007. Several cities, council areas and counties such as North Lanarkshire, Suffolk, Newcastle and Glasgow have local species action plans or protection projects.

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Swift Conservation: The Built Environment - suggested Actions and Targets (see above)

Conwy Council Guidance (2016) - Action for Swifts, Swallows and Martins.

Contact

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4.9 Tower mustard species action plan for Richmond

Aims

1. To contribute to the research and conservation of tower mustard in the UK through the maintenance of London's population in the London Borough of Richmond upon Thames (LBRuT).
2. To successfully establish a new population of tower mustard in Southwest London, either through re-introduction at a historic site or via a new introduction to a suitable site.

Introduction

Tower mustard *(Arabis glabra)* is a biennial, or sometimes short-lived perennial, plant of disturbed habitats on free-draining, sandy soils in grassy and wasteland places. It is a member of the cabbage family, and it has smooth, grey-green leaves and produces pale yellow flowers on stems 30-100 centimetres tall. Tower mustard germinates in spring spending at least one season in a vegetative state before flowering the following May-July. It can produce abundant seeds, which appear to remain viable for many years with plants often reappearing on old sites after long periods of absence. It is nationally scarce and declining, currently known from only about 30 sites in England. Since open ground is required for germination, it will not survive when the habitat becomes overgrown. Its rarity and rather undistinguished appearance mean that tower mustard is not a plant that often touches the public consciousness. It is not known to have ever had any significant culinary or medical use anywhere within its wide European range, though the Cheyenne of North America know it as a cure for the common cold.

Current status

Tower mustard has suffered dramatic declines during the 20th century and is now thought to be present in only 15% of its historical range. Evidence suggests that a formerly more extensive metapopulation once stretched either side of the Thames from Wimbledon Common in the east to Sunbury in the west.

Today, there are two known populations of tower mustard in Greater London, one of which is a recently discovered population at Lesnes Abbey Woods in the London Borough of Bexley, whilst the largest and previously only known colony is at Stain Hill Reservoir in the London Borough of Richmond upon Thames (LBRuT), which is a Site of Metropolitan Importance for Nature Conservation. This is one of the largest populations in the country, surpassed only by a couple of East Anglian sites, with plants appearing in four or five distinct clusters on the grass pathways around the reservoir tops. It must however be acknowledged that the sloping banks of the reservoirs themselves also provide suitable conditions for tower mustard, and these have never extensively been surveyed for the plant.

The population has undergone significant fluctuations at Stain Hill Reservoir since it's discovery in 1987. To some degree this has been influenced by various management operations and environmental factors, however it is considered typical of this species' 'boom-bust' characteristics. A recent count of 486 individual plants was recorded in 2023 by Richmond Biodiversity Partnership, with the distribution shown in the figure below. However peak counts at the site have been in excess of 1000 plants (2005), which was preceded by a minimum count of just one plant in 2004.

2023 distribution of tower mustard plants at Stain Hill Reservoir

Specific factors affecting the species

Protection and management

The continued protection and suitable management of the Stain Hill Reservoir site is crucial to the survival of this species in LBRuT and Greater London. Guidelines involve cutting back growth to prevent excessively dense vegetation and shading from occurring and some light disturbance needs to be carried out when the grassland becomes closed and tussocky. It is however important to give the plant an opportunity to flower during the late spring and early summer, which was the drawback with the previous operationally driven management regime implemented by Thames Water, that saw the grassland on the reservoir tops maintained as short amenity grass areas. Whilst this successfully maintained open ground for seeds to germinate and the vegetative part of the plant to flourish, it inevitably prevented flower and seed production.

Other

Other historic sites in London have been lost through development or changes to habitat. Nationally, it has suffered due to the loss of open habitat on heathland, through building development, agricultural improvement and intensification, forestry and neglect.

Habitat neglect results in a lack of open ground for regeneration and the development of coarse competing vegetation. It is also vulnerable to high levels of overgrazing by rabbits.

Current action

Legal status

Tower mustard is now classified as *Endangered* in the UK. Its conservation status has shifted from *Vulnerable* since the previous edition of the Richmond Biodiversity Action Plan was published in 2019.

Tower mustard receives the same protection as all other wild plants in the UK through the Wildlife and Countryside Act 1981 (as amended). Therefore, it may not be uprooted without the permission of the landowner.

Stain Hill Reservoir has been designated as a Site of Metropolitan Importance for Nature Conservation.

Mechanisms targeting the species

These current actions are ongoing. They need to be supported and continued in addition to the actions listed under *Section 6*.

Local management

Thames Water Utilities manage the Stain Hill Reservoir site. The continued protection and suitable management of the Stain Hill Reservoir site is crucial to the survival of this species in LBRuT and Greater London. A Management Plan focusing on the conservation of tower mustard within the operational requirements of Thames Water was produced by the Richmond Biodiversity Partnership in 2023 for this purpose.

Re-introduction research

In 2024, a report was produced by Paul Losse of Salix Ecology and Mark Spencer of London Natural History Society which assessed options for re-introduction or establishment of a tower mustard population at a second site in the Southwest London area. The study utilised extensive research of historical records and site history, coupled with an evaluation of existing habitats. A shortlist of four potential establishment sites was produced, and an additional fifth site (Feltham Marshalling Yards) was suggested by local botanical and invertebrate expert Paul Cook, based on the similarities in floral

and faunal assemblages to the Brecklands area of Norfolk, which is a national stronghold for tower mustard. The five sites are described in the table below:

Site	Borough	Landowner
A scrape to the south-west of Hounslow Heath	Hounslow	London Borough of Hounslow
A disused area of Hampton Water Treatment Works: Sunnyside Filter beds	Richmond upon Thames	Thames Water
An area of rough grassland to the south and east of Hurst Park	Elmbridge	Elmbridge Borough Council
Around the Golf course rough at Home Park	Richmond upon Thames	Historic Royal Palaces, leased to Get Golfing
Feltham Marshalling Yards	Hounslow	London Borough of Hounslow

It should be noted that, during 2001/2002, an attempt to establish a tower mustard public demonstration plot at London Wetland Centre, Barnes was undertaken. This was ultimately unsuccessful, however there will undoubtedly be important lessons to learn from this in advance of any future introduction attempt.

National mechanisms

Nationally, tower mustard is included in Natural England's Species Recovery programme and Plantlife's *Back from the Brink* programme. *Back from the Brink* recovers wild plants through practical, hands-on response to the crisis of species loss and decline in Britain.

Advice

Plantlife advises landowners and managers of the importance of this species and the most appropriate management for its conservation under the *Back from the Brink* programme. Advice is available to anyone managing a site for one of the *Back from the Brink* species, whether the site is a nature reserve or in private or public ownership.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions targeting tower mustard			
Action	**Target Date**	**Lead**	**Other Partners**
TM01 – Continue management of Stain Hill Reservoir population. Monitor the effectiveness of the revised management practices and update the management plan as necessary.	Ongoing	LA, TW	H&H, Plantlife
TM02 – Monitor population of tower mustard at Stain Hill Reservoir and supply data to Plantlife for databasing in co-operation with BSBI Threatened Plants Database.	Annually	LA, TW	H&H, Plantlife,
TM03 – Provide tower mustard seeds to the Millennium Seed Bank at Wakehurst Place.	Annually	TW, LA	Plantlife, RBGK

TM04 – Using the feasibility study undertaken in 2024, work with stakeholders to fund and implement a tower mustard re-introduction/establishment trial in the Southwest London area.	2028	LA, H&H	Plantlife, RBGK, HRP
TM05 – Create and produce an online interpretation for tower mustard.	2026	H&H	LA
TM06 – Improve connections with other organisations in Greater London and nationally who are involved with tower mustard conservation. In particular London Borough of Bexley, Back from the Brink and the Worcestershire and Norfolk Wildlife Trusts.	Ongoing	LA, H&H	

Relevant action plans

Local Plans
Acid Grassland

London Plans
Wasteland, Private Gardens, Churchyards and Cemeteries, Heathlands, Acid Grassland, Built Structures, Ponds, Lakes & Reservoirs Audit

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Contact

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4.10 Water vole species action plan for Richmond

Aim

1. To conserve water vole population in London Borough of Richmond upon Thames (LBRuT) and to increase their range and numbers for the benefit of current and future generations.

Introduction

Water voles (*Arvicola terrestris*) can be distinguished by their hidden ears, rounded snout and hairy tail, unlike a brown rat whose ear are visible, have a more pointed snout and a hairless tail. The former widespread distribution and abundance of the Water vole has meant that it has attracted little or no previous conservation interest. However, its rapid decline in numbers and the resulting fragmentation of its population across the UK is of great concern.

The water vole is potentially an excellent flagship species, whose presence reflects healthy waterside habitats and their associated plant communities. As one of the main characters in the children's classic *The Wind in the Willows*, the water rat, or water vole as it is properly called, is a well-liked and familiar animal amongst the general public. Water voles are not overly sensitive to the presence of people and may be easily seen during the day where they still survive. This high profile presents opportunities to bring the species' plight to the attention of people living in LBRuT, publicise progress of the Action Plan and involve the local public in its conservation.

Current status

The changing fortunes of the British water vole population through the 20th century were revealed by the pioneering national surveys conducted by the Vincent Wildlife Trust in 1989-90 and 1996-98. These surveys confirmed that the species has become progressively scarcer along our waterways

since the 1930s, due to habitat loss and land-use changes associated with the intensification of agriculture in the wider countryside. Since the 1980s, this decline has accelerated due to predation by feral American mink (established as escapes from fur farms). The decline has now developed into a serious population crash with a further 88% loss to the remaining populations in only seven years (1991-1998). This makes the water vole the most rapidly declining mammal in Britain.

In Greater London, the water vole has disappeared from over 72% of the sites it occupied prior to 1997 (London Mammal Group Greater London Water Vole Survey 1997). Although the species still retains a widespread distribution around much of London's periphery (especially in outer boroughs including LBRuT, neighbouring LB Hounslow and to a lesser extent RB Kingston upon Thames), populations are highly localised and fragmented.

In LBRuT, the water vole is currently confined to a couple of extant sites including London Wildlife Trust's (LWT) Crane Park Island reserve on the Crane Corridor. Outlying sites on the edge of LBRuT include a population south-west of Feltham Marshalling Yards in London Borough of Hounslow further west along the Crane Corridor. A population was successfully introduced at the Wildfowl & Wetlands Trust's London Wetland Centre at Barn Elms. Populations reported at Leg O' Mutton Reservoir at Lonsdale Road, Barnes in the late 1980s are believed to be extinct. However, opportunities exist for further introduction programmes at certain sites in LBRuT e.g. the Beverley Brook in Richmond Park, the Longford River in Bushy Park, and Home Park.

Specific factors affecting the species

The many factors that influence the survival of this species are outlined below. They are listed in order of priority, but each may have a greater or lesser local effect depending on the robustness of the individual populations and their habitat. More information about such factors and best practice management for water voles can be found at sources including Strachan *et al*. (2011) or suitable weblinks e.g. http://www.gloucestershirewildlifetrust.co.uk/sites/wt-main.live.drupal.precedenthost.co.uk/files/Water%20Vole%20Booklet%20final_0.pdf

Fragmentation and isolation of habitats and populations

This is viewed as being a major factor of concern. Loss of wetland habitats has reduced populations and left them more vulnerable to other threats such as predation. Development, land drainage, low water levels, river engineering and changes in waterside management have all destroyed habitat. Intensive grazing and trampling by livestock along watercourses also contributes greatly to habitat loss in some of the more rural boroughs, but equally might apply to LBRuT where the impact of both livestock and deer herds should be considered.

Predation by Mink

The arrival and spread of American mink along a waterway has been found to have serious consequences for water voles and rapid extinction of some water vole colonies has been recorded. Mink predation is influenced and exacerbated by other threats such as habitat loss. The removal of mink in London is increasingly positive. North London has vanishingly few mink, with only two caught in the last six months. In south London, in the six months to April 2025, 43 mink have been captured in the south of Greater London (within the M25) including in Chertsey, Molesey, Kingston, Hampton Court and the river Mole. These captures indicate the continued need for trapping and removal, to further reduce the vulnerability of extant water vole populations in the south and west of Greater London.

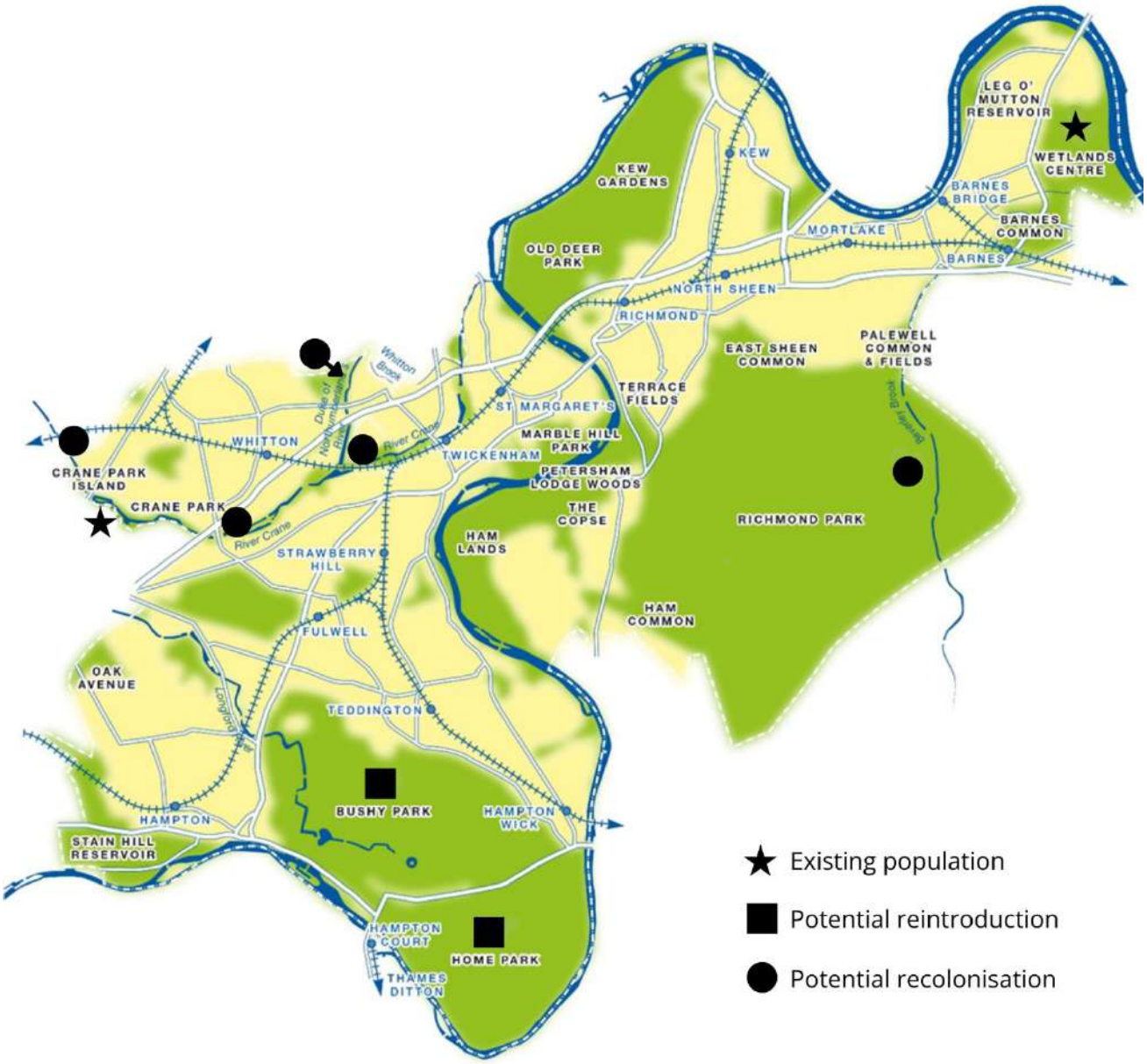

Figure 1 Location of existing water vole populations (star), as well as potential reintroduction (square) and potential recolonization (circle) sites.

Disturbance of riparian habitats

In the past, canalisation and subsequent dredging operations as part of flood defence management caused the most significant form of disturbance. These modifications have had a drastic effect on water vole habitat causing the destruction of burrows, loss of emergent and in-stream vegetation and the re-profiling or hard engineering of the banks. Mechanical cutting and removal of bankside vegetation may also be highly disturbing to water voles.

Water voles are relatively tolerant of human recreational activities (dog walking, angling and boating) along waterways as long as they have vegetation cover in which to hide.

Deterioration of riparian habitats and reduction of flow

Water voles appear to be relatively tolerant of low water quality, but the full impacts of different types of pollution such as industrial effluent are unknown. Low flows and droughts, such as those caused by over-abstraction of groundwater, can lead to the loss of water voles. By contrast, prolonged flooding can also be detrimental. Furthermore, increased shading by trees and the spread of Indian (Himalayan) balsam adds further pressure to riparian vegetation along margins of the River Crane, ultimately making the habitat less suitable for water voles.

Rodenticides and rat control

Poisoned grain or similar rodenticides placed for rats or mice may be taken by water voles if placed along a watercourse. The proliferation of rats along a waterway, attracted by litter and human refuse, may be detrimental to water voles which may be out-competed or even fall prey to their larger cousins. Carried out carefully, rat control has been shown to be beneficial to water voles.

When controlling rats near watercourses there are a number of ways in which unnecessary destruction of water voles can be avoided:

1. Check thoroughly for water vole signs before treatment on waterways.
2. If water voles are present the only safe option is to live trap. These should be carefully sited and checked twice per day to release captured voles.
3. Do not use back-break or snap traps.
4. If there is no feasible alternative, poison should be covered or enclosed in a bait box and placed at least 5m from the water's edge.
5. Do not place poison or traps in burrow entrances (this would constitute a breach of the law).
6. Place poison off the ground if possible as water voles are less likely to climb than rats.
7. Avoid the use of poisoned grain, pellets or liquid bait; use instead wax or soap blocks.
8. The treatment site should be frequently inspected. If any dead water voles are found immediately review the control method used.
9. Report any water vole sites to your local wildlife trust.

Current action

Legal status

The water vole has legal protection under the Wild Mammals (Protection) Act 1996 and Schedule 5 of the Wildlife & Countryside Act 1981 (as amended in April 2008).

The Wildlife & Countryside Act makes it an offence to:

- Intentionally capture, kill or injure water voles
- Damage, destroy, or obstruct access to any structure or place which water voles use for shelter or protection
- Disturb water voles while they are using such a place
- Possess, sell, control or transport live or dead water voles.

Further information: https://www.gov.uk/guidance/water-voles-protection-surveys-and-licences

Mechanisms targeting the species

Advice

Practical advice about water vole conservation and habitat management has been summarised in *The Water Vole Conservation Handbook* (Strachan et al. 2011). Educational resources are available through The Wildlife Trusts. There are also a number of resources available on the internet, for example see: http://mwhg.org.uk/wordpress/wp-content/uploads/2015/05/Section-A-1.pdf

Waterway management

Flood defence management of waterways is being carried out in accordance with best practice guidelines to maintain water vole populations.

River Basin Management Plans, Local Environment Agency Plans (LEAPs) and Water Level Management Plans now consider the requirements of water voles and implement actions when appropriate. This applies to all LEAPs produced for rivers in LBRuT.

Research and recording

National research is ongoing and investigating translocation and reintroduction as methods to aid the species recovery. This includes the water vole introduction that was undertaken in May 2001 at the London Wetland Centre (WWT). The current thinking is that the population at this site is no longer genetically viable as it is isolated from other breeding populations. A possible solution might be to try and connect the site to Beverley Brook through ditches. Alternatively, a long-term strategy to regularly introduce water voles to the site would support the genetic viability of this population.

Promotion of conservation

Richmond Council, Richmond Biodiversity Partnership, LWT, WWT, Historic Royal Palaces (HRP), Friends of the River Crane Environment (FORCE), Thames Landscape Strategy (TLS), The Royal Parks (TRP) and other organisations are already promoting water vole conservation through habitat enhancement projects, surveys, talks and other publicity campaigns.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific Action Targeting water voles			
Description	**Target Date**	**Lead**	**Other partners**
WV01 - Water Voles records: Continue to collate existing water vole records and verify that data is uploaded to the water vole data portal on GiGL.	Ongoing	ZSL	FORCE, Ian McKinnon, H&H
WV02 - water vole monitoring: Create opportunities and train volunteers for citizen science projects monitoring active water vole populations and tracking dispersal.	Annual review	ZSL	H&H, FORCE
WV03 - Mink monitoring & eradication: Monitor and record mink activity on WRT website (verifying data is uploaded to GiGL) and ensure the maintenance of traps and a functioning network of volunteers.	Annual review	WRT	ZSL, LBRuT, LWT, HRP, RP, WWT Barnes

WV04 - Sites protection: Safeguard *potential* and *current* water vole sites by zoning and limiting damaging activity using fencing and dead hedging, and carrying out habitat enhancement and creation.	Ongoing	ZSL	WRT, LBRuT, LWT, HRP, RP, WWT Barnes
WV05 - Sites management: Work with contractors and landowners to ensure land management is sympathetic of water vole habitat requirements. Eg mowing, tree management etc.	Ongoing	ZSL	EA, WRT, LBRuT, LWT, HRP, RP, WWT Barnes
WV06 - Planning: Ensure planning includes strategic habitat enhancements focussed on expanding water vole populations.	Ongoing	LBRuT	LBRuT
WV07 - Reintroduction: Assess the feasibility of water vole re-introduction for two sites over five years – with priority given to sites that aid connectivity to existing habitat/ populations.	2030	ZSL	WRT, LBRuT, LWT, HRP, RP, WWT Barnes
WV08 - Best practice: Hold one on-site field visit a year for partners to exchange best practice and attend LWVRP practitioner forum.	Annually	Ian M, ZSL	FORCE, TCV, H&H
WV09 - Public awareness: Public information campaign raising awareness including not using rodenticides and responsible dog walking through social media, newsletters and blog posts.	2027	H&H, FORCE, LBRuT	H&H, FORCE, LBRuT
WV10 - Walks and talks: Hold four 'healthier river' walks over the year to include water voles content.	Annually	H&H	FORCE, LGOAL, BCL, WWT, Cartographer

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UK Water Vole Steering Group (1997). *Species Action Plan for the UK: Water Vole,* Arvicola terrestris EA.

Contact - The Lead for this Species Action Plan is Ian McKinnon.

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In memoriam: The Water Vole Species Action Plan is dedicated to the late Rob Strachan who was so influential in developing the original London-wide Water Vole Species Action Plan, which has been so influential on the development of a Water Vole Species Action Plan for LBRuT:

https://www.wildcru.org/news/tribute-rob-strachan/

http://www.otterspecialistgroup.org/Bulletin/Volume31/Obituary_Rob_Strachan_1958-2014.html

4.11 White-letter hairstreak and elm species action plan for Richmond

Aims

1. To safeguard existing populations of the white-letter hairstreak butterfly in London Borough of Richmond upon Thames (LBRuT) and to achieve a more widespread distribution.
2. To maintain elm trees in suitable habitats that support populations of the butterfly and increase the area of habitat.

Introduction

The white-letter hairstreak (*Satyrium w-album*) is a small and highly elusive butterfly which gets its name from the white letter 'W' on the underside of its hindwings. It is a canopy species and is usually seen high in the treetops, often as just a dark speck against the sky, flying with an erratic, spiralling flight. It is only rarely seen on the ground when the adult butterflies occasionally come down to feed on nectar in flowers.

The lifecycle of the white-letter hairstreak is totally dependent on elm trees (*Ulmus spp*). This is its sole larval foodplant, on which its lays its eggs and which provides food for the caterpillars. Various native and hybridised elm species are used, including wych elm (*Ulmus glabra*), English elm (*Ulmus procera*), smooth-leaved elm (*Ulmus minor*) and Dutch elm (*Ulmus x hollandica*), although wych elm may be preferred.

The white-letter hairstreak suffered a precipitous decline in the 1970s and early 1980s with the arrival of a more aggressive strain of Dutch Elm Disease (DED) which devastated Britain's native elm population.

The species was greatly helped by its ability to breed on some of the new Disease Resistant Elm (DRE) cultivars, particularly *Ulmus* 'Sapporo Autumn Gold', which were developed in the wake of DED and which have been a lifeline for the species.

The white-letter hairstreak is single brooded with adults on the wing from mid-June to the beginning of August (depending on the weather). It can also be found in its egg stage which lasts from August until the following April.

The butterfly forms discrete colonies which are sometimes very small containing only a few dozen individuals. Colonies are typically found on small clumps of trees in hedgerows or woodland edges but can also survive on a single, isolated tree. The butterfly will reuse the same habitat year after year, but also appears to be adept at colonising new habitat.

The species is equally at home in rural and urban environments. It is by some distance the rarest butterfly which can be found in London.

Current status

Legal status

The White-letter Hairstreak butterfly is a Section 41 Species of Principal Importance under the 2006 NERC Act in England and is a London Biodiversity Action Plan Priority Species. It is protected under Schedule 5 of the 1981 Wildlife and Countryside Act (a licence is needed for trading). Finally, it is a High Priority species in Butterfly Conservation's Regional Action Plan for Southeast England.

National status

The State of the UK's Butterflies 2022 (Fox et al. 2023) report from Butterfly Conservation and the Centre for Ecology and Hydrology describes the species as having suffered "very substantial decreases" in both abundance and occurrence over the last five decades. The abundance trend for the White-letter Hairstreak between 1976 and 2019 was -78%.

The reason for this decline was catastrophic habitat loss as elms were lost in the 1970's and 1980's by the effects of DED. By the late 1980's the species was extremely scarce and there were grave concerns that it might become extinct in the British Isles.

In the 1990's however, increased recorder effort found the species surviving albeit in low numbers and some new colonies were even discovered. Contrary to popular belief, some elm trees do survive and provide habitat for the butterfly.

The future of the species is still delicately poised but at least it is healthier than the situation in the 1980s. Although the effects of DED continue to be felt, with many local colonies becoming extinct as their trees succumb to the disease, the white-letter hairstreak has demonstrated the ability to disperse and colonise new elms as well as planted, non-native trees.

Local status

In his book, "The Butterflies of the London Area" (1987), C.W. Plant says that the white-letter hairstreak has always been uncommon - and very local - in the London area. In South London a single colony is reported: this has been there since 1940 or earlier and remains to this day.

The white-letter hairstreak however is present in a number of locations in LBRuT and this is reflective of LBRuT's superb elm legacy. Quite apart from their significance in supporting this rare butterfly, the trees themselves could be made an important ecological feature of LBRuT and promoted as such.

Moreover, native and hybridised elm is an important species in the landscape and maintains several ecological relationships. At least 29 species of moth, for example, are associated with elm, including the Section 41 white-spotted pinion and local species such as the dusky-lemon sallow – as is other wildlife as well.

Good elm locations in LBRuT are:

- The Thames towpath at Ham Riverside which has many mature trees. These are European white elms (*Ulmus laevis*) – identified in spring by their white flowers and seeds on stalks. These are rare and significant trees which were previously thought to be withstanding DED, however recent studies from Zeeland Province, Netherlands have indicated that this species is now rapidly succumbing to the disease. These trees must be closely monitored moving forward.
- There is a grove of mature Sapporo Autumn Gold close to Ham House.
- Barnes Common has many large wych elms and there is a huge, mature elm on Putney Lower Common.
- The towpath from Hammersmith Bridge down to Small Profit Dock Gardens, Leg of Mutton LNR, is particularly rich in large elms.
- Ham Lands has several stands – which may be either smooth-leaved elm or Dutch elm.
- The new elm avenue in Richmond Park (close to Petersham Gate) is providing a new habitat opportunity for the white-letter hairstreak as they create a link to the wych elms at the corner of Petersham Road and Star and Garter Hill only a short distance away.

Ulmus 'Sapporo Autumn Gold' in flower at Ham Riverside, March 2017

Specific factors affecting the species

As the white-letter hairstreak is a monophagic species, entirely reliant on *Ulmus spp*, a Species Action Plan for the butterfly is, of necessity, also one for the trees.

White-letter hairstreaks require sexually mature elm as the eggs, laid on the branches the previous summer, hatch into larvae in mid- March and immediately feed on the elm flowers before progressing to the seeds. Elm becomes sexually mature (flowering and fruiting) after around twelve to fifteen years of growth. Many elms however succumb to DED at around this age.

Recent research in the Low Countries however has shown that larvae may be able to survive on immature, flowerless trees by remaining dormant for up to six weeks until the leaves flush. This would explain the occasional sightings of the butterfly on English elm suckers.

There are different types of elm, however *Ulmus* species are highly variable and readily hybridize which makes precise identification notoriously difficult. The following species however are present in the London area:

Species	**Provenance**	**Suitability for WLH**
English elm *(Ulmus procera or Ulmus minor var. vulgaris)*	Native	Widespread through London but all trees are clones only spreading by suckering. It is highly susceptible to Dutch Elm Disease (DED) and usually does not reach flowering age before succumbing. Where it suckers up into large stands however it is possible to find the butterfly.
Wych elm *(Ulmus glabra)*	Native	It is susceptible to DED but, as it spreads by seed, it has a higher resistance than English Elm. Wych Elm is the favourite native host for the white-letter hairstreak and large, flowering trees can still be found in several places.
Smooth-leaved elm (*Ulmus carpinifolia* or *Ulmus minor var. minor*)	Native	Spreads both by seed and suckering but is only locally abundant. This tree hosts the butterfly.
Dutch elm (*Ulmus x hollandica*)	Native	A naturally occurring hybrid of wych elm and smooth-leaved elm which has a degree of resistance to DED. It is a very variable tree and therefore not easy to identify. It supports white-letter hairstreak.
Huntingdon elm (*Ulmus hollandica 'Vegeta'*)	UK	A cultivar of Dutch elm which was widely planted in the past in streets and parks and, although still susceptible to DED, has considerable resistance. A mature, 70-to-80-foot elm in London is probably a Huntingdon and is likely to support a colony of the butterfly.
Ulmus 'Sapporo Autumn Gold'	USA	A cross between Siberian elm (*Ulmus pumila*) and Japanese elm (*Ulmus japonica*) and was the first of the disease resistant cultivars. It was widely planted in the 1980s in schools, parks and gardens, often as a replacement for other elms killed by the disease. There are now many mature trees, and these have been of huge benefit to the white-letter hairstreak. Indeed, wherever there are Sapporo's in London there is the near

		certainty of finding a colony. However, it is not a long-lived tree, and few are now planted.
Ulmus 'New Horizon'	USA	A newer cultivar currently being planted in London and comes from the same cross as Ulmus 'Sapporo Autumn Gold'. It is proven to be 100% resistant to DED. A colony of white-letter hairstreak was found in 2017 on a New Horizon in Vauxhall Pleasure Gardens. This is significant because the butterfly has not been recorded breeding on this elm before. Butterfly Conservation carries out trials of new disease resistant elm cultivars both to assess the quality of the trees and their use for breeding by the white-letter hairstreak (Brookes 2016). At present we cannot definitely say that New Horizon hosts the white-letter hairstreak, which would require the finding of eggs. However, it seems 99% certain that is does.
Ulmus 'Lutece'	Netherlands	A disease resistant cultivar of Dutch elm which has recently been shown to host the species on a tree on the Isle of Wight.
American elm (*Ulmus americana* 'Princetown')	USA	Widely planted in South London and Surrey but it is not used by the butterfly. It also may be susceptible to DED. A very fast-growing cultivar that readily develops weak branch unions that result in branch collapse. Not recommended for further planting.
European white elm (*Ulmus laevis*)	Europe	Hosts the butterfly. It is not a disease resistant tree but has very high level of resistance due to the presence of the triterpene *Alnulin* in the bark which deters the vector beetles. It has been utilized in some planting projects in the UK and is particularly suited to riparian environments as it is highly tolerant of water logging. Recent studies however are indicating that this tree is rapidly beginning to succumb to DED.
Ulmus 'Wingham'	Italy	A tree which shows excellent levels of resistance to DED and is considered likely to support white-letter hairstreak.

Actions

Please note that the partners identified in the tables are those that have been invited to be involved in the process of forming the plan. It is not an exclusive list and new partners are both welcome and needed. The leads identified are responsible for coordinating the actions - but are not necessarily 'implementers' themselves.

Specific actions targeting white-letter hairstreak and elm			
Action	**Target date**	**Lead**	**Other partners**
WLH01 – Provide training sessions for contractors and volunteers on the protection of elms within woodland and hedgerow habitats. Conservation of native and naturalised elm trees (likely to be wych elm, smooth-leaved elm or Dutch elm) needs to be at the core of the strategy.	Ongoing	LA	H&H, Butterfly Conservation

WLH02 - Only fell diseased trees for health and safety reasons. Standing deadwood is excellent habitat for invertebrates.	Ongoing	LA	
WLH03 – Build a borough database of healthy elm (likely to be wych elm, smooth-leaved elm or Dutch elm) and planted DRE.	Ongoing	H&H, LA	TRP, FORCE, FOHL, WWT, TLS, Butterfly Conservation
WLH04 – Plant and retain other trees near elms which are known to be nectar sources for the adult white-letter hairstreak: Limes (*Tilia spp*), field maple (*Acer campestre*) and ash (*Fraxinus excelsior*).	Ongoing	LA	
WLH05 – Identify key areas for targeted Disease Resistant Elm (DRE) planting, focusing on creating pathways between known elm and WLH populations, and areas where there is an abundant alternative nectar source, such as lime avenues.	2026	LA	TRP, FORCE, FOHL, WWT, TLS, Butterfly Conservation
WLH06a – Plant a variety of DRE that support white-letter hairstreak in streets and parks, as part of the strategy of conserving the native and hybridised trees.	Ongoing	LA	
WLH06b – Plant a variety of Disease Resistant Elms (DRE) that support white-letter hairstreak on nature conservation sites, focusing in particular on woodland and hedgerow areas. It is recommended that wych elm is planted more widely in such situations.	Ongoing	LA	TRP, WWT, TCV, FOHL, FORCE, TLS
WLH07 – Develop partnerships with nurseries supplying suitable varieties of DRE, to secure a long-term supply of healthy tree stock.	2026	LA	
WLH08 – Encourage the planting of WLH supporting DRE within private property. This is to be achieved through Council promotions and initiatives. Planning conditions should be used to ensure that (where appropriate) the species is introduced as part of landscaping schemes and tree planting within development sites.	Ongoing	LA	Local residents and landowners
WLH09 – Undertake a training session for volunteers during the winter months on identification of white-letter hairstreak eggs.	2025	Butterfly Conservation	TRP
WLH10 – Carry out annual monitoring of elms to detect the presence of white-letter hairstreak. This can be done by observing the canopy for the adult butterflies during the summer flight period or by searching for the presence of eggs during winter.	Ongoing	Butterfly Conservation and volunteers	TRP

Relevant action plans

Local Plans
Broadleaved Woodland, Hedgerows, Private Gardens, Tidal Thames, Ancient and Veteran Trees

London Plans
Parks and Urban Greenspaces, Private Gardens, Tidal Thames, Woodland, Open Landscapes with Old/Ancient Trees

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Tawny Owl - photography by Jane Bain

Common Frogs - photography by Andrew Wilson