



plan

01: Introduction & Policy

02: Habitat Action Plans

- 2.1 Introduction
- 2.2 Built environment
- 2.3 Parks, squares & amenity space
- 2.4 Allotments
- 2.5 Brownfield habitats
- 2.6 Species-rich grasslands
- 2.7 Trees & scrub
- 2.8 Wet woodland
- 2.9 Rivers
- 2.10 Reedbed
- 2.11 Ponds

03: Species Action Plans

- 3.1 Introduction
- 3.2 Black poplar
- 3.3 Terrestrial invertebrates
 - Brown banded carder bumble bee *Bombus humilis*
 - Toadflax brocade moth *Calophasia lunula*
 - A fungus beetle *Cicones undatus*
 - A tumbling flower beetle *Mordellistena neuwaldeggiana*
 - A beetle *Olibrus flavicornis*
 - A ground bug *Stictopleurus abutilon*
 - A ground bug *Stictopleurus punctatonevrosus*
- 3.4 European eel
- 3.5 Amphibians
 - Common frog
 - Common toad
 - Smooth newt
- 3.6 Reptiles
 - Common lizard
 - Grass snake
 - Slow worm

- 3.7 Black redstart
- 3.8 Grey heron
- 3.9 House sparrow
- 3.10 Kingfisher
- 3.11 Linnet
- 3.12 Reed bunting
- 3.13 Sand martin
- 3.14 Song thrush
- 3.15 Starling
- 3.16 Swift
- 3.17 Bats
- 3.18 Water vole
- 3.19 Otter

04: Management & Monitoring

1. Introduction & Policy

In 1988, Edward O Wilson, edited *BioDiversity*, the proceedings of the first conference on the subject, thereby introducing the word to the language. Biodiversity (biological diversity) is an all-encompassing term which describes the richness and variety of species and habitats, from the upper reaches of the atmosphere to the ocean depths and even subterranean rock formations. Although they have replaced more complex natural ecosystems, cities, including London, still support a surprising range of habitats and species. However we can do more to improve city life by attracting even more wildlife to open spaces and built structures. Increases in biodiversity also bring ecosystem services, which reduce surface water run-off, provide evapo-transpirative cooling and help mitigate for, and build resilience to, climate change. Caring for biodiversity makes cities more sustainable and more comfortable.

The UK Government's response to the 1992 Convention on Biological Diversity was to establish a steering group, which is now known as the UK Biodiversity Partnership Standing Committee (chaired by the Director of Wildlife, Countryside and Flood Management of DEFRA). The committee supports the UK Biodiversity Partnership in implementing the UK Biodiversity Action Plan and is advised by two support groups, namely the UK Biodiversity Reporting and Information Group and the UK Biodiversity Research Advisory Group. The work of the Standing Committee has been devolved to national level with

A youngster spots a grey heron, an Olympic Park BAP species



each of the countries that comprise the UK represented in the UK Biodiversity Partnership Standing Committee.

The UK Biodiversity Partnership has now compiled detailed descriptions of the UK's biodiversity and has prepared a plan for its protection. By the year 2006, 391 Species Action Plans, 45 Habitat Action Plans and 162 Local Biodiversity Action Plans (BAPs) with targeted actions had been produced by the various partners. BAPs are now required through the planning process. Planning Policy Statement 9 (PPS 9) on Biodiversity and Geological Conservation, states that: 'Local Development Frameworks should identify any areas or sites for the restoration or creation of new priority habitats which contribute to regional targets, and support this restoration or creation through appropriate policies'

This has been reinforced by the Natural Environment and Rural Communities Act 2006 (see Part 3, Chapter 16), which places a responsibility upon every public authority to conserve biodiversity. The Act also refers to the need to restore or enhance populations of species or habitats.

The Olympic Park will be a major new asset for London and the nation and the catalyst for large scale regeneration of an area which has hitherto been one of the most deprived in the UK. The London 2012 Olympic and Paralympic Games will be a unique, shortlived, event, however, thereafter the area will continue to develop into a significant sporting, social, economic, cultural and environmental hub for local, metropolitan, national and international visitors. As envisaged in the Opportunity Area Planning Framework, the Olympic Park is also part of a wider vision to regenerate the Lower Lea Valley, East London and the Thames Gateway. In the long term, the Olympic Park will form part of an extended network of interconnected green spaces (green infrastructure) linking the Lee Valley Regional Park in the north with the Thames to the south and connecting with new and existing parks in the new communities that will emerge to the east and west. The new network of wildlife-rich parks will encourage more people to use and appreciate these greenspaces which in turn will promote healthier, more active lifestyles. The extended green infrastructure network will help

Biodiversity Action Plan

this part of London adapt to climate change.

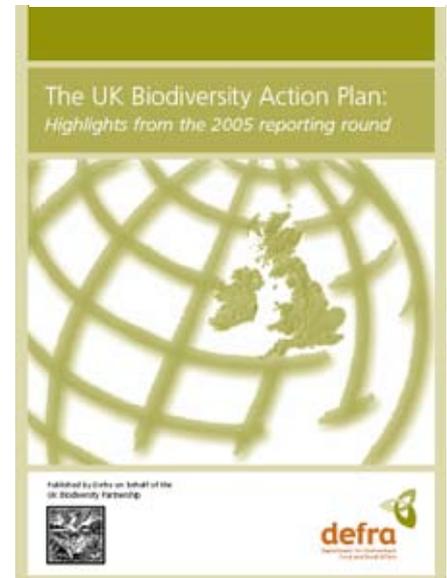
The Games phase proposals within the Olympic Park have been developed to allow a flexible approach to the still evolving legacy plans for the area, by providing infrastructure required for the Games which can be utilised in Legacy. Legacy conditions are currently being considered as part of the London Development Agency's (LDA's) Legacy Masterplan Framework (LMF) study.

The Olympic Park BAP takes account of the objectives of the UK BAP, London BAP, BAPs of the Olympic Host boroughs and the Lee Valley Regional Park BAP. It should be noted, however, that BAPs at both the national and local level are subject to revision and change.

This document also takes account of a number of other policy documents as well as as the national policies already mentioned. They include the following:

- The London Plan (consolidated with alterations since 2004)
- Mayor of London Strategies and Supplementary Planning Guidance
- Lee Valley Regional Park Plan (LVRP) 2007
- Green Grid Framework Spatial Development Strategy for Greater London Draft SPG (2007)
- Lower Lea Valley Opportunity Area Planning Framework
- East London Sub-Regional Development Framework (2006)
- The London Borough of Waltham Forest UDP (2006)

UK BAP



1. Introduction & Policy (cont.)

- The London Borough of Newham UDP (2001)
- London Borough of Newham Local Development Scheme (2007)
- London Borough of Newham Preferred Options for the Core Strategy (2006)
- The London Borough of Tower Hamlets UDP (Saved policies, 2007)
- Interim Planning Guidance: Core Strategy and Development Control Plan (2007)
- The London Borough of Hackney UDP (1995)

The following Planning and Guidance documents have also been considered:

- London 2012 Sustainability Strategy
- ODA Sustainable Development Plan
- London Thames Gateway Development Corporation – Lower Lea Valley Vision
- East London Green Grid
- Water Framework Directive

Schedule 6 of the section 106 deed of agreement (dated 28 September 2007) agreed as part of the planning permission for the London 2012 Olympic and Paralympic Games

requires that the ODA prepares a Biodiversity Action Plan for the Olympic construction, games and legacy transformation phases and that the LDA complies with the approved BAP until 'such time and to the extent that the Biodiversity Action Plan is replaced with an alternative plan approved by the Local Planning Authority relevant to the Legacy Communities Development.' . This document is the ODA's Olympic Park BAP which takes forward the principles outlined in the Framework Olympic Park BAP submitted with the 2007 planning application.

Planning Condition OD.0.11 requires that 'before 30 September 2008, the Biodiversity Action Plan, which shall be based on the Biodiversity Action Plan Framework submitted with the application, shall be submitted to the Local Planning Authority for approval.'

The condition goes on to state: 'This shall clearly identify the areas of recognised wildlife habitat to be provided and the means by which these will be maintained' and gives the reason for the condition as being: 'To help achieve biodiversity objectives and protect habitats and species'.

Biodiversity Action Plan

The key aims of the BAP are to:

- Establish targets and provide guidance on how to create habitats, encourage species and generally enhance biodiversity through the Olympics to Legacy Transformation phase in 2014. (This will be underpinned in the construction phase by the Ecological Management Plan which includes measures to protect existing habitats and species).
- Outline actions and set measurable targets for the establishment and conservation of selected habitats and species of conservation concern; and,
- Provide the method and means for monitoring, measuring and reporting on the action plans.

As already mentioned, the BAP is a response to key policy documents. The London Plan (consolidated with alterations since 2004) encapsulates international and national policy on nature conservation (e.g. PPS 9) on the conservation of biodiversity as well as the Mayor's Biodiversity Strategy (2002). The London Plan states that 'opportunities should be taken to achieve positive gains for conservation, including measures to create, enhance

Figure 1. The Olympic Park (red) will, in effect, extend the Lee Valley Regional Park south towards the Thames. Further initiatives in the Lower Lea Valley being promoted by the London Thames Gateway Development Corporation will complete the chain of green space

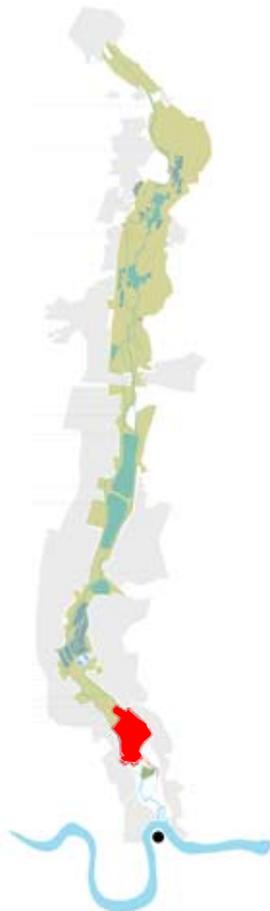


Figure 2. The Olympic Park (red), River Lea catchment and riparian authorities



1. Introduction & Policy (cont.)

Biodiversity Action Plan

and manage habitat and improve access to nature.’ In order to achieve this, the approach adopted by the ODA is to ensure that there will be no net loss in area of habitat at Legacy Transformation when compared to the pre-construction baseline but also to ensure that the quality of habitats created will eventually merit designation by the GLA as Grade 1 Sites of Borough Importance (SBI) for nature conservation or better.

Inevitably the area of habitat will fall during preparations for and the staging of the Games (2008-2012), however some areas of existing habitat are being safeguarded and some new habitat will be created during this period. After the games the Olympic Park will be transformed to include more habitat. The targets for minimum areas of habitat to be created are explained in the introduction to Section 2 of this document.

This Biodiversity Action Plan will set the direction for a long term programme of habitat creation and management which will be reviewed and refined in association with partners and stakeholders. The BAP will give local people an opportunity to be involved in nature conservation and it will provide guidance to enable the designers, builders and future operators of the Olympic Park to maintain and enhance biodiversity. The Biodiversity Action Plan is one of a suite of documents produced (and to be produced) by the ODA which also include the Urban Design &

Landscape Framework (UDLF) and its appendices, the Waterspace Master Plan and Lighting Strategy which will inform the design of the Olympic Park. These documents will, in combination with the emerging Parklands and Public Realm design, provide a framework for the Parklands and Public Realm Application package is which to be submitted in 2008.

Key stakeholders will continue to be consulted as part of the design development process. The ODA is committed to working closely with various partners and stakeholders to develop and implement the BAP. Representatives from the following organisations attended workshops to inform this BAP:

- British Waterways London
- Environment Agency
- Forestry Commission London Region
- Greater London Authority
- Lee Valley Regional Park Authority
- London Development Agency
- London 2012 Organising Committee
- London Wildlife Trust
- Natural England
- ODA Planning Decisions Team (PDT)
- Olympic Host Boroughs namely:
 - Hackney
 - Newham
 - Tower Hamlets
 - Waltham Forest

The first workshop was held in November 2007 to discuss the Framework BAP (which had been issued in summer 2007). A second workshop was held in March 2008 to discuss the contents of a draft BAP and a third workshop was held in August 2008 to present the latest plans for the Park. The ODA will continue to hold meetings with stakeholders to discuss and monitor the implementation of the BAP. It is anticipated that the group that attends these meetings will be the precursor of an Olympic Park Biodiversity Action Plan Working Group, which will continue its work through to the legacy transformation phase and beyond.

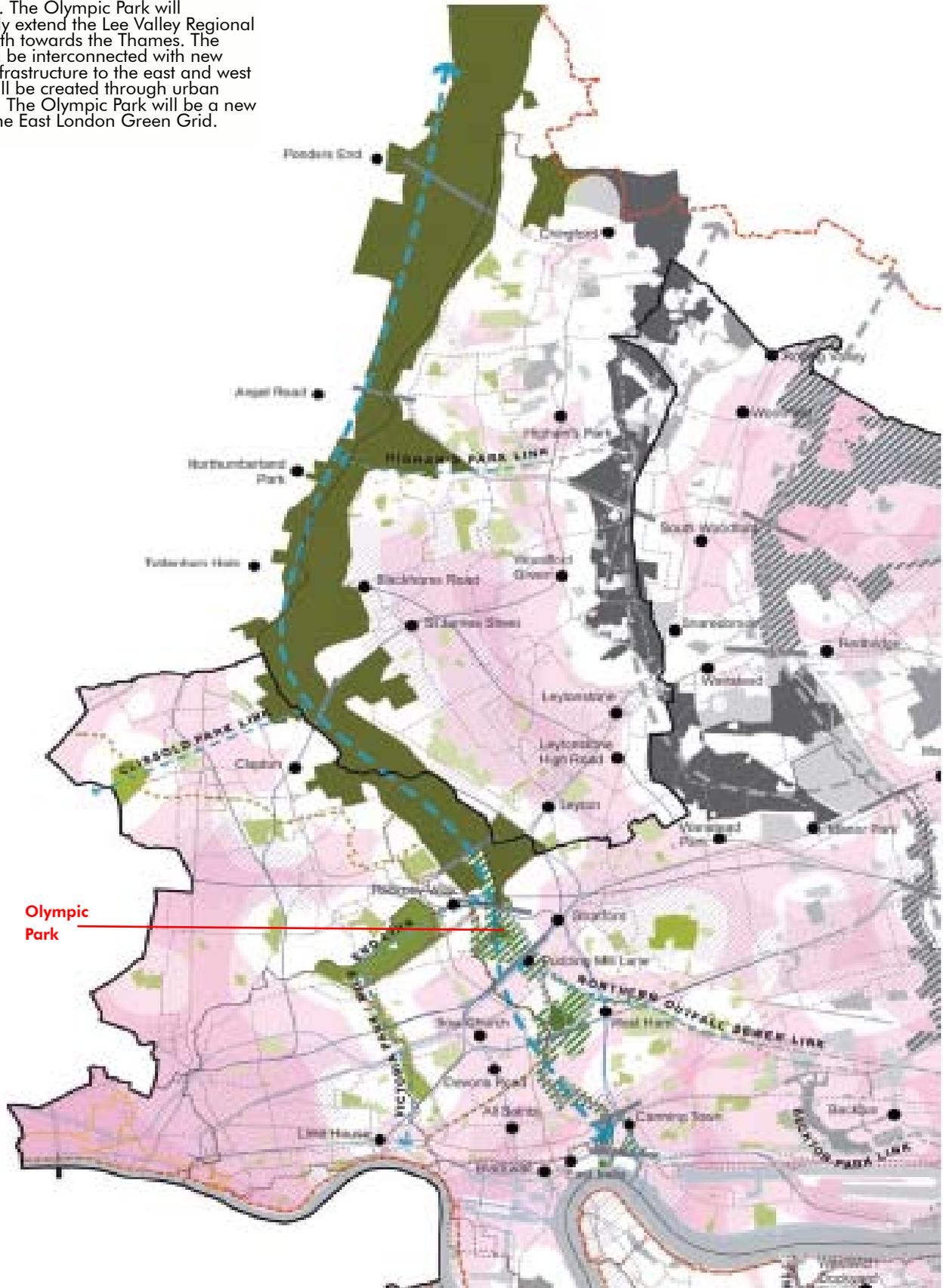
Some of the partners are landowners (e.g. the British Waterways Board owns the Bow Back Rivers). Other partners have a special responsibility for particular areas. For example the Environment Agency has a statutory role in flood risk management and maintaining environmental quality. These and other relationships mean that the implementation of specific habitat or species action plans may involve the ODA working closely with particular organisations for those projects. Where the special involvement of a key partner is anticipated, this has been indicated in the appropriate Habitat Action Plan (HAP). Key partners are not indicated for Species Action Plans (SAPs), however the ODA is looking forward to forging new partnerships which support both individual HAPs and SAPs as these are implemented.

For an outline of proposals for management and monitoring see Section 4 of this document.



Beyond the wall is the Old Ford Nature Reserve, an area within the Olympic Park planning application site, owned by Thames Water and managed by the London Wildlife Trust, which is being safeguarded during construction.

Figure 3. The Olympic Park will effectively extend the Lee Valley Regional Park south towards the Thames. The Park can be interconnected with new green infrastructure to the east and west which will be created through urban renewal. The Olympic Park will be a new hub in the East London Green Grid.



2.1 Introduction to the HAPs

The overarching objectives of the habitat action plans are to:

- Enhance habitat and species diversity in the area;
- Compensate for habitats lost in ground remediation and remodelling;-
- Improve the conservation status of species through habitat creation, enhancement and management;
- Increase habitat connectivity within the park and between the park and neighbouring sites;
- Increase public access to natural greenspace and wildlife;
- Increase resilience to climate change;
- Ensure that an appropriate approach to management is adopted and,
- Indicate how managers will monitor the effectiveness of the plans

The range of habitats included in this BAP reflect the diversity of the site before construction began but also the desire to restore vegetation (like native woodland and species-rich grassland) which has largely disappeared from the area. There is also a recognition that the waterways need to be restored to include more natural features.

In order to ensure that the development of the Olympic Park meets the shared international, national, London and local policy objective of achieving positive gains in nature conservation value, it is essential that targets are set for the creation of high value habitat. The Environmental Statement for the Olympic and Paralympic Games planning application has estimated that losses of existing sites of nature conservation value (sites designated by the Greater London Authority as Sites of Borough Importance or SBIs) will be approximately 45 ha. This has subsequently been measured at 42.47 ha. In view of this loss and the policy requirement for compensation, the ODA has adopted an overall target to create,

by 2014, at least 45 ha of new habitat which will eventually mature to meet a quality standard of SBI Grade 1 (or better). Targets for each of the individual categories of habitat to be created are consistent with the Stage D (September 2008) Parkland and Public Realm design and the latest information regarding the design intent for the venues and infrastructure (including roads, bridges and utility buildings). Drawings showing the proposed distribution of habitats in 2012 and 2014 are presented in figures 5 and 6 on pages 7 and 8. It may be that the relative balance between the various habitats may change to a minor degree as designs continue to be refined, therefore the targets stated for each of the habitat categories that follow and the locations shown on the drawings are for guidance, however the overall target of at least 45 ha of high value habitat will remain fixed. Despite the possibility of changes in the design, radical changes to the individual habitat targets are not anticipated at this time. There will be further opportunities for examination of the detailed location and distribution of habitats as detailed designs are completed.

The area of wetland within the Olympic Park is set to increase, largely because of the planned creation of new wetland in the North Park and extension of the River Lea in the Bully Point area. This wetland creation will occur in time for the 2012 Olympics, however opportunities to create terrestrial habitats by this time will be, relatively speaking, limited by the requirement to provide facilities for and access to, venues. Therefore, delivery of the full quantum of terrestrial habitat necessary to meet the overall target will not be complete until 2014. Despite this, the designers of the Olympic Park have sought to maximise the area of habitat during the Games, whilst acknowledging the need to provide adequate space for venues and concourse. Any habitat

Biodiversity Action Plan

creation that occurs after 2014, will ensure that, in the long term, there will be a further increase in the area of sites of nature conservation value.

The table overleaf lists relevant UK Habitat Action Plans habitat types and relates these to habitats and features that will be created within the Park. Each of the habitat types in the left hand column of the table are considered in more detail in this section of the document. Within each habitat type there will be variation, depending on the location, aspect and nature of adjoining habitats. For example, whilst most reeds may be planted in dense single-species stands next to the river, they will also occur in linear belts, growing with other wetland species, in drainage swales some distance from the river. In addition, in some situations, for example where woodland grades into tall grassland habitat or where reed grades into wet woodland, the boundaries between habitat types may be indistinct. Such gradations between habitats (known as ecotones) are desirable because they have some of the characteristics of both adjoining habitats and therefore tend to increase overall habitat and species diversity.

The HAPs are guides to ensure that all of the habitat types are created and that each type is created in an appropriate quantity in order to ensure that targets are met. The HAPs do not include rigid prescription or detailed specifications. Therefore further development of habitat creation specifications by the various design teams is required. Collaboration and liaison between the various teams and experts within each team involved in the establishment of the habitats will be coordinated by the ODA's Delivery Partner in order to ensure connectivity, continuity and the creation of a harmonious combination of the various component projects.



Figure 4. Sections of the North Park illustrating how a full range of habitats and ecotones will be created

2.1 Introduction to the HAPs (cont.)

Table 1. Proposed habitat categories

UK BAP Habitat Type	Olympic Park Habitats or Features	Target (area of new habitat in hectares)
Built environment	Installations or modifications to man made structures and buildings including bird boxes, bat boxes and voids, bee hotels, living roofs and living walls. (Target area is living roofs)	0.40
Parks, squares & amenity Space	Species-rich lawns, ornamental trees and shrubberies established using native species. Ornamental planting designed specifically to benefit species identified in an Olympic Park Species Action Plan.	1.67
Allotments	Include native boundary hedges and trees with tall grassland verges, species-rich grassy paths, compost heaps, fallow plots with arable weeds, small ponds and other features to attract wildlife including bird boxes, bat boxes and bee hotels	1.04
Brownfield habitats	Bare ground and cliffs, stony ground, pioneer communities, tall ruderal, low scrub, vegetated gabions.	5.05
Species-rich grassland	Species-rich grasslands established on a variety of low fertility substrates, which may vary in soil pH from acid, through neutral to alkaline, maintained by a variety of cutting regimes which may result in swards of varying height.	23.69
Trees & scrub	Native trees and shrubs with associated woodland ground flora	10.00
Wet woodland	Groups of alder, willow and birch with associated ground flora usually close to waterways with soils subjected to frequent waterlogging.	0.90
Rivers	All watercourses and waterways (target area is extension of River Lea at Bully Point)	0.27
Reedbed	Wetlands (including drainage features) dominated by common reed, but which may be comprised of other locally appropriate, native wetland plants.	1.80
Ponds	Ponds with shallow margins and native wetland vegetation	0.18
	Minimum target of new SBI Grade1 equivalent habitat (2014)	45.0

Figure 5. Indicative plan of habitat distribution at 2012

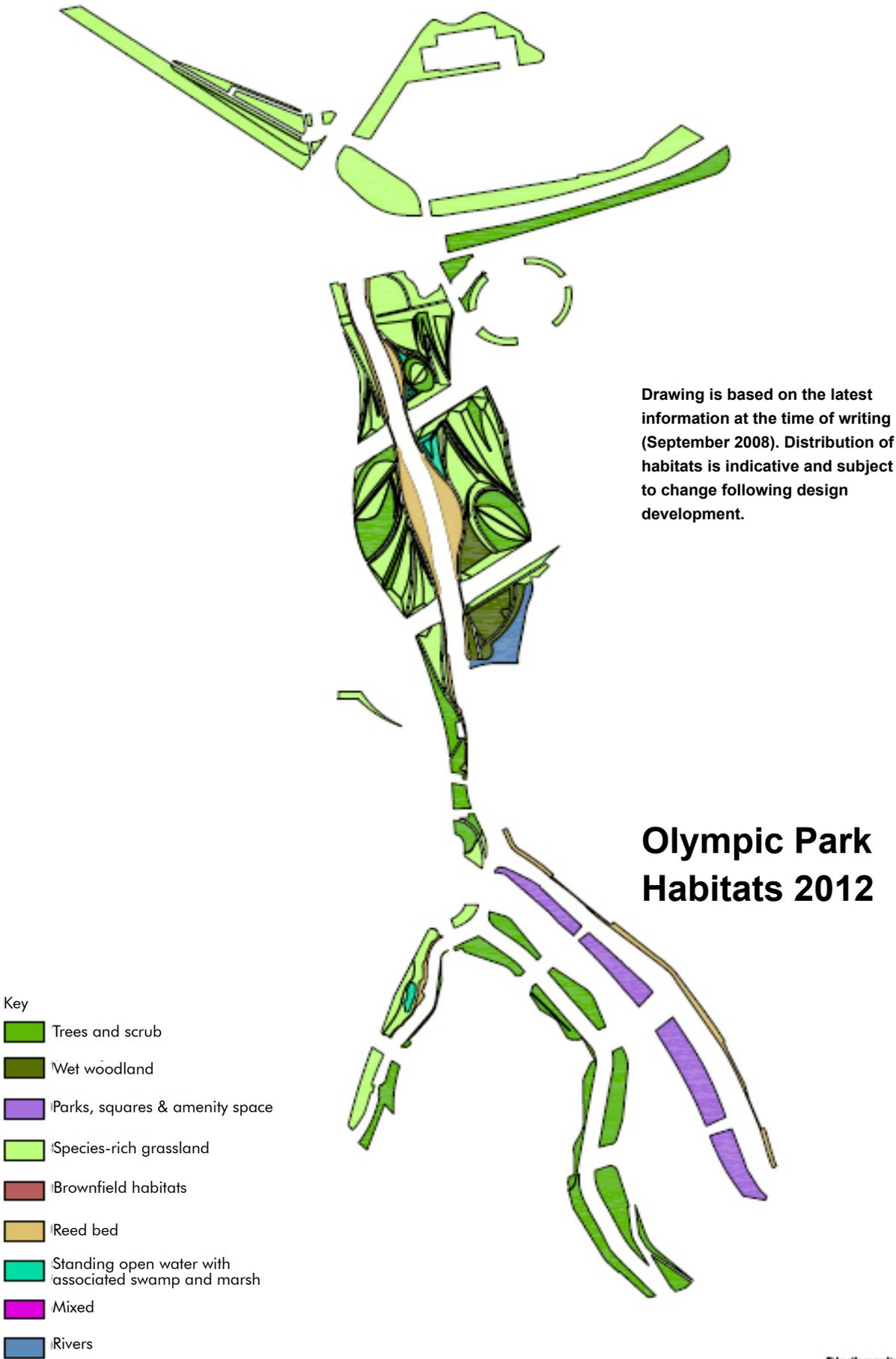
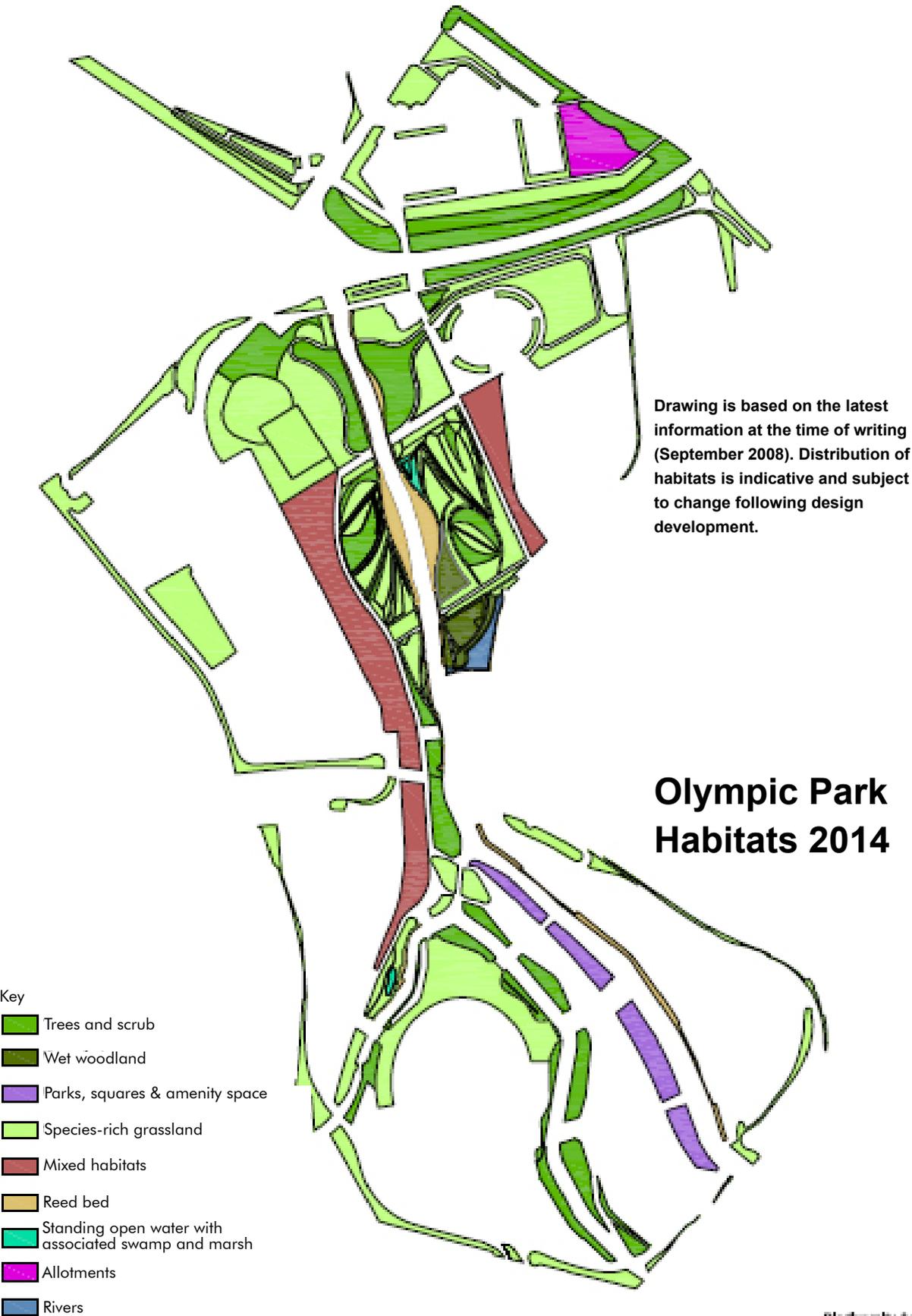


Figure 6. Indicative plan of habitat distribution at 2014



Biodiversity Action Plan
Landscape created for 2012 Olympic and 2014 Transformation plans
DATE: 09/09/08
BY: MCB

2.2 Built Environment

Description

The Built Environment urban sub-category habitat type (now known as Built-up areas and gardens in the UKBAP) covers any man-made structure. It includes the walls and roofs of buildings and bridges. This habitat is home for a range of species including plants, mammals, birds and invertebrates. Many species that once only used natural features such as caves, cliffs, rocks and bare ground have adapted to use man-made sites. Man made structures vary considerably in complexity and orientation, providing a range of opportunities for species to colonise. Examples of groups of species that colonise buildings and walls include lichens, mosses, ferns, wild flowers and birds (including swallow, house martin and swift). Several species of bat habitually roost in buildings or other man-made structures. Buildings can be deliberately modified to provide wildlife habitat. Examples include living (green) roofs, living walls and nesting and roosting boxes for birds and bats, either integrated into the structure or retro-fitted. The built environment is also the setting for street trees and these play an important role in bringing biodiversity into the built environment. Large shade trees will also be increasing important in terms of future adaptation to climate change.

Requirements

It is preferable to create features specifically for targeted species of wildlife rather than rely on accidental colonisation. Opportunities for installing gabion walls, creating living roofs and

walls and installing nesting or roosting boxes or voids should be considered at an early stage in the procurement of a building (i.e. potential features or opportunities should be identified in the design brief). Reference should be made to recent guidance on creating habitats on buildings (CIRIA 2007). Where street trees are proposed adjacent building foundations should be designed to anticipate and allow for the growth of adjacent large and long-lived trees.

Distribution

National

The built-environment is widespread, dominates some lowland areas and is still expanding. Features like roads and railways connect almost all man-made structures into a nationwide network.

London

As would be expected in a major city, the built environment dominates, with some of London's wildlife depending almost entirely on the built fabric (London BAP).

Olympic Park Site

The Olympic Park site includes a number of existing road and rail bridges, bridge abutments and other structures. A number of new roads, bridges, bridge abutments, retaining structures, utility buildings and venues are planned including many that will be permanent.

Legal Status

No building or structure is currently protected by any statutory or non-statutory wildlife designation. New buildings and structures require detailed planning permission and features to attract wildlife could be required by planning condition. Some species

Biodiversity Action Plan

associated with buildings e.g. nesting birds and roosting bats enjoy legal protection. All existing bat roosts enjoy legal protection.

Conservation Status

The built environment habitat type has no conservation status, however it is a priority habitat in the London BAP.

Factors Causing Loss or Decline

The main factors affecting the quality and maintenance of this habitat are:

- Demolition or unsympathetic renovation of old buildings can lead to a loss of biodiversity
- Lack of effective management for wildlife
- Lack of information on the range of wildlife associated with the built environment
- It is a common misconception that buildings and built features are devoid of wildlife, or of any potential to support it.

Desired Outcome

To ensure that the new built fabric within the Olympic Park incorporates measures to create new habitats for wildlife, with special consideration for Olympic Park BAP species (see related BAPs listed below).

Action

Action To-date

Advice has been given to venue and bridge designers to take account of the requirements of species in the Olympic Park Framework BAP. The requirement for living roofs has been included in the design briefs for the Aquatic Centre, the IBC/MPC and the Primary Sub-Station.

Action & Targets

Implementation Guidance for Project Teams (IGPT) is to be issued to ensure installation of biodiversity enhancements (e.g. bird nest boxes and bat boxes) on permanent bridges, venues and other buildings. This work should be completed by 2012 and may be supplemented once venues are transformed into their permanent configuration. Construction of at least 0.40 ha (4,000m²) of living roofs on selected buildings.

Key Partners

Design for Biodiversity Partnership (DfB 2007)

London's Swifts



Living roofs for wall lizard on platform canopy at Zurich railway station - example of habitat creation in an urban environment

2.2 Built Environment (cont.)

Related Action Plans

Olympic BAP

Brownfield Habitat

Black redstart

Swift

House sparrow

Bats

Other BAPs

UK BAP (Built structures)

London BAP (Built structures)

L B Waltham Forest BAP (Built up areas and gardens)

L B Tower Hamlets (Local Habitat: the built environment and brownfield land)

References

DfB 2007. *Design for Biodiversity Partnership* <http://www.d4b.org.uk>

CIRIA 2007. *Building Greener* <http://www.ciria.org/buildinggreener>

London BAP, 2007, *London Biodiversity Action Plan – Priority Habitats* <http://www.lbp.org.uk/londonhabssp.html#built>

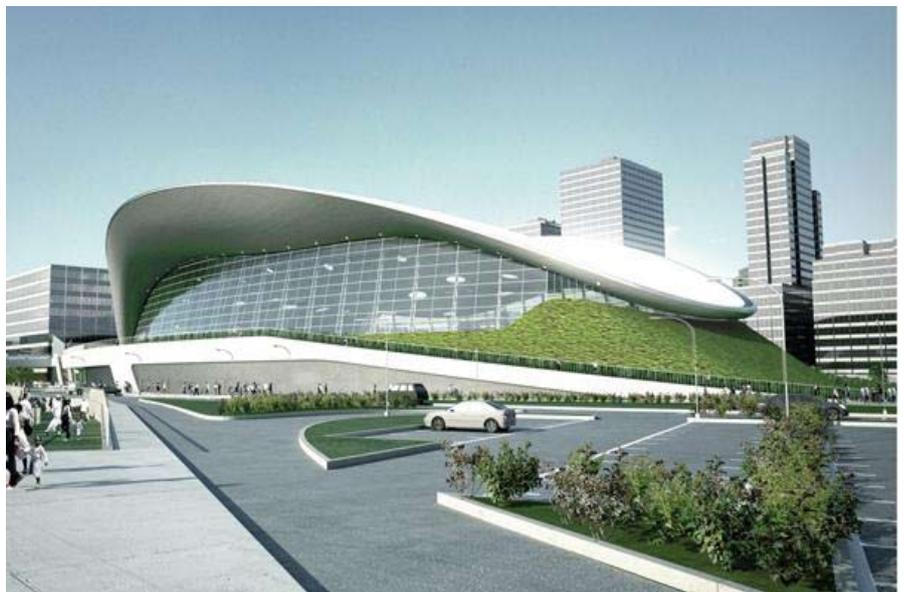
L B Tower Hamlets BAP (Local Habitat: the built environment and Brownfield land) <http://www.ukbap.org.uk/lbap.aspx?id=538#6>

L B Waltham Forest BAP (Built up areas and Gardens) <http://www.ukbap.org.uk/UKPlans.aspx?ID=62>

UKBAP *Priority Habitats*. <http://www.ukbap.org.uk/PriorityHabitats.aspx>



Bat and black redstart/wagtail boxes installed in a new building near Oxford Street.



Living roof is to be included on Aquatics Centre

2.3 Parks, Squares & Amenity Spaces

Description

Parks, squares and amenity spaces are an essential component of cities and towns, primarily established to provide opportunities for relaxation, play and socialising. They may be important for historic, cultural, horticultural and landscape reasons. Parks tend to be dominated by a relatively simple vegetation of amenity grassland with scattered trees and shrubberies. Older parks may include ancient trees of high ecological value which pre-date the establishment of the park. Even the most simple of urban parks will support wildlife, most notably birds and bats, however urban parks usually have unrealised potential for ecological improvement.

Requirements

In order to maximise the ecological value of parks the dominant low grassland sward should be species-rich to increase plant diversity and to attract invertebrates. The use of native species as ornamental or specimen trees also increases the value of parks. Appropriate management plans and changes in maintenance regimes can bring about an increase in biodiversity (CABE 2006). As with the urban environment, large shade trees will also be important in parks and squares in terms of adaptation to climate change, specially in places where people may congregate in hot weather.

Distribution

National

Urban parks occur in virtually all urban districts in the UK. The total area of urban parks is unknown. Estimates of the number of parks in the UK vary between 34,000 and 123,000, although only 5,500 of these are considered formal (DTLR 2002).

London

There are about 17,000 ha of Parks in London. However, only a few parks currently have management plans orientated to promote wildlife (London BAP)

Olympic Park Site

There are currently no urban parks within the Olympic Park site. A total of 102 ha of open space will be created in the Olympic Park and all of this open space should be designed to meet the criteria in the London Plan for

designation as Metropolitan Open Land

Current Status

Legal Status

There is recognition of the value of urban parks and veteran trees in various local authority plans. Many parks are designated as non-statutory wildlife sites by county or metropolitan authorities. Some of the component habitats of urban parks are biodiversity action plan priority habitats in their own right (UK BAP 2007).

Conservation Status

Parks, Squares & Amenity Spaces are a London BAP habitat.

Factors Causing Loss or Decline

The area of urban parks is not in decline, however urban parks often receive management (e.g frequent cutting and removal of vegetation), which reduces or limits biodiversity

Desired Outcome

In order to promote biodiversity in the parks, squares and amenity spaces of the Olympic Park, trees planted will be predominantly native. Wherever practicable, amenity grasslands will be established as species-rich lawns. Ornamental plantings will include species known to attract wildlife.

Action

Action To-date

The ODA and its Delivery Partner are working closely with the Parklands and Public Realm design team to ensure that the conservation of biodiversity is fully integrated into the design

Action & Targets

A preliminary target (subject to review following design development) is for 1.67 ha of habitat within this category to be created by 2014, with some areas established by 2012. Habitats will include species-rich lawns and ornamental plantings known to attract nectar feeding insects. Plantings of ornamental and specimen trees in formal parks and avenues will include native species of local provenance (e.g. common oak) which can mature into important habitats in their own right in the future. Bird and bat boxes and installations for invertebrates to be erected in appropriate locations throughout. Consideration should be given to creating at least one sculptural feature within the formal areas of the

Biodiversity Action Plan

Olympic Park that gives shelter to birds, bats or invertebrates.

Key Partners

None

Related Action Plans

Olympic BAP

Trees and Scrub

Species-rich Grassland

House sparrow

Song thrush

Starling

Bats

Invertebrates

Other BAPs

London BAP (Parks and Squares)

L B Waltham Forest BAP (Lowland wood and Parkland)

L B Tower Hamlets (Park squares and burial ground)

References

CABE 2006. *Making contracts work for wildlife: how to encourage biodiversity in urban parks*

DTLR 2002. *Green spaces: better places* (Department of Transport Local Government and the Regions)

L B Tower Hamlets BAP (*Parks, squares and burial grounds*) <http://www.ukbap.org.uk/lbap.aspx?id=538#6>

L B Waltham Forest Biodiversity Action Plan. <http://www.ukbap.org.uk/UKPlans.aspx?ID=5>

London BAP (*Parks and Squares*). <http://www.lbp.org.uk/londonhabspp.html#parks>



Species-rich lawn with low growing wildflowers

2.4 Allotments

Description

Allotments (included within the Built-up area and gardens category in the UKBAP but considered separately in this document) are where people can rent land to grow their own fruit and vegetables. They are a familiar part of life for many city dwellers. Although the emphasis in allotments is on crop production there is space for wildlife in fallow plots, compost heaps, grassy paths and perimeter features, including hedges and trees. Some allotments have small ponds. Like parks, allotments usually have unrealised potential for ecological improvement.

Requirements

In order to maximise the ecological value of allotments, permanent perimeter vegetation should include native hedgerows and trees. Ponds should be included. Allotment holders should be encouraged to use wildlife friendly methods of cultivation, e.g. where pesticide use is minimised. Grassy paths should be species-rich.

Current Distribution

National

Allotments occur in virtually all urban districts in the UK. In 1996, the total area of urban allotments was 13,350 ha (a decline of 43% since 1970) NSLAG 1997.

London

The exact area of allotments in London is unknown but available data for 20 of the 33 boroughs has identified 20,786 plots covering approximately 480 ha (London Assembly 2006)

Olympic Park Site

The Manor Gardens allotment was situated in the northern part of the Olympic Park site. This will be replaced by a larger area after 2014.

Current Status

Legal Status

Allotments receive no special protection for nature conservation.

Conservation Status

Allotments are occasionally designated as non-statutory wildlife sites by county or metropolitan authorities. Manor Garden allotments were part of a SBI Grade 1.

Factors Causing Loss or Decline

The area of allotments is in decline. Post

war abandonment of allotments was followed by development of many plots. There is now a resurgence in interest in allotments with waiting lists lengthening

Desired Outcome

In order to promote biodiversity in the new allotments of the Olympic Park, boundary trees and hedges will be predominantly native. Wherever practicable, grassy paths will be established as species-rich lawns. With the agreement of the allotment holders, it is hoped that a small wildlife pond can be created. Allotment holders will be encouraged to practise wildlife friendly gardening as espoused by Natural England (2007). The target for the creation of allotments is 1.04 ha.

Action

Action To-date

None

Action & Targets

To create 1.04 ha of allotments by 2014. (Detailed plans will be provided as part of the plans for parkland and public realm transformation). Plantings of ornamental or specimen trees will be native species of local provenance (e.g. common oak) which can mature into important habitats in their own right in the future. To seek agreement with allotment holders to construct a small wildlife pond. Bird and bat boxes to be erected in appropriate locations throughout.

Key Partners

Manor Gardening Society

Related Action Plans

Olympic BAP

Trees and Scrub

House sparrow

Song thrush

Starling

Bats

Reptiles (slow worm)

Invertebrates

Other BAPs

None

References

London Assembly 2006. *A lot to lose: London's disappearing allotments*. Report by Environment Committee of London Assembly.

National Society of Leisure and Allotment

Biodiversity Action Plan

Gardeners and Anglia Polytechnic University, 1997. *English Allotments Survey: Report of the Joint Survey of Allotments of in England*

Natural England 2007.

Wildlife on Allotments NE20. Leaflet <http://www.naturalengland.org.uk>



Allotments include a variety of habitats including fallow (ruderal or bramble covered) areas, grass paths, boundary hedges and trees, as well as cultivated plots.

2.5 Brownfield Habitats

Description

Brownfield habitat (known as open mosaic habitats on previously developed land in the UK BAP and sometimes called wasteland habitat or urban common) is a general term used to describe self-established vegetation which has grown up on previously developed sites. This not only includes neglected or temporarily vacant sites in cities but also quarries, pits, old railway lands and other post-industrial sites in the wider countryside. Brownfield sites can support a variety of habitats including pioneer communities, ruderal vegetation, rough grassland, scrub and in the case of long abandoned areas, woodland, although it is the mosaic of open habitats (not woodland and scrub) which are referred to in this HAP. Many brownfield sites support a mixture of habitats, which adds to their overall diversity and interest. Brownfield sites are often extremely rich in species and support some of the UK's rarest plants and animals, which, in some cases, have become dependent on these areas since their natural habitats were destroyed in the wider countryside through agricultural improvement. Species associated with brownfield sites which have been found within the Olympic site in the past, which are also in the Olympic BAP, include toadflax brocade moth and black redstart.

Requirements

Brownfield habitats occur in a wide range of conditions with varying soil types, topography, drainage characteristics and microclimates. Some of the most interesting sites have artificial substrates with low soil fertility that enables plants with poor competitive ability to thrive. Such sites are often sunny and well drained. Re-creating this particular kind of brownfield habitat requires the use of free-draining recycled construction materials or inert industrial waste. Topography should be varied.

Current Distribution

National

In 2005 it was estimated that 63,500 ha of previously developed land was available for development (CLG 2006). Much of this land supports brownfield habitat.

London

The exact current extent of brownfield habitat in London is unknown but is likely to be in decline following a post-war peak in the 1970s and 1980s and subsequent large-scale redevelopment.

Olympic Park

Before clearance works began, much of the Olympic site was considered to be brownfield habitat. For example, some parts of the designated SBLs at Eastway Cycle Circuit and Mill Meads had the typical mosaic of brownfield habitat, with pioneer communities on rubble, tall ruderal vegetation on landfill, unmanaged grassland, scrub and young woodland. Most of the habitat lost through site clearance and remediation works, covering an area of about 44 ha, was classified as brownfield habitat.

Current Status

Legal

Brownfield habitat rarely enjoys legal protection, although there are sites that have been designated as Sites of Special Scientific Interest (SSSI) e.g. Canvey Wick on Canvey Island. Brownfield sites are occasionally designated by local authorities as nature conservation sites of county (metropolitan) or borough importance (as is the case with parts of the Olympic Park). Brownfield habitat usually supports species which benefit from legal protection. Examples include breeding birds and reptiles, both of which have been recorded within the Olympic Park site.

Conservation Status

The area of brownfield habitat in the UK is in decline because government planning policy encourages the redevelopment of these sites. For example PPS 3 anticipates 60% of all new housing to be located on brownfield sites. Concern over habitat losses has led to the formation of policies (e.g. PPS 9) that require special efforts by authorities and developers to incorporate habitats into new development where losses are predicted. This policy applies to brownfield habitats as much as any other.

Factors Causing Loss or Decline

The following factors have been identified as potential causes in the decline of brownfield habitats:

- Their ecological and amenity value is often underestimated.

Biodiversity Action Plan

- Policy has put pressure on authorities to expedite building on brownfield sites. This puts an emphasis on mitigation and compensation rather than avoidance of ecological impact.
- Although it can be initially beneficial, lack of management can allow natural succession to reduce habitat diversity of brownfield sites.
- Invasive non-native species can reduce biodiversity over large areas of brownfield sites.

Desired Outcome

The overall objective is to re-create brownfield-equivalent terrestrial habitat throughout the park to provide 'stepping stones' for species which have been reliant on brownfield habitat to thrive and spread. Much of the brownfield-equivalent habitat in the Olympic Park will be delivered under categories other than brownfield (for example species-rich grassland) as described in the sections that follow. The target for brownfield habitat at Legacy Transformation (which will consist of largely of pioneer communities on stony substrates and tall herb vegetation) is 5.05 ha.

Action

Action To-date

In 2007, as part of the Enabling Works and for the purposes of early mitigation for habitat loss, approximately 1 ha of brownfield and grassland habitat was created around the margins of the football pitches on East Marsh. Works now underway on the Greenway will also include brownfield habitat creation.

Action & Targets

To create 5.05 ha of brownfield habitat throughout the Olympic Park by 2014, with some of this provided by 2012.

Habitats and features to be created may include (but should not necessarily be limited to):

- Seeded and planted stone-filled baskets (gabions) and earth reinforced slopes associated with bridges, roads and paths.
- Sparsely vegetated pioneer communities on recycled demolition/construction waste
- Native tall herb communities at woodland edge (eg willowherbs, nettles, umbellifers)
- Dead wood habitat (log walls and

loggeries)

- Biodiverse living roofs (brown roofs)

Key Partners

Natural England has taken a lead in advocating the creation of brownfield habitat at East Marsh. Further close collaboration on the design of brownfield habitats within the Olympic Park is planned.

London Wildlife Trust is assisting with habitat creation on the Greenway

Related Action Plans

Olympic Park BAP

Brown-banded carder bee *Bombus humilis*

Toadflax brocade moth *Calophasia lunula*

Flower beetle *Olibrus flavicornis*

Ground bug *Stictopleurus abutilon*

Ground bug *Stictopleurus punctatonevrosus*

Black redstart

Linnet

Common lizard

Other BAPs

UKBAP (Open mosaic habitats on

previously developed land)

London BAP (Broad Habitats: Urban/Wasteland))

LB Waltham Forest BAP (Urban Wasteland)

LB Tower Hamlets (The Built Environment and Brownfield Land)

References

Communities and Local Government, 2006. <http://www.communities.gov.uk/news/corporate/onemillionnew>

LB Tower Hamlets BAP (*The Built Environment and Brownfield Land*) <http://www.towerhamlets.gov.uk/data/environment/download/towerHabitats4.pdf>

LB Waltham Forest BAP (*Urban Wasteland*).

<http://www.ukbap.org.uk/lbap.aspx?id=404#6>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Urban Wasteland*. <http://www.lbp.org.uk/londonhabssp.html#wasteland>

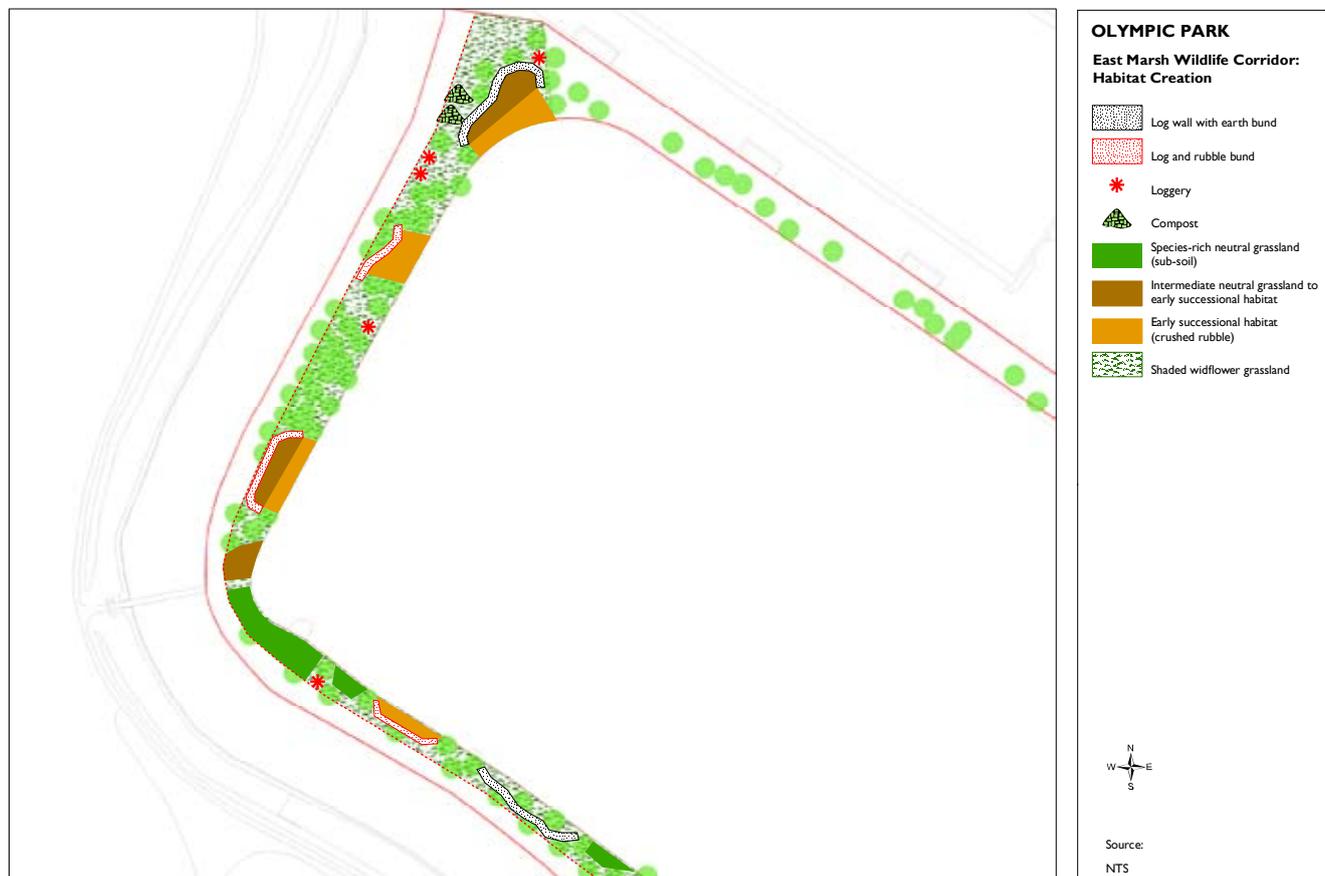


Figure 7. Plans for brownfield habitat creation at East Marsh undertaken in 2007-2008

2.6 Species-rich Grasslands

Description

Species-rich grasslands were once the dominant habitat in the English landscape, managed as pastures or hay meadows, however agricultural improvement during the twentieth century meant that by the early 1980s, 97% of England and Wales' species-rich grasslands had been lost. Species-rich grasslands vary in species composition according to the underlying geology (or build up of made ground) and hydrology. Calcareous grasslands, in particular, can be extremely flower-rich, with many associated invertebrates. (Species-rich lawns are considered in the Parks, Squares and Amenity Spaces HAP.)

Requirements

Species-rich grasslands require careful management, with controlled grazing or cutting after flowering with cuttings removed. In order to create species-rich grasslands, low-fertility substrates must be used (the use of topsoil must be avoided). Grassland seed mixtures should be based on locally appropriate species based on natural associations (derived from National Vegetation Classification or NVC categories), wherever possible locally sourced and carefully matched to substrates and hydrology.

Distribution

National

Species-rich grasslands are scarce but widely distributed. It is estimated that less than 60,000 ha remain in the UK. Species-rich grasslands can be found throughout the landscape, with calcareous grasslands on chalk and limestone hills, neutral grasslands on valley clays and acid grasslands on lowland sands and gravels and wet grasslands usually found in river valleys.

London

Species-rich grasslands are rare in London, and almost absent from inner London. They are largely found within the chalk and clay of the remaining agricultural areas of outer London. Most of London's acid grassland occurs on golf courses and in some of the larger parks.

Olympic Park Site

There are currently no remaining areas of species-rich grasslands within the site.

Current Status

Legal Status

The majority of the remaining unimproved, species-rich grasslands in England are now designated as SSSIs or as County Wildlife Sites (Natural England 2007)

Conservation Status

Lowland meadows, lowland calcareous grassland and lowland dry acid grassland are all identified as priority habitats in the UKBAP.

Factors Causing Loss or Decline

Destruction of sites is relatively rare nowadays - threats to remaining sites tend to involve gradual losses caused by neglect, soil enrichment, fragmentation, agricultural intensification, conversion to horse paddocks and invasive weeds.

Desired Outcome

The objective is to create substantial areas of species-rich grassland, throughout the Olympic Park. These grasslands should vary in character and should be created from a variety of substrates with a range of soil pH and be managed by varying cutting regimes. This habitat will constitute a significant proportion of the overall target of providing 45 ha of new terrestrial habitat by 2014.

Action

Action To-date

Soils and substrates reclaimed from the Olympic Park site, with potential to be re-used in habitat creation, are currently being stockpiled and chemically analysed

Action & Targets

A preliminary target, subject to review following design development, is to create 23.69 ha of species-rich grassland within the Olympic Park by 2014. The final target should be within 20% of the preliminary target. A proportion of this habitat will be delivered during the Olympic (2012) Phase, however it is anticipated that the majority will be created during the Legacy Transformation phase.

Key Partners

The GLA and London Wildlife Trust can provide species lists for existing species-rich grasslands in London, which may serve as models for species-rich grassland creation. The Lee Valley

Biodiversity Action Plan

Regional Park Authority have suitable sites where wildflower seed could be harvested.

Related Action Plans

Olympic BAP

Brown-banded carder bee *Bombus humilis*

Flower beetle *Olibrus flavicornis*

Tumbling flower beetle *Mordellistena neuwaldeggiana*

Ground bug *Stictopleurus punctatonevrosus*

Ground bug *Stictopleurus abutilon*

A beetle *Olibrus flavicornis*

Swift

Other BAPs

London BAP (Chalk Grassland)

L B Waltham Forest BAP (Neutral Grassland)

Lee Valley Regional Park BAP (Grassland and Fen HAP)

References

GLA 2007. *Specification of Requirements: Open Space and Habitat Survey* (

L B Waltham Forest BAP (*Neutral Grassland*) <http://www.ukbap.org.uk/lbap.aspx?id=404#6>

Lee Valley Regional Park BAP (*Grassland and Fen HAP*) <http://www.ukbap.org.uk/lbap.aspx?id=375#6>

London BAP 2007, *London Biodiversity Action Plan, (Chalk Grassland)* <http://www.lbp.org.uk/londonhabsp.html#chalkgrass>

Natural England 2007. *England Habitat Network, Briefing Note.* <http://www.naturalengland.org.uk/>

UKBP, 2007, *UK Biodiversity Action Plan – UK List of Broad Habitats* <http://www.ukbap.org.uk/UKPlans.aspx?ID=51>



Species-rich grassland in public park

2.7 Trees & Scrub

Description

This habitat includes native broadleaved woodland, scrub, hedgerows and shelter belts. It is equivalent to the woodland category in the UKBAP. Scattered trees are considered in the Park, Squares and Amenity Space HAP. Trees and scrub provide a high diversity of habitats and support song birds, bats, other small mammals and invertebrates.

Requirements

As the climax vegetation, woodland, if natural succession were to occur, could be expected to occur anywhere in the Olympic Park site, however it is likely to be sited in areas where less intensive use is envisaged, around the perimeter of the site or the perimeter of the main sub-divisions of the site. Linear plantings are likely to bring most benefits in terms of providing edge habitats and connectivity. Preparation of a deep (>700mm) uncompacted soil is desirable before planting. For long term success in the establishment of a diverse woodland ground flora (which should be an objective), the use of high-fertility soil (i.e. topsoil) should be carefully limited to areas where more aggressive plants (e.g. willowherbs at the woodland edge) are wanted. In order to promote diversity, plantings should use a wide variety of native species which are suited to specific locations. Plantings should be at varying densities to promote long term structural diversity.

Distribution

National

The total area of woodland cover in England is 1,097,000 ha (about 8.4% of land area.) 54% of this is broadleaved woodland and 30% of the total is ancient (i.e. pre dates AD 1600).

London

Few places in Greater London are more than 2 km from a wood. Just under 5% of Greater London is woodland, however much of this is non-native woodland of limited ecological value. Epping Forest, one of London's most valuable woodland complexes, is about 5 km to the north-east of the Olympic Park (at its nearest point). Scrub in London is widely scattered and often small in stature. It is mainly concentrated along river valleys and railway corridors.

Olympic Park Site

Approximately 1.5 ha of broadleaved

woodland has been safeguarded within the Olympic site at Old Ford Nature Reserve. Recent plantings associated with the A12 verge are also being retained. A willow and poplar dominated shelterbelt frames East Marsh. There is a substantial community woodland just to the west of the Olympic Park at Wicks Field.

Current Status

Legal Status

Woodlands of the highest quality are designated as SSSIs. Woodlands of lesser importance usually enjoy non-statutory designation. The Forestry Commission requires that landowners apply for a felling licence before cutting trees in woods that are not managed under plans already approved by them. In local development plans, most local authorities identify woodlands as features to be conserved. Woodlands support many species (eg bats and nesting birds) that enjoy legal protection.

Conservation Status

Although the area of woodland in the UK is growing, there are relatively few opportunities to establish woodland in urban areas.

Factors Causing Loss or Decline

Despite a significant increase in woodland cover in recent years, UK woodlands suffer negative effects from the following:

- Excessive tidiness (e.g. removal of fallen leaves and dead wood) which reduces biodiversity.
- Anti-social behaviour (e.g. uprooting of newly planted trees, litter, fly-tipping etc)
- Continuing isolation and fragmentation of sites
- Invasion by non-native species
- A lack of young and veteran trees.
- Neglect and loss of traditional tree and hedge management techniques (e.g. pollarding)
- Inappropriate management

As a result of these factors typical UK woodlands lack structural and species diversity.

Desired Outcome

The objective is to create substantial areas of native broadleaved woodland throughout the Olympic Park. These woodlands should vary in character with

Biodiversity Action Plan

a variety of native species combinations (to suit local conditions) and planting densities. This habitat will constitute a significant proportion (about 20 %) of the overall target of providing 45 ha of new habitat by 2014.

Action

Action To-date

Old Ford Nature Reserve, which consists mainly of broadleaved woodland, has been safeguarded to ensure that it is protected throughout the construction phase. Many other mature trees, particularly those associated with the waterways, have also been safeguarded.

Action & Targets

A target based on the Stage D Parklands and Public Realm design is 10.0 ha. of native broadleaved woodland, shelter belts and hedgerows within the Olympic Park by 2014. This may be revised following design development, providing the overall target of 45 ha of new habitat is met, however the final target should not deviate from the preliminary target by more than 20%. A substantial area of this habitat should be delivered during the Olympic (2012) phase.

Key Partners

The Forestry Commission has produced a report 'The Right Trees for London' for the Mayor. Reference should be made to this important document and the ODA will continue to work with the Forestry Commission in developing the Trees & Scrub HAP.

Related Action Plans

Olympic BAP

Parks, Squares and Amenity Space HAP

Song thrush

Swift

Bats

Timber beetle *Cicones undatus*

Other BAPs

UKBAP (Woodland)

London BAP (Woodland)

L B Waltham Forest BAP (Broad Habitat: Broadleaved, mixed and yew woodland)

References

L B Waltham Forest BAP (*Broad Habitat: Broadleaved, mixed and yew woodland*).<http://www.ukbap.org.uk/lbap.aspx?id=404#6>

London BAP (LBP) 2007, *London*

2.7 Trees & Scrub (cont.)

Biodiversity Action Plan (Woodland).
<http://www.lbp.org.uk/londonhabsp.html#woodland>

UK Biodiversity Action Plan 2007 - *List of Habitats.* <http://www.ukbap.org.uk/habitats.aspx>

2.8 Wet Woodland

Description

Wet woodland or 'carr' occurs on poorly drained or seasonally wet soils, usually with alder, birch and willow as the predominant tree species, but sometimes includes ash and oak. Wet woodlands often occur in mosaics with other open wetland habitats and drier woodlands. Wet woodlands are usually found on river floodplains, along streams or in peaty hollows. In the UK they are usually unmanaged secondary habitats which originated on open ground where management had ceased. Ecologically, wet woodlands are of great importance because they combine some of the characteristics of both dry woodlands and wetlands and support a wide variety of species including many rare invertebrates and Olympic Park BAP species, including otter.

Requirements

Wet woodlands need a high water table, and can flourish in situations where there are fluctuations in water level. They can be established on any soil type.

Distribution

National

Less than 70,000 ha of wet woodland remain in the UK (Forestry Commission, 2003). Wet woodland is most abundant in Cumbria, East Anglia, Shropshire, Cheshire, the New Forest, Wales and Scotland, however it occurs in small isolated pockets throughout the country.

London

Wet woodland is scarce in London. It occurs in small pockets in the Lea Valley and in a few locations along the Thames, for example at Chiswick, Brentford and Isleworth.

Olympic Park Site

There are small pockets of wet woodland in safeguarded areas on the Old River Lea (near Old Ford).

Current Status

Legal Status

Many wet woodland sites are designated as SSSIs and Special Areas for Conservation (SACs) - sites of European importance. As with dry woodlands, the Forestry Commission requires that landowners apply for a felling licence before cutting trees

in woods that are not managed under plans already approved by them. The Environment Agency may take into account the special hydrological conditions required by wet woodlands in issuing permissions or licences for drainage, abstraction, impoundment or in approving water level management plans.

Conservation Status

Wet woodland is a UKBAP Priority Habitat associated with the Broad Habitat: Broadleaved, mixed and yew woodland .

Factors Causing Loss or Decline

The following factors are amongst those that have been identified in the UKBAP as causes of loss or decline of wet woodland:

- Clearance
- Cessation of management which may encourage succession to drier woodland
- Lowering of water-tables through drainage or water abstraction
- Inappropriate grazing levels
- River control and canalisation, resulting in the reduction in, or cessation of, seasonal flooding
- Poor water quality
- Invasion by non-native species

Desired Outcome

Although the scarcity of suitable conditions within the Olympic Park means that large scale creation of wet woodland is not possible, the objective is to create stands that will complement other wetlands and increase the overall area of wet woodland beyond that already being retained. The target is to create 0.9 ha. of wet woodland by 2012.

Action

Action To-date

Wet woodland has been safeguarded within the Olympic site on the banks of the Old River Lea. The ODA have arranged for the collection of more than 200 local native black poplar cuttings which are stored in a nursery.

Action & Targets

To plant 0.9 ha of wet woodland within the Olympic Park by 2012. All of this habitat will be created in the North Park, close to the River Lea and at Bully Point.

Key Partners

Biodiversity Action Plan

The Environment Agency will continue to work closely with the ODA in the development of detailed plans for the creation of this habitat.

Related Action Plans

Olympic BAP

Trees & Scrub

Rivers & Streams

Reedbed

Black poplar

Tumbling flower beetle *Mordellistena newwaldeggiana*

Amphibians

Grass snake

Kingfisher

Bats

Otter

Other BAPs

UKBAP (Wet woodland)

Lee Valley Regional Park BAP (Wet woodland)

References

Forestry Commission 2003. *The Management of Semi-natural Woodlands. 8. Wet woodlands. Practice Guide.* [http://www.forestry.gov.uk/pdf/fcpg008.pdf/\\$file/fcpg008.pdf](http://www.forestry.gov.uk/pdf/fcpg008.pdf/$file/fcpg008.pdf)

Lee Valley Regional Park BAP (*Wet woodland*). <http://www.ukbap.org.uk/lbap.aspx?id=375#6>

UK Biodiversity Action Plan 2007. <http://www.ukbap.org.uk/UKPlans.aspx?ID=4>



Wet woodland in winter

2.9 Rivers

Introduction

Description

This is a broad habitat type which covers any flowing water, including rivers, streams and waterways. In their natural unmodified condition rivers are dynamic with constantly changing morphology, shape, depth, size and gradient and with differences in the material that constitutes the channel and banks. Rivers and streams therefore support many habitats and a wide diversity of flora and fauna, some of which are only associated with running water and some which are unique to specific river types. Rivers and streams provide vital ecological corridors in the landscape and can be the only such corridors left in some urban districts. Species in the Olympic Park BAP which are closely associated with rivers and streams include black poplar, eel, kingfisher, sand martin, heron, water vole and otter.

Requirements

In order to maintain full ecological function, urban rivers should include a range of habitats including water of varying depth, soft banks and an abundance of marginal emergent aquatic vegetation. Care is required to maintain ecological connectivity (of habitats outside of the main channel). A fall in water quality can lead to losses in biodiversity.

Distribution

National

Rivers and streams occur throughout the UK, however wholly unmodified natural watercourses are confined to a few upland areas.

London

There are about 600 km of rivers and streams in Greater London although many of the Thames' smaller tributaries (e.g. the Fleet) have been incorporated into the city's sewerage system. All of London's rivers have been modified and most sections have been heavily channelised in order to promote rapid drainage. Beginning in the late 18th century most of London's larger rivers were modified to allow navigation and connection with the national canal network.

Olympic Park Site

The River Lea enters the Olympic Park site from the north. A drainage channel,

(the Channelsea River which is to be culverted), joins the River Lea at Bully Point. The River Lea Navigation marks the western boundary of the western edge of the northern part of the site. The Lee Navigation connects with the Grand Union Canal system. To the south of the site the River Lea splits into the Bow Back Rivers (Old River Lea, City Mill River and Waterworks River) which are defunct navigation and flood conveyance channels which drain into Bow Creek and the River Thames. The River Lea and Bow Back rivers are currently tidal and brackish, however this will change when the Prescott Lock is reinstated by British Waterways to the south of the site. The lock will reduce the tidal fluctuation of water levels and create freshwater conditions.

Current Status

Legal Status

The rivers do not enjoy statutory nature conservation designation, however the Environment Agency has a statutory duty to further conservation and control pollution. British Waterways London owns the Bow Back Rivers and intends to reinstate navigation in that part of the site.

Conservation Status

The Rivers & Streams broad habitat type is a UK BAP Priority Habitat. The River Lea and Bow Back Rivers constitute a Site of Metropolitan Importance for nature conservation.

Factors Causing Loss or Decline

According to the UKBAP (2007), rivers and streams are vulnerable to:

- Pollution (from sewage, farming and urban run-off);
- Excessive ground water and surface water abstraction;
- Construction of dams and reservoirs;
- Insensitive flood defence and land drainage works;
- Inappropriate bank management;
- Introduction of invasive plant and animal species; and,
- Development within the floodplain

Desired Outcome

The goal, in accordance with the London River Restoration Action Plan, is to enhance the ecological value of the rivers and to ensure that the River Lea system is restored to function as a continuous ecological corridor,

Biodiversity Action Plan

connecting the Lee Valley River Park to the Thames. The watercourses will enhance the Olympic Park and provide the public with access. The restoration of the waterways must maintain water quality and quantity, habitat structure and promote ecological and hydraulic connectivity with the floodplain. The ODA will ensure that there is an improvement in the quality of River & Stream habitat within the Olympic Park site and that water quality is maintained throughout construction and improves in the long term. In order to ensure connectivity along the watercourses, where full restoration is not feasible, at least one bank will be vegetated. The package of waterway improvement works will be complete by 2012.

Action

Action To-date

Since the 1990s a coalition of organisations, including British Waterways, the London Borough of Newham, Lee Valley Regional Park Authority, Lea River Trust (which was wound up in March 2008) and the Inland Waterways Association have been cleaning up the Bow Back Rivers, improving access and creating wildlife habitats. In 2000-2001, British Waterways upgraded Bow Locks to reduce flood risk and siltation on the River Lea Navigation. At the same time the weir behind Three Mills (to the south of the Olympic Park site) was installed and a bund wall built to stop the tide overtopping the banks. Full restoration of the Bow Back Rivers has been a national priority for British Waterways since 2002, supported by the Mayor's Blue Ribbon Network (part of the London Plan). A programme to eradicate invasive aquatic and waterside weeds is underway. Construction of the Prescott Lock (a British Waterways project) is due to be completed in 2008.

Action & Targets

A detailed scheme of invasive species control, bank remodelling, towpath construction and establishment of marginal emergent aquatic vegetation and bankside habitats is in preparation. The target for eradication of invasive plants is 100% by 2012 (although monitoring and follow up treatment may be necessary in case of re-invasion). The River Lea will be extended in the vicinity of Bully Point to create a new backwater

covering an area of 0.27 ha. Works will include the creation of nesting banks for kingfisher, emergent aquatic vegetation for water vole and artificial holts for otter. The Waterspace Masterplan shows that 2.3 km of new soft river bank is to be created and this will be adopted as a minimum target.

<http://www.walthamforest.gov.uk/index/environment/land/biodiversity/bio-acid-rivers.htm>

Key Partners

The Environment Agency
British Waterways.

Related Action Plans

Olympic BAP
Wet woodland
Reedbed
Eel
Grey heron
Kingfisher
Sand martin
Bats
Water vole
Otter

Other BAPs

UK BAP (Rivers)
London BAP (Rivers & Streams)
London River Restoration Action Plan
L B Tower Hamlets (Local habitat: Canals, Rivers & Docks)
L B Waltham Forest BAP (Rivers & Streams)
Lee Valley Regional Park BAP (Rivers & Streams)

References

L B Waltham Forest BAP (*Broad Habitat: Rivers and Streams*) <http://www.ukbap.org.uk/lbap.aspx?id=404#6>
L B Tower Hamlets (*Local habitat: Canals, Rivers and docks*) <http://www.ukbap.org.uk/lbap.aspx?id=538#6>
Lee Valley Regional Park BAP (*Rivers and Streams*) <http://www.ukbap.org.uk/lbap.aspx?id=375#6>
London BAP (LBP) 2007, *London Biodiversity Action Plan*, (Rivers and Streams) <http://www.lbp.org.uk/londonhabsp.html#rivers>
UKBAP 2007, *UK Biodiversity Action Plan - UK List of Priority Habitat* <http://www.ukbap.org.uk/UKPlans.aspx?ID=59>
L B Waltham Forest, *Biodiversity Action Plan – Rivers and Streams*.

2.10 Reedbed

Description

Reedbeds are wetlands dominated by stands of the common reed *Phragmites australis*, where the water table is at or above ground level for most of the year. They tend to be associated with adjacent open water. Wet grassland and carr woodland may also be associated with them. Due to the dominance of common reed, reedbeds tend to be botanically poor (although they can support rare wetland plants). They are naturally unstable habitats, sensitive to succession, pollution and changes in water level (UKBAP 2007). Reed beds are amongst the most important habitats for birds. They support a number of breeding birds including reed bunting (an Olympic Park BAP species) and nationally rare species (e.g. bittern). They are also important roosting sites for some birds (e.g. starling, an Olympic BAP species) and feeding sites. Reedbeds are also important for the otter and water vole (again both Olympic Park BAP species). Over 700 species of invertebrate are associated with reed beds as well as some rarities. Large numbers of flying insects can occur over reedbeds, attracting aerial feeders like bats and sand martin (again both Olympic Park BAP species).

Requirements

Reedbeds require management (cutting) to prevent them from turning into woodland. For invertebrate diversity and to allow access to fish, water levels should vary in some places from the typical water depth of 30cm.

Distribution

National

The total area of reedbeds in the UK is about 5000 ha across 900 sites. Only about 50 sites are larger than 20 ha. Most of the important reedbeds are found near the coast in eastern England.

London

In London, areas of reedbed occur along the edges of lakes, flooded gravel pits, reservoirs, rivers and ditches. The total area of this habitat in London is 43.5 ha. The largest continuous areas occur in the Roding Creek (London Borough Newham) and the Ingrebourne Valley (London Borough of Havering).

Olympic Park Site

Although not within the Olympic Park, 0.5ha of reedbed occurs within the

railway triangle to the south of the Stratford railway box. There is reed along the western bank of the Old River Lea.

Current Status

Legal Status

In the UK most of the large reedbeds are designated as SSSI, Ramsar sites or SPAs and managed as nature reserves. (UKBAP 2007).

Conservation Status

Reedbeds are a UK BAP Priority Habitat and are included in the London BAP.

Factors Causing Loss or Decline

In the UK it is estimated that 40% of reedbed habitats were lost between 1945 and 1990 (DoE 1995). The main causes of the decline were:

- Habitat loss caused by water extraction and land drainage
- Nutrient enrichment from agricultural run-off
- Inappropriate management
- Invasive, non-native species
- Recreational pressure (boating)

Desired Outcome

The overall objective and target is to create a total of 1.8 ha of reedbed habitat within the Olympic Park by 2014. A significant part of this will be created by 2012 in the North Park.

Action

Action To-date

Reedbed habitat along the western bank of the Old River Lea is included within an area that is shown as safeguarded for development planning purposes.

Action & Targets

Substantial areas of reedbed habitat are included in designs for new wetlands in the North Park. Other reedbed habitat will be created along the margins of the waterways in various locations throughout the Olympic Park. The overall target for the creation of reedbed is 1.8 ha. The ODA will work closely with the proponents of the Stratford City development to ensure that proposed wetland under their control at Bully Point and to the south of the Stratford railway box will also contribute towards the overall aim of creating reedbed. Any reedbed created in these latter areas will be in excess of the 1.8 ha within the Olympic Park proper.

Biodiversity Action Plan

Key Partners

Environment Agency
British Waterways
Stratford City (Lend Lease)

Related Action Plans

Olympic BAP

Rivers and streams
Wet woodland
Eel
Reptiles (grass snake)
Grey heron

Kingfisher
Reed bunting
Sand martin
Starling

Bats
Otter
Water vole

Other BAPs

UKBAP (Priority Habitats: Reedbed)
London BAP (Reedbeds)
L B Waltham Forest BAP (Reedbeds)
Lee Valley Regional Park BAP (Priority Habitat: Reedbeds)

References

LB Waltham Forest *BAP (Reedbeds)*.
<http://www.ukbap.org.uk/lbap.aspx?id=404#6>
Lee Valley Regional Park *BAP (Priority Habitat: Reedbeds)*.
<http://www.ukbap.org.uk/lbap.aspx?id=375#6>
London BAP (LBAP) 2007, *London Biodiversity Action Plan, Reedbeds*
<http://www.lbp.org.uk/londonhabsp.html#reedbeds>
UKBAP 2007, *UK Biodiversity Action Plan – UK List of Priority Habitat*
<http://www.ukbap.org.uk/UKPlans.aspx?ID=19>

2.11 Ponds

Description

This habitat includes natural as well as man-made ponds and ditches with open water for at least for the majority of the year (UK BAP). Several vegetation types can be found in association with standing water, e.g. aquatic free-floating or rooted in sediments, emergent or marginal. Standing waters are classified according to their nutrient status and this can change naturally over time or as a result of pollution. Standing waters provide habitat for a variety of threatened flora and fauna. Two thirds of Britain's aquatic macrophytes and aquatic macro-invertebrates are found in ponds, with at least 40 UK BAP priority species associated with them. They support many rarities and are the main breeding sites for all amphibians and most dragonflies. In the context of the Olympic Park site, this habitat type will be represented by ponds.

Requirements

Ponds will be constructed in the Olympic Park primarily as a habitat for breeding amphibians. Such ponds are typically shallow (500mm deep) with gently sloping sides with native emergent and floating aquatic vegetation. They should be constructed in a place where rough vegetation is nearby to provide complementary terrestrial habitat for amphibians. These ponds should be hydrologically separate from the waterways.

Distribution

National

There is an estimated 3,344 km² of standing open water in the UK (DETR, 1998), with around 95 % of this being less than 1 ha in area (English Nature 1997). The JNCC (2000) estimates that there are approximately 400,000 ponds in the UK.

London

Brooks *et al* (undated) report that 2873 standing-water bodies (excluding garden ponds, rivers, streams and canals) have been identified within the M25, 86% of which are smaller than 0.5 ha (NHM undated). Regionally important assemblages of aquatic insects and plants occur in the ponds at Epping Forest and Wimbledon Common and in the Lea Valley.

Olympic Park Site

There are currently no standing water

bodies in the Olympic Park site.

Current Status

Legal Status

Approximately 200 large standing water bodies receive protection as SSSIs. Many ponds occur within SSSIs designated for other reasons. Smaller ponds tend not to have statutory protection. Ponds are often designated as local (non-statutory) wildlife sites by county and metropolitan councils which gives them some protection in local development plans.

Conservation Status

Ponds are included in the London BAP (Canals, Ponds, Lakes and Reservoirs)

Factors Causing Loss or Decline

In the UK, in recent decades, many areas of standing water have been lost or degraded, particularly in the lowlands (Bardsley *et al.*, 2003). There is an estimated decline over the last century of 75 % (English Nature 1997).

The factors affecting this habitat include:

- Water pollution, especially nutrient enrichment (eutrophication)
- Adjacent land-use changes leading to loss of waterside vegetation and siltation and fragmentation
- Loss of complementary terrestrial habitat
- Water abstraction leading to drying out of ponds
- Infilling, tipping, draining and built development
- Neglect and lack of appropriate management (leading to siltation and succession).
- Introductions and manipulation of fish stocks for angling
- Introductions of non-native plants and animals
- Recreational disturbance

Desired Outcome

The overall objective and target is to create a total of 4 ponds within the Olympic Park.

Action

Action To-date

Amphibians which were discovered in the Pudding Mill River and Bully Point Pond (both subsequently lost because of essential site-preparation works) were rescued and moved to the Waterworks Nature Reserve in the Lee Valley Regional Park. Spawn from this site

Biodiversity Action Plan

may be a source for re-introduction into the Olympic Park when new ponds are created.

Action & Targets

4 new ponds, each at least 50m² in area, will be created close to adjacent complementary terrestrial habitats by 2012. The total area of the 4 ponds shall not be less than 1800m² (0.18ha)

Key Partners

Environment Agency
Lee Valley Park Authority

Related Action Plans

Olympic BAP

Amphibians (common frog, common toad, smooth newt)

Reptiles (grass snake)

Other BAPs

UK BAP (Ponds)

London BAP (Standing Water)

L B Waltham Forest BAP (Standing Open Water and Canals)

Lee Valley Regional Park BAP (Standing Open Water and Canals)

References

Bardsley L, Eades P, Crofts A & Giles N. 2003. *The Wetland Restoration Manual*. The Wildlife Trusts, Newark.

Brooks, S., Goldsmith, B. and Battarbee, R., *The Biodiversity of London's Ponds, lakes and rivers*. http://www.nhm.ac.uk/research-curation/departments/botany/news-events/leaf/leaf-pdfs/assets/Biodiversity_London_Ponds_and_Rivers.pdf

DETR 1998, *UK Biodiversity Group Tranche 2 Action Plans*.

English Nature 1997. *Wildlife and fresh water: an agenda for sustainable management*. English Nature. Peterborough.

Joint Nature Conservation Committee (2000), *Habitats: Standing Open Water and Canals*. <http://www.jncc.gov.uk/page-3572>

L B Waltham Forest BAP (Standing Open water and Canals) <http://www.ukbap.org.uk/lbap.aspx?id=404#6>

L B Tower Hamlets (Canals, Rivers and Docks) <http://www.ukbap.org.uk/lbap.aspx?id=538#6>

Lee Valley Regional Park BAP (Standing Open water and Canals) <http://www.ukbap.org.uk/lbap.aspx?id=375#6>

2.11 Ponds (cont.)

London BAP (2007), *London Biodiversity Action Plan (Standing Water)*. <http://www.lbp.org.uk/londonhabsp.html#standingwater>



Ponds should be located close to terrestrial habitat which is suitable for amphibians to forage and hibernate in

3.1 Introduction to the SAPs

The Framework BAP identified a number of UK, London and local borough BAP species which had been recorded from the Olympic Park site. Most of these were included in the Framework and they have all (with the exception of one species) now been included in this version of the BAP. Species excluded at the Framework stage were grey wagtail, little ringed plover, marsh warbler and teal because it is unlikely that ideal conditions for these species will occur within the park. Tower mustard, a nationally rare plant, was included in the Framework BAP, however it has not been recorded within the Olympic Park site and at the suggestion of the London Wildlife Trust has been removed from this version of the BAP.

There were species included the Framework that are not listed in other BAPs. Surveys of invertebrates in 2006 revealed a number of red data book (endangered) species on the site. It was decided to include these in the Olympic Park BAP because they are associated with brownfield sites. Consideration for the requirements of these species will help to refine the habitat creation proposals designed to mitigate for the loss of brownfield habitat. As well as these invertebrates identified during baseline surveys of the site, the BAP will also include the brown banded carder bumble bee, which is both a UK and London BAP species. Other species often associated with London's brownfield sites, including birds like the black redstart and linnet are also included in the BAP. Reptiles like the slow worm and common lizard often colonise brownfield sites from the relative safety of adjacent railway embankments. The Olympic Park should continue to fulfill this function acting as a hub in a network of ecological corridors.

The Park will be defined by the waterways. Therefore it is important that a fish is included in the BAP. Eel has been chosen because it is a species of conservation concern, which moves across the landscape, benefitting from connectivity. The eel symbolises the importance of connectivity between river and adjacent wetland habitats. Other aquatic species included in this BAP are the otter (which feeds on fish, including eel) and water vole, which requires an abundance of marginal emergent aquatic vegetation. Wetland vegetation also attracts birds like the reed bunting. Grey heron and kingfisher are attracted to these habitats to

feed on small fish. Riverside wetlands on the River Lea are the London stronghold for the native black poplar, another Olympic Park BAP species. The sand martin is also associated with river valleys, feeding over marshes and nesting in sand cliffs.

Insectivorous bats will be attracted to both the wetlands and terrestrial habitats of the park. They will feed along new lines and groups of native trees. Trees and shrubs will also provide cover for familiar, but declining BAP species like the the song thrush, starling and house sparrow.

Buildings and bridges within the park can be places where nest boxes for swift (and other priority bird species) and roosting boxes for bats will be located. The species action plans combine to ensure that the full range of riverine, wetland, terrestrial and urban species are considered. They will be 'flagship' species for special consideration, however by providing for their needs we will be increasing overall habitat and species diversity. Therefore many other species will also benefit. Indeed as the park matures, monitoring will reveal new arrivals, some of which may be rare or exciting in some way and which may merit inclusion in future versions of the Olympic Park BAP.



Swift nests on buildings and feeds on flying insects (Photo courtesy of Edward Meyer/London's Swifts)



Log wall near Old Ford. Constructed by the ODA 2007 to benefit invertebrates

3.2 Black poplar

Description

Native black poplar *Populus nigra betulifolia* (the Atlantic form) is a large tree, with a characteristic lean. It can grow to a height of 30 metres, with a crown of 20 metres and a trunk diameter of 2.5 metres or more. It has rugged bark, arching branches and triangular leaves.

Habitat

Native black poplar is a tree of the floodplain forest but appears to favour more open ground rather than dense wet woodland. It is often found along riverbanks. It should be planted in the open close to the riverbank.

Biology & Reproduction

Black poplar is dioecious (separate male and female plants). Female flowers are wind pollinated in April.

National Distribution

The natural range of the native black poplar appears to be limited to Britain, northern France and parts of western Germany away from high ground (Milne-Redhead 1990). It is widely spread across England and Wales but is confined to relatively few locations. It can be locally abundant, for example in the Vale of Aylesbury, the Marches and East Anglia.

London Distribution

In London this species is widely distributed but few in number. In the Lower Lea Valley a few specimens have been recorded in LB Hackney (Springfield) and LB Waltham Forest (Walthamstow Marshes). Hackney Marshes, just to the north of the Olympic Park is the most important site in London for this species, with 43 mature specimens and 40 young trees (Hanson 2004)

Olympic Park Distribution

There are no native black poplars on the Olympic Park site. All 41 black poplars recorded from the site are planted hybrids of unknown origin.

Legal Status

Native black poplar does not receive special protection as a species, however individual trees of high value can be protected by a Tree Preservation Order (TPO)

Conservation Status

Native black poplar is listed in the British

Red Databook (Vascular Plants) as category LC (Least Concern) (Cheffings & Farrell 2005). It is also one of the three tree species included in the European Forest Genetic Resources Programme. It is a London BAP Priority Species.

Factors Causing Loss or Decline

Once common, there are now fewer than 7,000 individual trees of this species in the UK, making it one of the rarest trees. 95% are veteran specimens, 90% are male and many are genetically identical. Female trees are often too far from a male tree for natural reproduction to occur (Sussex Biodiversity Partnership 2005). Virtually all remaining black poplars date from before 1850. The reason for the decline is largely due to the destruction floodplain forest through drainage schemes. Hybridisation and widespread planting of hybrids is also a factor in the decline of this species.

Desired Outcome

The objective is to establish a viable population of native black poplar within the Olympic Park.

Action To-date

Approximately 200 native black poplar cuttings taken from Hackney Marsh in 2006 are stored in a nursery ready for possible planting in the Olympic Park.

Action & Targets

100 native black poplars of both sex are to be planted in suitable locations (close to the water's edge) by 2012. Some of these trees should be female. Any failures should be replaced until 100 healthy specimens are established. In future years these trees should be thinned out with at least 6 trees (with representatives of both sexes) being allowed to grow to maturity. This number is relatively small because of the huge size of these trees at maturity (which will not be reached for more than 100 years).

Related Olympic BAPs

Wet woodland

Trees and scrub

Rivers

Other Related BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park BAP

References

Cheffings, C. & Farrell, L. (Editors),

Biodiversity Action Plan

2005, *The Vascular Plant Red Data List for Great Britain*. <http://www.jncc.gov.uk/page-3354>

Hanson, M.W., 2004, *Hackney Marshes Wildlife Survey and Management Plan*.

<http://www.hackneyenvironment.org.uk/HM/HackneyMarshesSurvey2004.pdf>

London Biodiversity Partnership, 2000, *Species Action Plan: Black Poplar*. http://www.lbp.org.uk/03action_pdfs/ac24_poplar.pdf.

London Biodiversity Partnership, 2008, *Priority Species and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplnfo/PriorityPlants01.08.xls>

Milne-Redhead, E. 1990, *The B.S.B.I. Black Poplar survey, 1973-88*. *Watsonia*. <http://www.watsonia.org.uk/Wats18p1.pdf>



The rare native black poplar is a large tree of the floodplain, with a distinctive lean. It has a London stronghold in the Lower Lea Valley

3.3 Terrestrial invertebrates: Brown banded carder bee

Description

The brown-banded carder-bee *Bombus humilis* is tawny coloured with a characteristic brown band on the upper surface of the abdomen. In bumble bee society there are three castes: a 'queen' (the reproductive female), 'workers' (non-reproductive females) and males. All are broadly similar in appearance; however the males can be distinguished as they have no sting and longer antennae than the females. Queens are typically 16-18mm in length and workers 10-15mm in length.

Habitat

This species is associated with species-rich grassland particularly where flowers with long corollas are present, e.g. vetches.

Diet

These bees forage for pollen and nectar from May to September

Biology & Reproduction

The brown-banded carder-bee nests on the surface of the ground, usually in grass tussocks. Colonies are small and relatively mild tempered when disturbed. Colonies last for a year, with new queens hibernating through the winter and re-establishing colonies the following year.

National Distribution

The species has declined in the eastern half of England, where it is now local and sporadic. It is still frequently encountered in the south-west of England and on the southern coast of Wales. There are also a number of inland localities, usually associated with the more extensive areas of chalk grassland, notably Salisbury Plain. There are no records of this species from Scotland or Northern Ireland. *B. humilis* is widespread in Europe (Alford 1980)

London Distribution

London Biodiversity Partnership (2007) reports that this species is found in four London boroughs: Barking and Dagenham, Bexley, Havering and Newham. It has also been found in the Hackney Marshes, Hackney to the north of the Olympic Park site (Hanson 2004). It is probably under recorded in Greater London.

Olympic Park Distribution

This species has not been recorded from the Olympic Park, but occurs nearby

Legal Status

Brown-banded carder-bee is not specifically protected under any legislation.

Conservation Status

This is nationally scarce and a UKBAP Priority Species (UKBP 2007). It is listed under Priority Species and Species of Conservation Concern in the London BAP (LBP 2007).

Factors Causing Loss or Decline

The main reasons for the decline of this species is the loss of species-rich grasslands, largely through agricultural intensification.

Desired Outcome

The main objective to provide suitable habitat (species-rich grasslands, tall ruderal vegetation and sparsely vegetated south-facing banks) throughout the Olympic Park with the intention of establishing a breeding population. Substantial areas of these brown-banded carder bumble bee habitats will be created by 2012, with further areas created by 2014. The target is to create a range of conditions to enable a breeding population to become established by 2014.

Action To-date

The ODA has created 1ha of suitable habitat for this species around the edge of East Marsh and a further 1 ha of flower-rich habitat is being created on the Greenway.

Action & Targets

New landscape within the park shall include species-rich grassland of varying structure, tall ruderal vegetation and sparsely vegetated south-facing slopes to include red clover *Trifolium pratense*, birds foot trefoil species *Lotus spp.*, tufted vetch *Vicia cracca*, kidney vetch *Anthyllis vulneraria*, viper's-bugloss *Echium vulgare*, mignonette *Reseda lutea*, black knapweed *Centaurea nigra*, field scabious *Knautia arvensis* and marsh woundwort *Stachys palustris*. Some tussocks of grassland will be left uncut to provide overwintering sites. In formal gardens, ornamental species that are known to be favoured by this species should be planted. Substantial areas of these brown-banded carder bumble bee habitats will be created by 2012, with further areas created by 2014. The target is to create a range of conditions to enable a breeding

Biodiversity Action Plan

population to become established by 2014.

Related Olympic BAPs

Brownfield habitat

Parks, squares and amenity spaces

Species rich grassland

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park BAP

References

Alford, D. V. (ed.) 1980. *Atlas of the bumblebees of the British Isles*.

Hanson, M.W., 2004, *Hackney Marshes Wildlife Survey and Management Plan* <http://www.hackneyenvironment.org.uk/HM/HackneyMarshesSurvey2004.pdf>

London Biodiversity Partnership 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpInfo/PriorityInverts01.08.xls>.

UKBP, 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Brown banded carder bumble bee

3.3 Terrestrial invertebrates: Toadflax brocade moth

Description

The adult toadflax brocade moth *Calophasia lunula* is light brown in colour with black markings. Forewings have irregular patches of white and a white crescent. The hind wings are brownish white and the thorax has a double crest. The larvae are yellow and black with irregular markings and pale bluish-grey sides with black spots. The adult is 12-14 mm in length and has a wingspan of between 26 and 32 mm.

Habitat

This species can occur where there is an abundance of toadflax (*Linaria* species) including shingle, grasslands, waste ground, verges and gardens.

Diet

The caterpillars feed on toadflax foliage, favouring young leaves but also eating older leaves and flowers if young foliage is absent. Toadflax brocade moth feeds on all *Linaria* species but also small toadflax *Chaenorhinum minus*.

Biology & Reproduction

Eggs are laid twice in each year, typically in May/ June and again in August, although some overlapping of the generations can occur. Caterpillars are seen between June and September. The pupal stage overwinters inside a robust cocoon attached to a solid object. Adult moths are active at night, when they feed. The adult has a lifespan of between 10 and 25 days.

National Distribution

Toadflax brocade moth was first recorded in the UK in the 1950s where it is at its most northern limit of its range. In the UK the toadflax brocade moth is rare and is only found in a small number of sites along the Thames Gateway, Essex, Kent and Sussex coast (NBN Gateway 2008).

London Distribution

Once listed as present in Greenwich and Brent, it has recently been found on various post-industrial sites in London where it feeds chiefly on purple toadflax (Tucker *et al* 2005).

Olympic Park Distribution

Plant (2006) has recorded this species at Eton Manor

Legal Status

Toadflax brocade moth is not specifically protected under any legislation.

Conservation Status

This species is listed in the British Red Data Book (Insects) as RDB3 (i.e. species that are not at present endangered or vulnerable, but are at risk). Formerly included in the London BAP list of priority species (LBP 2008).

Factors Causing Loss or Decline

This species suffers a reduction in range following poor weather. Habitat loss associated with coastal development, road-widening and brownfield re-development could also affect this species.

Desired Outcome

The main objective is to provide a number of suitable habitat patches for toadflax brocade moth at several locations throughout the Olympic Park, usually in the midst of 'brownfield', living roof or species-rich grassland habitats. In order to avoid the risk of failure if a location is damaged, at least four of these habitat patches will be created by 2012, with further areas created by 2014. The overall target is to create a range of conditions that have the potential to support a breeding population by 2014.

Action To-date

The ODA have seeded common toadflax within the 1ha of 'brownfield' habitat created around the edge of East Marsh in 2007/2008.

Action & Targets

Four 'habitat patches' seeded with common toadflax, each of at least 100m² will be created by 2012, with eight further 'patches' created by 2014. Suggested locations for creating toadflax brocade moth habitat patches include living roofs, East Marsh (work already underway), North Park, South Park and the Greenway. These patches will be created within larger areas of open 'brownfield' habitat or species-rich grassland.

Related Olympic BAPs

Built environment (living roofs)

Brownfield habitat

Species rich grassland

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park BAP

Biodiversity Action Plan

References

London Biodiversity Partnership 2008. *London Biodiversity Action Plan – Review of Priority Species*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/LBAPPrioritySppReview2007.doc>

NBN Gateway 2008, *Map of records for Toadflax Brocade Moth (Calophasia lunula)*. <http://www.searchnbn.net/gridMap/gridMap.jsp?allIDs=1&srchSpKey=NBNSYS0000006316>

Plant C. 2006. *Lower Lea Valley Olympic Development Invertebrate Surveys*. Unpublished report for ODA

Tucker, G.; Ash H. and Plant, C. 2005. *Review of the coverage of urban habitats and species within the UK BAP – Working today for nature tomorrow. Report 651*. *English Nature*. <http://www.ukbap.org.uk/Library/brig/shrw/Post-Industrial/Review%20of%20urban%20habitats%20and%20species%20-%20ENRR651.pdf>

UKBP, 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Adult



Larva on common toadflax

3.3 Terrestrial invertebrates: Fungus beetle *Cicones undatus*

Biodiversity Action Plan

Description

Cicones undatus (synonym: *Synchita undata*) is a species of small (less than 6mm in length) fungus beetle which has a dark convex protuberant thorax and brown-banded, oblong-ovate wing cases. The antennae are 10-jointed and have enlarged, flat and rounded ends.

Habitat

This species is associated with fungus-infected timber and has been recorded under bark and in dry, dead wood of sycamore. In Germany, this species has also been found on beech, hornbeam alder and oak (Malten et al, 2002). It seems to be associated with dead-wood (including cut logs and branches), rather than decaying areas on living trees.

Diet

The adult beetle is a predatory carnivore, probably feeding on aphids (Malten et al, 2002). The larvae feed on fungus in decaying wood.

Biology & Reproduction

The adults are active between March and August. Little is known about the biology and reproduction of this species.

National Distribution

First recorded in 1984 from dead sycamore trees in Windsor Great Park. Probably a recent immigrant to the UK, it is of local distribution nationally but has been found to be locally common in a few areas, including Bedfordshire and London. (Malten et al, 2002)

London Distribution

In Greater London this beetle is reported from sites in Lewisham, Croydon and Richmond (LBP, 2007).

Olympic Park Distribution

This species has also been recorded from Old Ford Nature Reserve (Hackett 2005)

Legal Status

Cicones undatus is not specifically protected by any legislation.

Conservation Status

This insect is a Red Data Book (RDB1) species being listed as 'Endangered'. Additionally, it is listed under Priority Species and Species of Conservation Concern within the London BAP (LBP, 2007).

Factors Causing Loss or Decline

The population of *Cicones undatus* is

believed to be increasing in Britain. However, potential threats include habitat loss, in particular, through the felling of trees, removal of dead-wood from living trees and the destruction or removal of standing and fallen dead wood for reasons such as woodland hygiene, tidiness, public safety or for use as fire wood.

Desired Outcome

The overall objective is to continue to provide suitable habitat for *Cicones undatus* in a number of locations in the Olympic Park in order to encourage its spread to more than a single location. This will be achieved by providing suitable habitat in four new locations by 2012.

Action To-date

Log walls which incorporate sycamore have been constructed at Old Ford Island and East Marsh.

Action & Targets

Dead sycamore logs, with bark attached, will be built into loggeries and log walls in a further two locations (in addition to Old Ford Island and East Marsh). One suggested site is Bully Point Dead sycamore branches should be left in situ wherever it is safe to do so.

Related Olympic BAPs

Trees and scrub

A Tumbling flower beetle *Mordellistena neuwaldeggiana*

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park BAP

References

Alexander, Keith N. A., 2002. *The invertebrates of living and decaying timber in Britain & Ireland: a provisional annotated checklist*, English Nature Research Report Number 467. <http://www.english-nature.org.uk/pubs/publication/PDF/enrr467.pdf>

Daniel Hackett Wildlife Development 2005. *Invertebrates of the Lower Lee 200-2001*. For the Lower Lee Project.

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/>

PriorityInverts01.08.xls

Malten A., Bonsel, D., Fehlow, M., & Zizka G., 2002, *Biotypen im Umfeld des Flughafens Frankfurt am Main, Teil II Untersuchungsgebiet Schwanheim*.

http://www.senckenberg.de/files/content/forschung/abteilung/botanik/phanerogamen1/pro2_2_s.pdf

UKBP, 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Cicones undatus Adult

3.3 Terrestrial invertebrates: Tumbling flower beetle *Mordellistena neuwaldeggiana*

Description

Mordellistena neuwaldeggiana, a tumbling flower beetle, is small (2-4mm in length) and orange-brown in colour.

Habitat

This species is associated with decaying wood. It is reported from wet woodland, wood pasture and old forests. Adults are attracted to the blossom of umbellifers. Therefore this beetle tends to be found where there is dead-wood in the immediate vicinity of tall flowering umbellifers, usually at the woodland edge or in clearings (Kirby 2004). Dead stems in tall grassland are also believed to be important for over-wintering and larval development.

Diet

The adults feed on umbellifer flowers. No information is available on the diet of the larvae, but they are associated with decaying wood.

Biology & Reproduction

Larvae have been reared from hornbeam and field maple branch wood in the early stages of decay (Alexander 2002). No other information is available for this species.

National Distribution

Restricted distribution across south and east England, with most records coming from ancient woodland or wood pasture.

London Distribution

This species is rare in London but believed to be increasing (LBP 2007)

Olympic Park Distribution

Recorded from the Olympic Park site by Plant (2006)

Legal Status

This species is not specifically protected by any legislation.

Conservation Status

Listed in the Red Data book (RDB) in category K (species with insufficient information available). The beetle is listed under Priority Species and Species of Conservation Concern in the London BAP (LBP 2007).

Factors Causing Loss or Decline

This species is believed to be increasing in numbers, however potential threats include habitat loss, in particular removal of dead-wood habitat and tall ruderal, woodland-edge vegetation which includes umbellifers.

Desired Outcome

The overall objective is to continue to provide suitable habitat for *Mordellistena neuwaldeggiana* in a number of locations in the Olympic Park in order to encourage this species to become established. This will be achieved by providing decaying wood in the vicinity of umbellifers in a number of locations by 2012.

Action To-date

The log walls installed by the ODA at Old Ford and East Marsh (both locations where umbellifers grow) are expected to benefit this species.

Action & Targets

Dead logs, with bark attached, will be built into loggeries and log walls in a further two locations (in addition to Old Ford Island and East Marsh). One suggested site is Bully Point. Tall ruderal vegetation with umbellifers will be encouraged to grow at adjacent woodland edge locations.

Related Olympic BAPs

Trees and scrub

Cicones undatus

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park BAP

References

Alexander, Keith N. A., 2002. *The invertebrates of living and decaying timber in Britain & Ireland: a provisional annotated checklist*, English Nature Research Report Number 467. <http://www.english-nature.org.uk/pubs/publication/PDF/enr467.pdf>

Kirby, P., 2004, *Wimpole Estate Survey of invertebrates of arable farmland 2003. Report to the National Trust*. <http://www.wimpole.org/PDF/Arable%20Survey.pdf>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityInverts01.08.xls>

London BAP - *Mordellistena neuwaldeggiana*:

<http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityInverts01.08.xls>

Plant C. 2006. *Lower Lea Valley*



Adult

3.3 Terrestrial invertebrates: Flower beetle *Olibrus flavicornis*

Description

Olibrus flavicornis is a small black smut or flower beetle of the family Phalacridae.

Habitat

Found in grassland and coastal sites but also brownfield habitats particularly in the Thames Gateway (Jones 2002). The beetle is associated with autumn hawkbit *Leontodon autumnalis*

Diet

Larvae probably develop in the flower head of autumn hawkbit, while the adults feed on pollen (NHM 2007).

Biology & Reproduction

Little is known about the biology and reproduction of this species. The adults are usually seen in June and July.

National Distribution

Prior to 1970 this beetle was recorded from the Isle of Wight, East Sussex, East Kent, Surrey, Buckinghamshire and Suffolk but is now restricted to Greater London and the Thames Valley. Found chiefly on brownfield sites in the Thames Valley (Jones, 2002).

London Distribution

This species has been recorded on wasteland in Barnet, Lewisham and Waltham Forest (LBP 2007). It has been found on a green roof - Soanes Centre, Tower Hamlets Cemetery Park (Jones, 2002). It has also been recorded from Hackney Marshes to the north of the Olympic Park (Hanson 2004).

Olympic Park Distribution

Plant (2006) has recorded this species from the north of the Olympic Park site.

Legal Status

This species is not specifically protected by any legislation.

Conservation Status

Listed in the Red Data book (RDB) in category K - this refers to species with insufficient information available. The beetle is listed under Priority Species and Species of Conservation Concern in London BAP (LBP, 2007).

Factors Causing Loss or Decline

This species may have declined because of the loss of habitat caused by agricultural improvement, forestation, development and natural succession (NHM 2007).

Desired Outcome

To provide habitat for this species in a number of locations within the Olympic Park with the intention of creating suitable conditions for the establishment of a resident population. This will be achieved by establishing species-rich grasslands, pioneer communities and living roofs seeded with autumn hawkbit.

Action To-date

1 ha of brownfield habitat, likely to be suitable for this species, has been created at East Marsh. A further 1 ha is being created on the Greenway.

Action & Targets

Autumn hawkbit will be seeded into the species-rich grasslands, brownfield features and living roofs created within the Olympic Park.

Related Olympic BAPs

Built environment (living roofs)

Brownfield habitats

Species-rich grassland

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park BAP

References

Hanson, M.W., 2004, *Hackney Marshes Wildlife Survey and Management Plan*. <http://www.hackneyenvironment.org.uk/HM/HackneyMarshesSurvey2004.pdf>

Jones, Richard A., 2002. *Tecticolous invertebrates. A preliminary investigation of the invertebrate fauna on green roofs in urban London*. *English Nature*. <http://www.livingroofs.org/NewFiles/Tecticolous%20Insects.pdf>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityInverts01.08.xls>

Natural History Museum (NHM) 2007, *Details for Olibrus flavicornis (Sturm, 1807)*. http://nbn.nhm.ac.uk/nhm/bin/nbntaxa.dll/taxon_details?taxon_key=NBNSYS0000024680

Plant C. 2006. *Lower Lea Valley Olympic Development Invertebrate Surveys*. Unpublished report for ODA.



Adult beetle (inset) with foodplant, autumn hawkbit.

3.3 Terrestrial invertebrates: A ground bug *Stictopleurus abutilon*

Description

Stictopleurus abutilon is a ground bug or scentless plant bug of the family Rhopalidae. It is a large pale brown bug (typically about 7mm in length) with two circles near the front of the neck shield. The larvae and adult are similar in appearance.

Habitat

This bug inhabits sunny open flower-rich grassland or unmanaged and sporadically disturbed habitats

Diet

The diet is unknown, however this bug is associated with fleabane species (*Pulicaria spp.*) and scentless mayweed *Tripleurospermum maritimum*, plants of disturbed habitats. The larvae are known to be associated with ragwort (*Senecio spp.*)

Biology & Reproduction

Little is known about the biology and reproduction of this species. Sparsely vegetated bare ground or grassland areas are usually chosen in the spring for the purposes of mating and egg laying (Tucker *et al* 2005). Larvae appear in June on ragwort and other composites. The larvae reach adulthood in September. From mid-September to the end of October adults and larvae may be seen together in small mixed groups. By the end of October all adults have found a place for overwintering and emerge the following spring.

National Distribution

Stictopleurus abutilon was once believed to be extinct in Britain. The last specimen to be found was reported in 1870. However in the mid 1990s it was rediscovered in southern and eastern England. Changes in habitat, international trade and global warming are considered as possible reasons for the apparent reappearance and spread northwards (Reemer *et al* 2003). It is now recorded widely in warm open flower rich grassland in the southeast, on 'waste ground' or other unmanaged and sporadically disturbed habitat (EFC 2007).

London Distribution

Its distribution is centred around the River Thames and Lea Valley where the bug appears to be locally common on older brownfield sites with tall herbaceous vegetation (EFC 2007).

Olympic Park Distribution

Plant (2006) has recorded this species from the the Olympic Park site.

Legal Status

This species is not specifically protected by any legislation.

Conservation Status

Currently considered as a 'vagrant' (NHM 2007)

Factors Causing Loss or Decline

This species is apparently increasing in numbers and range but could be locally threatened by loss of suitable brownfield habitat.

Desired Outcome

To provide habitat for this species in a number of locations within the Olympic Park with the intention of creating suitable conditions for the establishment of a resident population. This will be achieved by establishing species-rich grasslands, tall ruderal vegetation and pioneer communities which will include fleabane, scentless mayweed and ragwort.

Action To-date

1 ha of brownfield habitat, likely to be suitable for this species, has been created at East Marsh. A further 1 ha is to be created on the Greenway.

Action & Targets

Fleabane, scentless mayweed and ragwort will be seeded into the species-rich grasslands, brownfield features and living roofs created within the Olympic Park.

Related Olympic BAPs

Built environment (living roofs)
Brownfield habitats
Species-rich grassland

Other Relevant BAPs

London BAP (regional)
L B Waltham Forest BAP
L B Tower Hamlets
Lee Valley Regional Park BAP

References

Essex Field Club, 2007, *Species Account: Stictopleurus abutilon*. <http://www.essexfieldclub.org.uk/portal/p/Species+Account/s/Stictopleurus%20abutilon>

Hanson, M.W., 2004, *Hackney Marshes Wildlife Survey and Management Plan:*

<http://www.hackneyenvironment.org.uk/HM/HackneyMarshesSurvey2004.pdf>

Plant C. 2006. *Lower Lea Valley Olympic Development Invertebrate Surveys*. Unpublished report for the ODA.

Reemer, M., van Helsdingen. P.J. and Kleukers, R.M.J.C., 2003, *European Invertebrate Survey – the Netherlands, Proceedings of the 13th International Colloquium of the European Invertebrate Survey, Leiden, 2-5 September 2001*. <http://www.repository.naturalis.nl/document/46404>

Tucker G., Ash H. and Plant C., 2005, *English Nature Research Reports (number 651): Review of the coverage of urban habitats and species within the UK Biodiversity Action Plan*. <http://www.ukbap.org.uk/Library/brig/shrw/Post-Industrial/Review%20of%20urban%20habitats%20and%20species%20-%20ENRR651.pdf>



Stictopleurus abutilon Adult

3.3 Terrestrial invertebrates: A ground bug *Stictopleurus punctatonervosus*

Description

Stictopleurus punctatonervosus is a ground bug or scentless plant bug of the family Rhopalidae. It is similar to the closely related, *Stictopleurus abutilon*. It is greyish to black in colour, with a slim and u-shaped scutellum (a shieldlike bony plate on the thorax). The neck shield is punctuated with a marking near the front edge - two half circles interrupted by a indistinct dark line between them. On average the bug is between 6.6 and 8.5 mm in length.

Habitat

This bug is associated with tall ruderal communities, dry open rough grassland and brownfield habitats

Diet

The details of the diet are unknown, however these insects are associated with a variety of plants including white campion *Silene alba*, creeping thistle *Cirsium arvense* and yarrow *Achillea millefolium*.

Biology & Reproduction

Little is known about the biology and reproduction of this species. A variety of ruderal and brownfield wildflowers are used in the spring for the purposes of mating and egg laying (Tucker *et al* 2005). Larvae appear in June and live on thistles (*Cirsium spp.*) and other tall species. The earliest laid bugs reach adulthood in August. From mid-September to the end of October adults and larvae may be seen together in small mixed groups. By the end of October all adults have found a place for over-wintering and emerge the following spring.

National Distribution

Stictopleurus punctatonervosus was once believed to be extinct in Britain. The last specimen to be found was reported in 1957. However in the mid-1990s it was rediscovered and in a few years it re-colonised much of southern and eastern England and is still continuing expanding northwards. Changes in habitat, international trade and global warming are considered as possible reasons for the apparent reappearance of this species and its spread northwards (Reemer *et al* 2003).

London Distribution

Distribution is centred around the Thames Valley where the bug may be locally common on old brownfield sites

with tall herbaceous vegetation (EFC 2007)

Olympic Park Distribution

Plant (2006) has recorded this species from the the Olympic Park site.

Legal Status

This species is not specifically protected by any legislation.

Conservation Status

Still officially categorised as RDB X (extinct). The official status is no longer appropriate as seems to be well established in southern England

Factors Causing Loss or Decline

This species is apparently increasing in numbers and range but could be locally threatened by loss of suitable brownfield habitat.

Desired Outcome

To provide habitat for this species in a number of locations within the Olympic Park with the intention of creating suitable conditions for the establishment of a resident population. This will be achieved by establishing species-rich grasslands, tall ruderal vegetation and pioneer communities which will include white campion, creeping thistle and yarrow.

Action To-date

1 ha of brownfield habitat, likely to be suitable for this species, has been created at East Marsh. A further 1 ha is being created on the Greenway.

Action & Targets

White campion and yarrow will be seeded into the species-rich grasslands, brownfield features and living roofs created within the Olympic Park. Creeping thistle will be tolerated in selected woodland edge locations.

Related Olympic BAPs

Built environment (living roofs)

Brownfield habitats

Species-rich grassland

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park BAP

References

Essex Field Club, 2007, *Species Account: Stictopleurus abutilon*. <http://www.essexfieldclub.org.uk/portal/p/Species+Account/s/Stictopleurus%20abutilon>

Plant C. 2006. *Lower Lea Valley Olympic Development Invertebrate Surveys*. Unpublished report for ODA

Reemer, M., van Helsdingen. P.J. and Kleukers, R.M.J.C., 2003, *European Invertebrate Survey – the Netherlands, Proceedings of the 13th International Colloquium of the European Invertebrate Survey, Leiden, 2-5 September 2001*. <http://www.repository.naturalis.nl/document/46404>

Tucker G., Ash H. and Plant C., 2005, *English Nature Research Reports (number 651): Review of the coverage of urban habitats and species within the UK Biodiversity Action Plan*. <http://www.ukbap.org.uk/Library/brig/shrw/Post-Industrial/Review%20of%20urban%20habitats%20and%20species%20-%20ENRR651.pdf>



Stictopleurus punctatonervosus Adult

Description

The common or european eel *Anguilla anguilla* can grow up to 2m long but most adults are between 0.5 and 1.5 m in length and weigh up to 2 kg. Immature and adult eels are different in appearance. The immature eel can be brown or dark olive green in colour on the back, paler and yellowish on the belly. As they mature their back goes almost black and their bellies become silver instead of yellowish. The oldest recorded specimen was 40 years of age (EA 2008).

Habitat

This species spawns in the ocean. Young fish (elvers) find their way to estuaries, rivers and streams where they are bottom dwellers, living under stones, in the mud or in crevices. They can travel over land for several hours on damp nights.

Diet

Eels eat virtually all aquatic fauna. Smaller eels tend to feed on invertebrates, whereas larger eels take more fish. Little food is taken in winter.

Biology & Reproduction

The common eel is catadromous, i.e., it spawns in the ocean. After hatching, the young migrate to freshwater, where they mature. They then go back to the ocean to spawn. Spawning takes place in spring in the Sargasso Sea. A mature female eel can contain up to 10 million eggs which develop into a larvae which feed on plankton. The journey by the larvae towards the European coast lasts at least 12 months, during which time they change into un-pigmented transparent form (glass eel). As they enter estuaries they are about 50mm in length. They darken in colour and become known as elvers. Once in freshwater, elvers grow quickly, reaching sexual maturity after 6 years after which time they may return to the Sargasso Sea to spawn (FRS 2008).

National Distribution

The common eel is widespread in UK estuaries and rivers, however the population is known to be declining (SWO 2008).

London Distribution

The common eel is known to use the watercourses of Greater London but the true population is unknown.

Olympic Park Distribution

The common eel has been recorded from the River Lea, but detailed records are not available.

Legal Status

The common eel is listed in the EC Habitats Directive as a Species of Community Interest. EU Council Regulation (EC) No 1100/2007 requires member states to establish measures (management plans) for the recovery of the stock of european eel. This species is listed in Annex II of CITES.

Conservation Status

Common eel is a UK BAP and London BAP Priority Species

Factors Causing Loss or Decline

Probable causes of the decline in stocks may include pollution, over fishing, habitat degradation, parasite infection and changes in climate.

Desired Outcome

To regularly observe common eel in the waterways that flow through the Olympic Park.

Action To-date

Works have commenced to re-profile river banks. The Zoological Society of London and the Environment Agency have been monitoring eel populations in the Lee.

Action & Targets

To create diverse river habitats that will provide hiding places for common eel and provide an abundance of aquatic fauna that will allow this species to feed within the Olympic Park site.

Related Olympic BAPs

Rivers

Reedbed

Other Relevant BAPs

UK BAP

London BAP (regional)

References

Environment Agency 2008. *Eel*. http://www.environment-agency.gov.uk/subjects/fish/246986/342184/396688/396734/?version=1&lang=_e

Fisheries Research Services (Scotland) 2008, *Eel*. http://www.frs-scotland.gov.uk/FRS.Web/Delivery/display_standalone.aspx?contentid=791

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

UKBP, 2007, *UK Biodiversity Action Plan – UK List of Priority Species*

<http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>

South West Observatory 2008. http://www.swenvo.org.uk/environment/sec6_3.asp



Adult common eel

3.5 Amphibians: Common frog

Description

The common frog *Rana temporaria* can grow to 8 cm in length - the male is slightly smaller than the female. Both sexes are generally some shade of brown or olive with a dark patch behind the eye and dark bands on the back legs. Individuals generally have irregular black markings on the back and two narrow lighter stripes running along each side of the back. However, coloration is extremely variable and yellow, pink and orange individuals have been reported.

Habitat

This species occurs in almost any habitat where suitable breeding ponds are nearby. Most of the year it lives on land in damp habitats including woods, hedgerows, fields and gardens, but never too far from water.

Diet

Adult frogs eat a variety of small animals including insects, spiders, earthworms and slugs. Initially tadpoles are vegetarian surviving on minute aquatic plants but as they develop their tastes become more catholic and their diet will include pond detritus, micro-organisms, dead tadpoles and other carrion.

Biology & Reproduction

The common frog reaches sexual maturity after two years. After the winter hibernation, frogs emerge to migrate to breeding ponds, returning, if possible, to the places from which they were hatched. The males usually arrive first, typically in February or March (some males will hibernate at the bottom of a pond). During mating the male grips the female, which may lay up to 2000 eggs which are then immediately fertilised. Of these about one in one thousand will survive to adulthood. The eggs hatch into tadpoles after about four weeks. By twelve weeks the tadpoles have metamorphosed into miniature frogs. At this stage they are ready to leave the water.

National Distribution

This species is widespread, but most abundant in the lowlands. In Scotland and Wales it is largely confined to coastal areas (Froglife 2008)

London Distribution

The common frog has been recorded from every London borough (LBP 2007).

Olympic Park Distribution

Common frog did breed in the Bully Point pond.

Legal Status

Receives partial protection under Wildlife and Countryside Act 1981 (as amended) (sale is prohibited).

Conservation Status

The common frog is not a UKBAP species but is listed under Priority Species and Species of Conservation Concern in the London Biodiversity Action Plan. It is also recognised as a Flagship Species for wetlands in London (LBP 2007).

Factors Causing Loss or Decline

Ponds can be infilled or polluted resulting in a loss of breeding habitat. All amphibians are particularly sensitive to pollution. This can result in increased susceptibility to disease and parasite infestation. Red leg syndrome (bacterial dermatosepticemia) and ranaviruses are frequently cited as major causes of death in frogs (Densmore *et al* 2007). Other causes of frog mortality include the use of insecticides (leading to a reduction in food for frogs) and the stocking of ponds with fish (which eat tadpoles).

Desired Outcome

To establish a breeding population of common frog within the Olympic Park by 2014 by creating a total of four amphibian ponds.

Action To-date

During enabling works common frogs in Bully Point Pond and in the Pudding Mill River were captured and subsequently released in the Waterworks Nature Reserve (in the Lee Valley Regional Park)

Action & Targets

Two new amphibian ponds each at least 50m² in area will be created close to adjacent complementary terrestrial habitats by 2012. At least two further ponds will be created in the wider Legacy Park by 2014. Once ponds are vegetated they may receive spawn, from the Lee Valley Regional Park (or other suitable donor sites)

Related Olympic BAPs

Ponds

Trees and scrub

Common toad

Smooth newt

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park Action Plan

References

Densmore, C. L. and Green, D. E. 2007, *Diseases of Amphibians, ILAR e-Journal Volume 48, Number 3 2007*. http://dels.nas.edu/ilar_n/ilarjournal/48_3/pdfs/4803Densmore.pdf

Froglife, 2008. *Frogwatch*. <http://www.froglife.org/frogwatch.htm>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

UKBP, 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Adult common frog

3.5 Amphibians: Common toad

Description

The common toad *Bufo bufo* ranges from about 8 to 20 cm. The females are larger than the males. This species has a broad, squat body and rounded snout. The toes are short, and the hind feet webbed. Eyes are orange with black horizontal pupils. The skin is covered in raised warts, particularly on the back and sides. The colour of the skin varies according to the time of year, sex, age and area in which they live. Colouration can be dark brown, grey, olive, terracotta or sandy with a grey-white underside. Toads are sometimes covered in darker markings on their backs. There are two prominent glands behind the eyes, which produce an unpleasant, irritating secretion. The forelimbs of the male are thicker and the fingers shorter than the those of the female. The male also has dark-coloured nuptial pads on the inner three fingers of the forelimbs (Froglife 2008)

Habitat

Common toads inhabit deciduous woodland, scrub, gardens, parks and fields. In the breeding season, they live in ponds, lakes and ditches.

Diet

This species is an opportunistic feeder, eating a variety of invertebrates such as insects, larvae, spiders, slugs and worms, which are caught with the tongue. Larger toads occasionally eat slow worms, small grass snakes and mice, all of which are swallowed alive.

Biology & Reproduction

The common toad reaches sexual maturity at the age of four. Toads emerge from hibernation in late February and head towards breeding ponds (to which they return year after year). The female common toad lays long strings of eggs, which are fertilised by the male, which holds onto the female for several days. Anywhere between 600 and 4000 eggs are laid. The adults leave the water once spawning is over. Tadpoles hatch within 10 days. Despite being distasteful to most predators, the majority will not reach adulthood. Metamorphosis of tadpole to toadlet can take up to 12 weeks depending on the availability of food and water temperature. The toadlets will usually leave the water during May. Toads spend most of their lives in terrestrial habitats. They

are largely nocturnal and most active following rain.

National Distribution

The common toad is widespread in the UK, but absent from Ireland and some offshore islands. It occurs from the coast to upland areas - wherever there are suitable bodies of water for breeding and adequate vegetation to provide cover and food. Toads are less common in intensively managed agricultural areas and city centres (RAUK 2003).

London Distribution

The common toad is recorded from all London Boroughs (LBP 2007).

Olympic Park Distribution

Common toads have been recorded from the Olympic Park site at Bully Point and Pudding Mill River.

Legal Status

The Wildlife and Countryside Act 1981 (as amended) prohibits the sale of the common toad. A licence is required for collection during the breeding season.

Conservation Status

The common toad is listed as a Priority Species with the UKBAP (UKBP 2007) and under Priority Species and Species of Conservation Concern within the London BAP (LBP 2007).

Factors Causing Loss or Decline

Destruction of breeding ponds is the prime cause of decline. Development within a toad's home range can mean isolation from the breeding pond. Amphibians have been adversely affected by intensification of farming, including applications of fertilisers and pesticides and ploughing and mechanical reaping. Many common toads are killed crossing roads on their way to and from breeding ponds. Toads are particularly sensitive to pollution which can result in increased susceptibility to disease and parasite infestation. Ranavirus is also a cause of toad mortality.

Desired Outcome

To establish a breeding population of common toad within the Olympic Park by 2014 by creating a total of four amphibian ponds.

Action To-date

During enabling works approximately 100 common toads were taken from Bully Point Pond and subsequently

released in the Waterworks Nature Reserve (in the Lee Valley Regional Park)

Action & Targets

Two new amphibian ponds each at least 50m² in area will be created close to adjacent complementary terrestrial habitats by 2012. At least two further ponds will be created in the wider legacy park by 2014. Once ponds are vegetated they may receive spawn, from the Lee Valley Regional Park (or other suitable donor sites)

Related Olympic BAPs

Ponds

Trees and scrub

Common frog

Smooth newt

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park Action Plan

References

Froglife, 2008. *Frogwatch*. <http://www.froglife.org/frogwatch.htm>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

(RAUK) 2003. *Reptiles and Amphibians of the UK* http://www.herpetofauna.co.uk/common_toad.htm

UKBP, 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Adult common toad

3.5 Amphibians: Smooth newt

Description

The adult smooth or common newt *Triturus vulgaris* is between 80 and 110mm in length including its tail. The body is brown with regularly spaced black spots along the sides. The underparts are orange, bordered with cream and black markings. Females are often pale sandy brown in colour. Males have a wavy crest (only during the breeding season). Females do not have a crest at any time. Males also become marked with black spots all over their bodies during the breeding season (LEHART 2008)

Habitat

The smooth newt occurs in a range of damp habitats, including woodland, grassland and gardens. When breeding, this species needs ditches or ponds with an abundance of aquatic weed.

Diet

When on land, smooth newts tend to feed on insects, worms and slugs. In water, their diet includes water lice, insect larvae, water snails and tadpoles. Newt larvae feed on aquatic invertebrates.

Biology & Reproduction

Smooth newts are nocturnal and spend much of the year in terrestrial habitats, hiding under stones or in the soil during the day. They hibernate through the winter months, emerging in February, when they enter ponds to breed. Newts have complex courtship displays which are performed under water. The female lays eggs singly in aquatic weed. The larvae hatch and mature during the spring and early summer. Both adults and juveniles leave the pond in June or July. Adults reach sexual maturity after 3 years, when they return to a pond to breed.

National Distribution

The smooth newt is the most common of the UK's three species of newt. It is widespread over most of the country, although rarer in the west and at high altitudes.

London Distribution

Smooth newts are widespread across London, but become increasingly rare towards the centre of the city.

Olympic Park Distribution

A population of over a thousand smooth newts was associated with the Bully Point

Pond.

Legal Status

The Wildlife and Countryside Act 1981 affords partial protection for this species, prohibiting collection for sale.

Conservation Status

Smooth newt is included in several local general amphibian species action plans (eg Birmingham and the Black Country)

Factors Causing Loss or Decline

Destruction of breeding ponds is the prime cause of decline. Development within a newt's home range can mean isolation from the breeding pond. Amphibians have been adversely affected by intensification of farming, including applications of fertilisers and pesticides and ploughing and mechanical reaping.

Desired Outcome

To establish a breeding population of smooth newt within the Olympic Park by 2014. This will be achieved by creating a total of four amphibian ponds close to suitable terrestrial foraging and hibernating habitat.

Action To-date

During enabling works more than 1000 smooth newts were taken from Bully Point Pond and subsequently released in the Waterworks Nature Reserve (in the Lee Valley Regional Park)

Action & Targets

Two new amphibian ponds each at least 50m² in area will be created in the North Park, close to adjacent complementary terrestrial habitats by 2012. At least two further ponds will be created in the wider legacy park by 2014. Once ponds are vegetated they may receive spawn, from the Lee Valley Regional Park (or other suitable donor sites)

Related Olympic BAPs

Ponds

Trees & scrub

Common frog

Common toad

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park Action Plan

References

London, Essex & Hertfordshire

Amphibian and Reptile Trust. *Smooth newt (Triturus vulgaris)*. [http://www.lehart.org/factsheets/2%20smooth%20newt%20\(triturus%20vulgaris\).pdf](http://www.lehart.org/factsheets/2%20smooth%20newt%20(triturus%20vulgaris).pdf)



Adult male smooth newt

3.6 Reptiles: Common lizard

Biodiversity Action Plan

Description

The common lizard *Zootoca (Lacerta) vivipara* ranges in colour from yellow brown to olive-green with patterns of darker spots, flecks or stripes. Males and females are distinguished from each other by their belly: males have an orange belly with black spots while females have a plain yellowish belly. An adult common lizard can grow to between 10 cm and 18 cm in length. This species is active during the day, often basking in the morning and late afternoon sun, hunting for food when their body temperature is high enough (reptiles are cold blooded, relying on external heat to warm their bodies). As night falls, they seek shelter in the ground or beneath logs and stones. These lizards hibernate from October or November to March. (HCT 2008)

Habitat

The common lizard lives in open, sunny habitats such as rough grassland, woodland edge, railway embankments, marshes, moors, heathland, sand dunes, hedgerows and wasteland.

Diet

This species feeds on invertebrates, including insects, spiders and earthworms.

Biology & Reproduction

Males become sexually mature after two years, females a year later. Courtship and mating follows hibernation, usually taking place in May. The common lizard is a viviparous reptile i.e. the female retains the fertilised egg inside her body until they are ready to hatch.

National Distribution

The common lizard is native to Britain and is distributed throughout the mainland (Herpetofauna Conservation Trust).

London Distribution

This species is widespread across London, but with patchy distribution, occurring mainly in the outer boroughs. Isolated populations occur in central locations along wildlife corridors such as railway lines.

Olympic Park Distribution

Common lizard has been reported from railway land near Temple Mills to the east of the former Eastway Cycle Track.

Legal Status

Under the Wildlife & Countryside Act 1981 the common lizard is protected from killing or sale. This species is listed in Appendix II of the Bern Convention (1982) which requires member states to ensure strict protection.

Conservation Status

This species is a UK BAP Priority Species and is listed as 'vulnerable' in the 2000 IUCN Red List.

Factors Causing Loss or Decline

Despite being widely distributed in the UK the population of common lizard has fallen in recent years. The main causes for this are thought to be habitat loss, fragmentation and degradation due to a changes in land use, scrub encroachment on grassland and heathland sites and uncontrolled fires.

Desired Outcome

To establish suitable habitat with the intention of making the Olympic Park a suitable receptor site for a small population of common lizard by 2014. The longer term objective will be to establish a viable breeding population of this species within the Olympic Park site.

Action To-date

Survey work prior to construction and during enabling works identified a population of common lizard within the Olympic Park site. Consequently, over 300 individuals were translocated to Waterworks Nature Reserve.

Action & Targets

To establish and monitor a number of quiet, sunny, south-facing locations, probably on slopes, at woodland edge locations or where species-rich grassland occurs, which will subsequently become receptor sites for translocated common lizards. The objective is to establish four suitable receptor sites (each of at least 500m²) in a suitable wider setting with adjacent lightly managed vegetation.

Related Olympic BAPs

Brownfield
Species-rich grassland
Trees and scrub
Slow worm

Other Relevant BAPs

London BAP (regional)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park Action Plan

References

Herpetological Conservation Trust 2008. *Reptiles and Amphibians of the UK – Common lizard*. http://www.herpetofauna.co.uk/common_lizard.htm

London BAP, 2007, *London Biodiversity Action Plan, (Reptiles)*. <http://www.lbp.org.uk/londonhabssp.html#reptiles>

UKBP 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Common lizard

3.6 Reptiles: Grass snake

Biodiversity Action Plan

Description

The grass snake *Natrix natrix* is non-venomous and is typically 70 cm to 120 cm in length but can occasionally grow to 2 metres. Females are usually larger than males. Their colour varies but they are usually olive green with a series of black regular small marks along the side. They have a yellow collar. The underside is usually pale with some blue-black and white markings (HCT 2008)

Habitat

The grass snake is a lowland species with a strong association with wetlands, but can be found in a variety of habitats, including grassland, woodland, heath, arable land and even allotments.

Diet

This species hunts amphibians and occasionally fish, small mammals and young birds. They are good swimmers and most of their hunting is done underwater. Prey is swallowed alive.

Biology & Reproduction

The grass snake hibernates (often communally) from October to March. Breeding begins in late April. Females seek out warm nest sites (like piles of rotting vegetation) where 30 or 40 eggs are laid in July and hatch in late summer. Males become mature at 3 years of age while females do not begin to breed until they are 4-5 years old.

National Distribution

The grass snake is widespread in the lowlands of England and Wales and absent from Scotland and Ireland,

London Distribution

This species is common in rural sections of outer London boroughs but largely absent from the urban centre

Olympic Park Distribution

Grass snake has been recorded from Bully Point.

Legal Status

Under the Wildlife & Countryside Act 1981 the grass snake is protected from killing or sale. This species is listed in Appendix III of the Bern Convention (1982) which requires member states to prevent indiscriminate capture and killing.

Conservation Status

The grass snake is listed as a Priority Species with the UKBAP (UKBP 2007) and under Priority Species and Species

of Conservation Concern within the London BAP (LBP 2007).

Factors Causing Loss or Decline

The grass snake has suffered from loss of wetland habitat through drainage, development, natural succession and pollution. Reduction in prey species (amphibians), unintentional disturbance to egg laying sites (compost heaps) and persecution may also be factors which have caused this species to decline..

Desired Outcome

The objective is to create an interconnected complex of wetland and grassland habitats which are suitable for the grass snake, in order to encourage natural recolonisation and conditions suitable for reintroduction.

Action To-date

Surveys have been carried out for reptiles (including grass snake) as part of preparation for the Environmental Statement and throughout Enabling Works. Grass snake was not recorded as part of these surveys but has been reliably sighted at other times within the site (at Bully Point). Subsequently, watching briefs by suitably qualified ecologists have been undertaken whenever works have been likely to impact potential grass snake areas.

Action & Targets

To establish a complex of wetland and lightly managed grassland habitats in the North Park around Bully Point. To create 4 potential egg laying sites (compost heaps) constructed from cut grass in secluded locations at Bully Point by 2014. Consideration may be given to introduction of grass snake once suitable habitat and a thriving prey base (amphibians) has become established.

Related Olympic BAPs

Allotments
Trees and scrub
Wet woodland
Species-rich grassland
Reedbed
Rivers
Ponds
Amphibians

Other Relevant BAPs

London BAP (Reptiles)
L B Waltham Forest BAP
L B Tower Hamlets

Lee Valley Regional Park Action Plan

References

Herpetological Conservation Trust 2008. *Reptiles and Amphibians of the UK – Common lizard*. http://www.herpetofauna.co.uk/common_lizard.htm
London BAP, 2007, *London Biodiversity Action Plan, (Reptiles)*. <http://www.lbp.org.uk/londonhabssp.html#reptiles>
UKBP 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Grass snake

3.6 Reptiles: Slow worm

Description

The slow worm *Anguis fragilis* is a legless lizard up to 50 cm in length. Adults have cylindrical bodies with a smooth, shiny grey or copper appearance. The female is usually black on the sides and sometimes with a dark stripe along their middle of its back. (HCT 2008)

Habitat

This species is found in a wide range of open and partially shaded habitats including rough grassland and woodland edge. Slow worms seek refuge under wood, stones or debris and spend most of their lives underground or deep under vegetation. They are commonly found in gardens and compost heaps **Diet**

Slow worms feed largely on slugs and other invertebrates which they hunt at dusk or after rainfall

Biology & Reproduction

This species emerges from hibernation in March, with mating occurring in May and June. Females typically give birth to about 8 young around the end of August. Males become sexually mature at 3 or 4 years of age, females at 4 or 5.

National Distribution

The slow worm is widespread in Britain, but most abundant in the south-west. They are the reptiles most commonly reported in urban areas, where they often occur in gardens, parks, allotments and brownfield sites.

London Distribution

This species is common in rural sections of outer London boroughs but largely absent from the urban centre. It does occur in some central locations, usually on railway embankments.

Olympic Park Distribution

Slow worm was not recorded during surveys of the Olympic Park site in 2006.

Legal Status

Under the Wildlife & Countryside Act 1981 the slow worm is protected from killing or sale.

Conservation Status

The slow worm is listed as a Priority Species in the UK BAP (UKBP 2007) and a Priority Species in the London BAP (LBP 2007).

Factors Causing Loss or Decline

Populations are known to have suffered declines in recent decades due to habitat loss following changes in land use. The slow worm cannot travel far and is especially vulnerable to isolation and fragmentation of its habitat. Other factors leading to its decline include 'tidying up' of sites, persecution and intensification of farming.

Desired Outcome

The objective is to create, by 2014, an interconnected complex of lightly managed grassland and woodland edge habitats which are suitable for the slow worm, in order to make the site suitable as a receptor site for animals rescued from development sites in the region.

Action To-date

Surveys have been carried out for reptiles (including slow worm) as part of preparation for the Environmental Statement and throughout Enabling Works. Slow worm has not yet been recorded within the Olympic Park site.

Action & Targets

To establish a complex of lightly managed grassland and woodland edge habitats throughout the Olympic Park. To monitor the development of these habitats with a view to suitable areas being used as receptor sites.

Related Olympic BAPs

Allotments

Brownfield habitats

Trees and scrub

Species-rich grassland

Other Relevant BAPs

London BAP (Reptiles)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park Action Plan

References

Herpetological Conservation Trust 2008. *Reptiles and Amphibians of the UK – Common lizard*. http://www.herpetofauna.co.uk/common_lizard.htm

London BAP, 2007, *London Biodiversity Action Plan, (Reptiles)*. <http://www.lbp.org.uk/londonhabspp.html#reptiles>

UKBP 2007, *UK Biodiversity Action Plan – UK List of Priority Species*. <http://www.ukbap.org.uk/PrioritySpecies.aspx?group=8>



Slow worm

Description

The black redstart *Phoenicurus ochrurus* is a brown, robin-sized bird of the thrush family. The male has a distinctive orange tail.

Habitat

After World War II, the black redstart colonised bomb-sites where it could take advantage of the insect-rich vegetation and abundance of available nooks for nesting. Today, derelict sites are still the stronghold for this species.

Diet

The black redstart feeds on invertebrates, particularly insects and their larvae, but also earthworms, and small molluscs. In autumn they may take fruit and berries.

Biology & Reproduction

The female builds a nest which consists of a lined cup of grass and moss usually on a building ledge or a hole in a wall. Breeding starts in April. Usually two clutches of 4-6 eggs are laid which are incubated by the female for 13-17 days. The young birds fledge between 12-19 days.

National Distribution

Greater London and the industrial West Midlands harbour most of these birds, but there are a few pairs in other towns such as Nottingham, Liverpool, Manchester and Ipswich, and the odd pair at cliff sites and power stations along the south coast between Suffolk and Dorset. The RSPB (2008) estimates that there are between 25 and 73 breeding pairs in the UK

London Distribution

London supports up to 30% of the UK population. In London black redstarts occur largely on derelict sites along the Thames east of Tower Bridge and in the Lee Valley (LBRAPP 2008)

Olympic Park Distribution

There are records of black redstart breeding within the Olympic Park site but recent surveys have failed to find this species on site.

Legal Status

The black redstart is a nationally rare species and is given protection in the UK by Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended). Internationally it is listed on appendix II of the Berne Convention.

Conservation Status

The black redstart are listed as a priority species for the London Biodiversity Action Plan (LBP 2007) and a UK amber list species i.e. of medium conservation concern, by the JNCC (2008).

Factors Causing Loss or Decline

The redevelopment of brownfield sites is resulting in the loss of suitable habitat for this species.

Desired Outcome

The objective is to create brownfield habitat, which is suitable feeding habitat for this species. This should be supplemented by the creation of suitable nesting sites. The intention is to establish suitable conditions to with the potential to support a breeding population of black redstart in the Olympic Park.

Action To-date

Regular black redstart surveys have been undertaken in the Olympic Park

Action & Targets

By 2012, the intention is to create a significant area of brownfield habitats throughout the Olympic Park. A total of 50 nestboxes suitable for this species will be erected in suitable locations in the Olympic Park by 2014. A significant number of these boxes should be erected by 2012.

Related Olympic BAPs

Brownfield habitats

Rivers

Other Relevant BAPs

London BAP (Reptiles)

L B Waltham Forest BAP

L B Tower Hamlets

Lee Valley Regional Park Action Plan

References

JNCC, 2008, *Population status of birds in the UK: Amber list*. <http://www.jncc.gov.uk/page-2906>

LBRAPP 2008. *London Black Redstart Action Plan Partnership 2008*. <http://www.blackredstart.org.uk>

London Biodiversity Partnership (LBP), 2007, *London Biodiversity Action Plan – Priority Species and Species of Conservation Concern* <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

RSPB 2008. *Black redstart page*. <http://www.rspb.org.uk/wildlife/birdguide/>



Male black redstart

Description

The grey heron *Ardea cinerea* stands at a height of around 90 cm with a wingspan of more than 1.75 metres. The upper plumage is grey with white below. Adults have a white head with a broad black mark on the head and slender crest. Immature birds have a dull grey head, yellowish legs and bill.

Habitat

This species seeks its prey in shallow wetlands, including marshes and the edges of gravel pits, reservoirs, lakes, rivers and estuaries.

Diet

The grey heron has a varied diet, including fish, young birds, amphibians, and small mammals.

Biology & Reproduction

Grey Herons nest in colonies, usually in tall trees in a quiet area close to water. Nests, which are made from sticks and branches, are built by both parents. The breeding season usually starts in February. 3-4 eggs are laid which take 27 days to hatch. The young remain in the nest for seven weeks. Both parents share incubation duties and the feeding of their young.

National Distribution

This is a common resident over most of Britain - the RSPB (2008) report 14,200 nests over the country. There is some migration to France, Spain and Portugal and from Norway and Sweden.

London Distribution

The grey heron may be seen in all parts of Greater London and 16 heronries are found across 12 London boroughs. The best known heronries are found on the islands of lakes in Regent's Park, Battersea Park and Kelsey Park but the largest and longest established is at Walthamstow Reservoirs, to the north of the Olympic Park, with 110 nests in the year 2000 (GLA 2001).

Olympic Park Distribution

Grey heron is frequently seen feeding in the waterways within the Olympic Park site.

Legal Status

The grey heron and its nest is fully protected under the Wildlife and Countryside Act 1981 (as amended).

Conservation Status

This bird is a 'flagship species' in the

Tower Hamlets BAP.

Factors Causing Loss or Decline

Fifty years ago London was too polluted to support the grey heron, however, as the result of improved water quality in the Thames and its tributaries, numbers have steadily increased. This species is therefore vulnerable to deterioration in water quality. Severe weather can cause winter starvation. There are reports of birds being killed by colliding with electricity wires.

Desired Outcome

The objective is for people to continue to regularly observe this species within the Olympic Park. This will be achieved by improving the quality of the habitat in the waterways and creating new wetland habitat.

Action To-date

Regular bird surveys (and further anecdotal sightings) have recorded this species in numerous locations, particularly at City Mills River and by the River Lea by East Marsh.

Action & Targets

Implementation of the various wetland related habitat action plans will ensure that suitable habitat for this species will be created. There will be an increase in habitat for fish and aquatic invertebrates which will benefit this species. Eel, amphibians, reptiles and young water vole, which all have action plans, are suitable prey for this bird.

Related Olympic BAPs

Wet woodland

Rivers

Reedbed

Ponds

Eel

Amphibians

Reptiles

Water vole

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

References

RSPB 2008. *Bird Guide Grey Heron*

<http://www.rspb.org.uk/wildlife/birdguide/name/g/greyheron/index.asp>

GLA, 2001, *Draft Biodiversity Strategy:*

Assembly and Functional Bodies Consultation Draft

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>



Grey heron

3.9 House sparrow

Biodiversity Action Plan

Description

The male house sparrow *Passer domesticus* has a grey crown, cheeks and undersides and a black eye-strip and bib. The female is paler and lacks black on the head or throat. Upperparts on both sexes are streaked with brown. Juveniles are like the adult female. As adults both sexes measure about 14 cm in length.

Habitat

The house sparrow is strongly associated with human settlement and dwellings. It occurs around farm buildings, in the suburbs and in city centres where there are parks and gardens.

Diet

The main diet of the adults is grain and other cereals. Seeds, fruits, earthworms and insects are also eaten. Insects are a particularly important food for juveniles birds.

Biology & Reproduction

Breeding normally begins in late April, although nesting periods are variable. The bird nests in holes in buildings, among ivy and other climbers or occasionally in trees. Nests, which both sexes participate in the construction of, are round and dome-shaped with an entrance to the side. They are built using grass, straw, plant fibres, paper and string and lined with hair and feathers. Usually between three and five eggs are laid but there may be as many as eight. The eggs are incubated for 11-14 days by both parents (although chiefly by the female). The parent birds feed their young largely on insects and they are ready to leave the nest after about fifteen days. There may be more than one brood in a year.

National Distribution

The house sparrow is found over most of Britain but is rare or absent in the uplands. It is frequently associated with towns and villages, and to a lesser extent, agricultural fields (Robinson 2005).

London Distribution

Despite recent declines, this species is still seen throughout London, although it is now rare in the centre. The highest populations are found to the eastern and western edges of London (LNHS 2002)

Olympic Park Distribution

The Breeding Birds of the London Area (LNHS 2002) indicates that this species breeds in the Olympic Park area. There was a breeding population adjacent to the allotments at Eastway.

Legal Status

The house sparrow and its nest is fully protected under the Wildlife and Countryside Act 1981 (as amended).

Conservation Status

House sparrow is listed in the IUCN Red List as a Species of High Conservation Concern and by the JNCC (2008) as a Red List species (of High Conservation Concern). The house sparrow has recently (2007) been made a UKBAP Priority Species and is a Priority Species and Species of Conservation Concern in the London BAP. This bird is a 'flagship species' in the Tower Hamlets BAP.

Factors Causing Loss or Decline

Nationwide the population of this species is in decline. In 1970 there was said to be around 12 million pairs of birds in the country. Current surveys suggest this figure has now slumped to 6-7 million. The reasons for this are not yet clear (DEFRA 2002, 2004), however possibilities include:

- Methyl tertiary butyl ether (MTBE) in unleaded petrol is reducing insect abundance (important for feeding young).
- Autumn sown cereal crops leave little stubble for them to forage in or spilt grain to glean.
- Predation by the increasing number of cats.
- Modern buildings have fewer holes and crevices where the birds can nest.
- The collared dove competes for a greater share of the same food types..

Desired Outcome

The objective is to establish conditions with the potential to support a breeding population of house sparrow within the Olympic Park. This will be achieved by planting a range of vegetation types, including trees, shrubs, seed bearing ruderal vegetation and insect producing grasslands, and by providing nest boxes.

Action To-date

Surveys have been carried out for birds (including house sparrow) as part of

preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

Implementation of the various terrestrial habitat action plans will ensure that suitable habitat for this species will be created. A total of 75 house sparrow nestboxes will be erected by 2014, with a significant number of these installed by 2012. All boxes must be installed in suitable locations. A gap of at least 2m should be left between house sparrow nesting boxes.

Related Olympic BAPs

Built environment

Parks, squares and amenity spaces

Brownfield habitats

Trees and scrub

Species-rich grasslands

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

References

DEFRA, 2002, *Investigation of the Causes of the Decline of House Sparrow and Starling in Great Britain*. <http://www.defra.gov.uk/wildlife-countryside/resprog/findings/sparrow/>

DEFRA, 2004, *House Sparrows in Great Britain*. <http://www.defra.gov.uk/wildlife-countryside/ewd/sparrows.pdf>

JNCC, 2008, *Population Status of Birds in the UK - Red List - Species of High Conservation Concern* <http://www.jncc.gov.uk/page-2905>

London Biodiversity Partnership (LBP), 2002, *Where have all our sparrows gone? - Survey report, London 2002*. http://www.lbp.org.uk/07library/sparrow_survey_report.rtf

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

London Natural History Society (LNHS), 2002, *The Breeding Birds of the London Area, LNHS*.

Robinson, R.A. 2005, *BirdFacts: profiles of birds occurring in Britain & Ireland (v1.2, Jan 2008)*. BTO Research Report 407. <http://www.bto.org/birdfacts>

3.9 House sparrow (cont.)

UK BAP Priority Species: House Sparrow

<http://www.ukbap.org.uk/PrioritySpecies.aspx?group=1>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>



House sparrow. Male (left); female (right)

3.10 Kingfisher

Biodiversity Action Plan

Description

The kingfisher *Alcedo atthis* is striking in appearance, with bright metallic blue upperparts and rich chestnut-red plumage underneath. The legs and feet are bright red. The bill is long and pointed – the male bird's is completely black whereas the female has a fleck of red at the base. Otherwise both sexes are similar in appearance. Juvenile birds have dull, greener plumage. Birds are between 16 and 19 cm in length with a wingspan of 7.5 cm. The kingfisher is extremely territorial. Apart from the breeding season, these birds are solitary and secretive - often roosting in dense cover near water.

Habitat

Lowland freshwater rivers, canals and streams are its principal habitats, lakes and gravel pits are also utilised. Banks need to be elevated, vertical or very steeply inclined and unvegetated in places to accommodate their nests. Water needs to be clear and shallow to allow for the catching of fish. Some birds move to estuaries and other coastal areas over the winter period

Diet

A kingfisher must consume around 60% of its body weight in food each day. The diet consists mainly of small fish but they also take aquatic insects, freshwater crustaceans and tadpoles. Hunting normally begins from an overhanging branch with the bird plunging into the water to catch its prey.

Biology & Reproduction

Pairing begins in February. If the male and female hold neighbouring territories they usually merge them for the course of the breeding season. A pair usually occupies a length of watercourse (or shoreline) of between 0.8 - 1.5 km (Hopkins 2001). Kingfishers are monogamous but will find a new mate each year. The nest is constructed in a tunnel 60 - 90 cm in length and 6 cm in diameter which ends in a rounded chamber. Usually, a riverside bank clear from vegetation or amongst the roots of a tree is chosen as a nest site. The first clutch of 6-7 eggs is laid in late March/early April. Further broods, in July and October may follow (RSPB 2008). The young birds usually fledge and leave the nest after 24-25 days but are still supported by the parents and only become fully independent after a further

4 days.

National Distribution

The kingfisher is widespread in Britain with between 4,800-8,000 pairs (RSPB 2008). Numbers are highest in central and southern England and the bird becomes increasingly rare in the north (BTO 2007). The kingfisher was in decline until the mid-1980s, in both range and numbers, but is now believed to be recovering.

London Distribution

The Breeding Birds of the London Area (LNHS 2002) shows the kingfisher as breeding or present in nearly all outer London boroughs. Records from central London are few. There is a clear association between kingfisher records and rivers.

Olympic Park Distribution

Kingfishers have been observed along the Bow Back Rivers (BW 2007) and are recorded as a breeding bird within the Lee Valley Regional Park immediately to the north of the site (LNHS 2002).

Legal Status

The kingfisher and its nest is fully protected under the Wildlife and Countryside Act 1981 (as amended). It is also listed in the Bern Convention, Appendix II and the Birds Directive Annex 1.

Conservation Status

Kingfisher is ranked as a UK Amber list species (of medium conservation concern by the JNCC 2008). The London Biodiversity Action Plan (LBP 2007) lists the bird as a Priority Species and Species of Conservation Concern.

Factors Causing Loss or Decline

The kingfisher population declined until the mid 1980s, since when it appears to have made a full recovery. Mortality rates of kingfishers are high during severe winters but the recovery is rapid too (Baillie *et al* 2005). Nevertheless kingfisher populations remain vulnerable to water pollution, very cold winters, persecution, unsympathetic river works removing nest sites, clearance of bankside vegetation, agricultural improvement of bankside areas, damage caused to bankside habitat by livestock and lack of nesting sites on certain, otherwise suitable river sections.

In addition reduced river flows due to over-abstraction or drought can

expose the bird's nest to an increase in predation of eggs and young by scavengers such as rats.

Desired Outcome

The objective is to create conditions with the potential to attract a breeding population of kingfisher within the Olympic Park by 2014. This will be achieved by improving the quality of riverine habitats and by providing nest sites.

Action To-date

Surveys have been carried out for birds (including specific surveys for kingfisher) as part of preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

Implementation of the various wetland habitat action plans will ensure that suitable feeding habitat for this species will be created. Two artificial kingfisher nesting banks overlooking rivers within the Olympic Park are to be established in suitable locations by 2012.

Related Olympic BAPs

Rivers

Reedbed

Wet woodland

Ponds

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

References

Baillie, S.R. *et al*, 2005, *Breeding Birds in the Wider Countryside: their conservation status 2005*. BTO Research Report No. 435. <http://www.bto.org/birdtrends>

BTO 2007. *BTO Atlases - Kingfisher (Alcedo atthis)*. <http://blx1.bto.org/atlasses/KF-atlas.html>

British Waterways 2007. *Bulletin - Bow Back Rivers Issue No.1 April 2007*. http://www.britishwaterways.co.uk/images/Bow_Back_Rivers_Bulleting_April_2007.pdf

Gibbons, D.W., Reid, J.B. & Chapman, R.A., 1993, *The New Atlas of Breeding Birds in Britain and Ireland: 1988-1991*. T. & A.D. Poyser, London.

Hopkins, Laura, 2001, *Best Practice Guidelines - Artificial Bank Creation for Sand Martins and Kingfishers*.

3.10 Kingfisher (cont.)

Environment Agency. http://www.lbp.org.uk/downloads/Publications/Management/artificial_bank_creation.pdf

JNCC, 2008, *Population status of birds in the UK: Amber list*. <http://www.jncc.gov.uk/page-2906>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

London Natural History Society, 2002, *The Breeding Birds of the London Area, LNHS*.

RSPB, 2008, *Birds and Wildlife - Kingfisher*. <http://www.rspb.org.uk/wildlife/birdguide/name/k/kingfisher/index.asp>



Kingfisher

Description

The linnet *Carduelis cannabina* is a small, slim bird with a forked tail. The male has a grey head and red forehead and breast. During the winter months the bird becomes much more dull. Both male and female have pale underparts which are streaked with brown. In both sexes the beak is dark brown and the legs flesh-brown. Adult birds are 13.5 cm in length and with a wingspan of 21-25 cm.

Habitat

The linnet is usually associated with scrub in summer and in the winter with stubble and weedy fields. Urban linnets tend to be found on wasteland sites or the overgrown fringes of allotments and golf courses.

Diet

Small seeds are the main food, however in the summer, some insects are also taken.

Biology & Reproduction

Linnets breed in hedges, shrubs and small trees. The female builds the cup-like nest which is made of grass, moss lined with hair and wool. Usually 4-5 eggs are laid. Incubation takes 13 -14 days and is undertaken by the female. The young are fed by both parents. Fledging takes a further 13 -14 days. The first clutch is usually laid in May and up to three broods can be raised in a season (Robinson 2005).

National Distribution

The linnet is widespread across the UK, with the greatest numbers occurring along the east coast. They are scarce in the uplands. The resident population is boosted by passage migrants and winter visitors (BTO 2007).

London Distribution

The Breeding Birds of the London Area, (LNHS 2002) shows the linnet to be most common at the edges of Greater London, along the Thames corridor and Lea Valley with a more scattered distribution elsewhere.

Olympic Park Distribution

Linnet has bred in the Olympic Park site in the past and some have been known to over winter (LNHS 2002).

Legal Status

The linnet and its nest is fully protected under the Wildlife and Countryside Act

1981 (as amended). The linnet (which was once a popular caged bird) is also listed in Schedule 3 of the Act, which means that it may be sold if ringed and bred in captivity.

Conservation Status

The linnet is a Red List species of High Conservation Concern (JNCC 2008). It is a UKBAP Priority Species (UKBAP 2007). According to the London Biodiversity Action Plan, the species is 'culturally valued' and is a Priority Species and Species of Conservation Concern (LBP 2007).

Factors Causing Loss or Decline

Linnet populations declined rapidly in the UK between the mid 1970s and mid 1980s according to the Common Bird Census. Numbers in Wales may be recovering and may be stabilising in England but continue to decline in Scotland. In 2000 556,000 territories were recorded in UK (Baillie *et al* 2006).

The Constant Effort Sites (CES) scheme indicates a continuing overall decline in this species, attributed to reductions in hedgerow quality which leaves nests exposed and more visible to predators (Siriwardena *et al* 1999, 2000). The most probable causes for the decline in the linnet population are changes in farming practices, including removal or reductions in size of hedgerows, loss of weedy field margins and less winter stubble. In cities the loss of brownfield habitats has affected this species.

Desired Outcome

The objective is for linnet to be regularly observed in the Olympic Park and to create conditions with the potential to attract a breeding population by 2014.

Action To-date

Surveys have been carried out for birds (including linnet) as part of preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

This will entail implementation of the terrestrial habitat action plans including those which involve the planting of dense deciduous hedgerows and small trees and shrubs with adjacent tall ruderal vegetation, pioneer communities and species-rich grasslands as feeding sites. Living roofs also have the potential to benefit this species.

Related Olympic BAPs

Allotments

Built environment (living roofs)

Brownfield habitats

Parks, squares and amenity spaces (hedges and species-rich lawns)

Trees and scrub

Species-rich grassland

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

References

Baillie, S.R. *et al*, 2006, *Breeding Birds in the Wider Countryside: their conservation status 2005*. BTO Research Report No. 435. <http://www.bto.org/birdtrends>

BTO 2007. *BTO Atlases – Linnet Carduelis cannabina*. <http://blx1.bto.org/atlases/LI-atlas.html>

JNCC, 2008. *Population Status of Birds in the UK - Red List - Species of High Conservation Concern*. <http://www.jncc.gov.uk/page-2905>

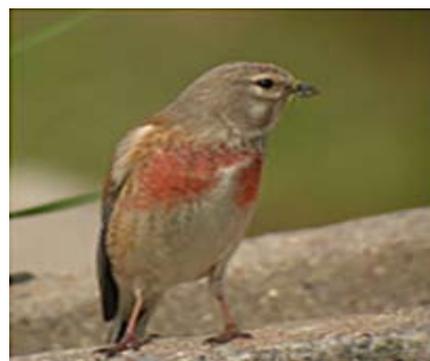
London Biodiversity Partnership (LBP) 2007. *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

London Natural History Society (LNHS), 2002, *The Breeding Birds of the London Area*.

Robinson, R.A., 2005, *BirdFacts: profiles of birds occurring in Britain & Ireland (v1.2, Jan 2008)*.

BTO Research Report 407. <http://www.bto.org/birdfacts>

RSPB, 2008, *Birds and Wildlife - Linnet*. <http://www.rspb.org.uk/wildlife/birdguide/name/k/Linnet/index.asp>



Male linnet

3.12 Reed bunting

Biodiversity Action Plan

Description

The reed bunting is a small, slim song bird, 15 -16 cm in length with a wingspan of 21 - 25 cm. In the summer the breeding male has a black head, face and throat contrasting with a bright white collar. Both male and female have the upper parts rich brown/ red with dark streaking and dirty-white down parts. Both sexes have a long, deeply notched tail with obvious white feathers. Young birds look like the females.

Habitat

The reed bunting inhabits reedbeds and other wetland habitats, as well as ditches, hedgerows and scrub. In winter this species joins mixed flocks on arable farmland.

Diet

The adult birds feed mainly on seeds, but take invertebrates during summer. Chicks are dependent on invertebrates in their diet.

Biology & Reproduction

In the UK the reed bunting is a year-round resident, although numbers are swollen in the winter by visitors from the north. The reed bunting breeds from mid-April through to August. They lay up to 5 eggs in a cup-like nest of grass or reed in a low bush or reed tussock.

National Distribution

Around 220,000 territories were estimated for Britain in 1988-91. Reed bunting is widespread across most of the UK but is rare in highlands of Scotland. Over a million birds are thought to winter in Britain.

London Distribution

London's reed buntings are associated with wetlands with important breeding populations at Rainham Marshes and the Ingrebourne Valley (Havering); the Lee and Colne Valleys, Beddington sewage works (Sutton) and the London Wetland Centre at Barn Elms (London BAP 2007).

Olympic Park Distribution

Reed bunting has been recorded from the Olympic Park site but does not breed (LNHS 2002).

Legal Status

The reed bunting and its nest is fully protected under the Wildlife and Countryside Act 1981 (as amended).

Conservation Status

The reed bunting is a UK BAP Priority Species and is listed as 'vulnerable' in the IUCN Red List.

Factors Causing Loss or Decline

Reed bunting populations in Britain declined during the 1960s and 1970s and appear to have stabilised since the 1980s. Reasons cited for this decline include changes in agricultural practice, particularly the use of pesticides and a switch from spring to autumn sown crops and the general reduction in habitat diversity on farmland. Another factor has been the loss of wetlands and the encroachment of carr into reedbeds. An increase in predation is also thought to be a cause in a reduction in breeding success (Baillie *et al* 2006, BTO 2008).

Desired Outcome

The objective is for reed bunting to be regularly observed in the Olympic Park and for conditions to be established which have the potential to attract a breeding population by 2014. This will be achieved by creating reedbeds and adjacent complementary terrestrial habitats including species-rich grasslands and brownfield habitats.

Action To-date

Surveys have been carried out for birds (including reed bunting) as part of preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

Implementation of the reedbed, brownfield, trees & scrub and species-rich grassland habitat action plans will provide a suitable complex of habitat for this species.

Related Olympic BAPs

Reedbed
Rivers
Trees & scrub
Brownfield habitats
Species-rich grassland

Other Relevant BAPs

L B Waltham Forest BAP
L B Tower Hamlets BAP
Lee Valley Regional Park Action Plan

References

Baillie, S.R. *et al*, 2006, *Breeding*

Birds in the Wider Countryside: their conservation status 2005. BTO Research Report No. 435. <http://www.bto.org/birdtrends>

BTO 2008. BTO <http://www.bto.org/birdtrends2006/wcrreebu.htm>

London BAP 2007, *London Biodiversity Action Plan (Priority Species)*. <http://www.lbp.org.uk/downloads/PriorityBirds/ReedBunting.pdf-reedbunting.php>

London Natural History Society (LNHS), 2002, *The Breeding Birds of the London Area*.

Robinson, R.A., 2005, *BirdFacts: profiles of birds occurring in Britain & Ireland (v1.2, Jan 2008)*.

RSPB 2008. *Birds and Wildlife - Reed bunting*. <http://www.rspb.org.uk/wildlife/birdguide/name/r/reedbunting/>

UKBP, 2007, *UK Biodiversity Action Plan-UK List of Priority Species*. <http://www.ukbap.org.uk/UKPlans.aspx?ID=279>



Male reed bunting

3.13 Sand martin

Description

The sand martin *Riparia riparia* is the smallest European hirundine (member of the swallow family) being approximately 12-13 cm in length. It is dark brown on the upperparts and pale underneath with a slightly forked tail.

Habitat

The sand martin is associated with river valleys. They feed over wetlands and nest in eroded river banks. They do use artificial habitats like flooded gravel pits and will nest in man made structures.

Diet

They feed on flying insects (eg midges) that they catch on the wing.

Biology & Reproduction

This is one of the first summer migrants to arrive in Britain. After spending the winter in Africa older birds begin to arrive in March to join their nesting colonies which may consist of hundreds of pairs. Younger birds continue to arrive in May. Sand martins nest in tunnels, usually in vertical, sandy cliffs although they do occasionally use drainage pipes in concrete river walls. Normally both sexes construct burrows and line the nest chambers with grass and feathers. Both parents incubate and feed the young. They usually have two clutches of 3-7 eggs each season. Incubation period lasts 12-16 days and the young usually fledge the nest after 19 days. The breeding season ends in October, when the birds return to their wintering grounds in Africa (Robinson 2005).

National Distribution

Sand martins have a widespread but patchy distribution over the UK. They are absent from large areas of the chalk and limestone hills of southern England. The UK breeding population is thought to be stable at around 85,000-270,000 pairs (RSPB 2008).

London Distribution

London's sand martin population is concentrated in the Lee Valley, Colne Valley and the boroughs of Kingston and Hounslow in the west (LNHS 2002).

Olympic Park Distribution

A few pairs nest in drainage holes in the concrete walls of the Bow Back Rivers. Sand martin has also been observed feeding over the River Lea near East Marsh.

Legal Status

The reed bunting and its nest is fully protected under the Wildlife and Countryside Act 1981 (as amended) and is listed in Annex II of the Bern Convention.

Conservation Status

The sand martin is a Amber List species - of Moderate Conservation Concern (JNCC 2008) and a London Biodiversity Action Plan species.

Factors Causing Loss or Decline

Population crashes have occurred following droughts in the African wintering grounds. Other factors known to affect this species include loss of suitable nesting banks, unsympathetic river works, disturbance to nesting colonies, loss of roost sites and loss of feeding sites such as wet grasslands and other wetland habitats (BTO 2008).

Desired Outcome

The overall objective is to create conditions suitable to attract a breeding colony of sand martin in the Olympic Park by 2014. Two artificial nest banks will be created. Wetlands will provide feeding habitat for these birds.

Action To-date

Surveys have been carried out for birds (including specific surveys for sand martin) as part of preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

Two artificial nesting banks, each with 50 nesting holes will be created by 2012. The implementation of the Reedbed and Rivers & Streams habitat action plans will provide the necessary feeding habitat for these birds.

Related Olympic BAPs

Reedbed

Rivers

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

London BAP

References

BTO 2008. *Focus on species Sand Martin*. <http://www.bto.org/migwatch/text/species/sanma.htm>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

London Natural History Society (LNHS), 2002, *The Breeding Birds of the London Area*.

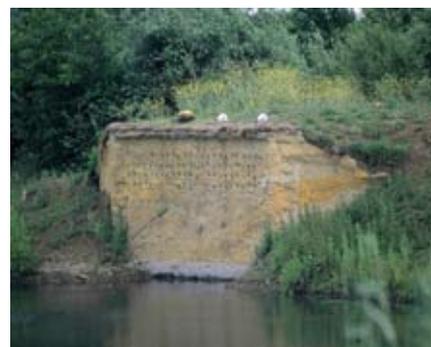
Robinson, R.A., 2005, *BirdFacts: profiles of birds occurring in Britain & Ireland (v1.2, Jan 2008)*.

RSPB 2008. *Sand Martin*. <http://www.rspb.org.uk/wildlife/birdguide/name/s/sandmartin/>

UKBP 2007, *UK Biodiversity Action Plan-UK List of Priority Species*. <http://www.ukbap.org.uk/UKPlans.aspx?ID=279>



Sand martin



Sand martin artificial nesting bank

3.14 Song thrush

Description

The song thrush *Turdus philomelos* is 23 cm in length. Male and female birds are similar in appearance, with plain brown backs and whitish under parts, often brown spotted.

Habitat

The song thrush is a woodland edge bird, associated with trees and scrub and adjacent species-rich grassland (particularly that found on damp neutral to high pH soils).

Diet

This species is omnivorous, eating a wide range of insects, earthworms, snails and berries.

Biology & Reproduction

The breeding season extends from March to August. Birds establish themselves in their breeding territories before this in the late winter. Territories are crucial for pair formation and nesting. The size of each territory varies with the habitat, usually between 0.2 to 6 ha but can be larger. Breeding territory boundaries break down when the last brood has fledged, late in summer. Song thrushes may raise 2-3 clutches each of 3-5 eggs in a year. The female incubates the eggs which normally hatch 13-15 days later. The nests are built by females alone. The nest is fairly low to the ground in dense vegetation. Chicks are ready to fledge about 13-14 days after hatching but continue to be fed by their parents up to 3 weeks after they have left the nest (Robinson 2008)

National Distribution

The song thrush is widespread. There are both resident and migratory birds in the UK. The present UK breeding population is estimated at 1.1 million pairs (Martin, 2007).

London Distribution

This species is widespread in London, occurring in all boroughs (LNHS 2002)

Olympic Park Distribution

The Atlas of the Breeding Birds of the London Area indicates that the song thrush breeds within the Olympic Park site (LNHS 2002).

Legal Status

The song thrush and its nest is fully protected under the Wildlife and Countryside Act 1981 (as amended)

Conservation Status

The song thrush is a Red List species - of High Conservation Concern (JNCC 2008) and a UKBAP Priority Species.

Factors Causing Loss or Decline

The song thrush has been in decline for the last 30 years. Reasons for this decline are not fully understood but may relate to changes in farming practices affecting the availability of food and nest sites, dry soil conditions affecting food supply, predation by crows and foxes, competition with blackbirds and hunting on the continent (UKBP 2007).

Desired Outcome

The overall objective is for this species to be regularly observed in the Olympic Park and to create conditions with the potential to attract a breeding population by 2014. This will be achieved by creating suitable terrestrial feeding and nesting habitats in the form of trees, shrubs, hedges and adjacent species-rich neutral to alkaline grasslands.

Action To-date

Surveys have been carried out for birds (including song thrush) as part of preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

The implementation of the brownfield, parks, squares and amenity space, trees & scrub and species-rich grassland habitat action plans will provide the necessary habitat to attract this species. By 2012, in a total of 50 suitable locations, dense plantings of shrubs will be made to provide cover for nest building.

Related Olympic BAPs

Brownfield habitats
Parks, squares and amenity spaces
Trees and scrub
Species-rich grasslands

Other Relevant BAPs

L B Waltham Forest BAP
L B Tower Hamlets BAP
Lee Valley Regional Park Action Plan
London BAP

References

BTO 2008. *Focus on species Song Thrush* <http://www.bto.org>

JNCC, 2008. *Population Status of Birds in the UK - Red List - Species of High Conservation Concern*. <http://www.jncc.gov.uk/page-2905>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

London Natural History Society (LNHS), 2002, *The Breeding Birds of the London Area*.

Robinson, R.A., 2005, *BirdFacts: profiles of birds occurring in Britain & Ireland (v1.2, Jan 2008)*.

UKBP 2007, *UK Biodiversity Action Plan-UK List of Priority Species*. <http://www.ukbap.org.uk/UKPlans.aspx?ID=279>



Song thrush

Description

The European starling *Sturnus vulgaris* is a medium-sized bird (about 21 cm in length) with a pointed head, triangular wings and short tail. Wingspan is 22-26 cm. During the summer both male and female birds develop a metallic purple/green sheen to their dark speckled plumage. The light speckles become more prominent during the winter. Both sexes have reddish-brown legs. During the mating season the bill colour of both sexes changes from black to yellow.

Habitat

The starling is a lowland bird. Most spend their time in parks and gardens, although they do forage on agricultural land, amenity grasslands and other habitats, including marshes and foreshore of tidal rivers. They nest in holes in trees or buildings. The starling is gregarious. In winter large roosts of several thousand individuals can occur (with numbers swollen with wintering birds from the continent). Roosts are usually in woods or reedbeds, but man-made structures like buildings and bridges are also used.

Diet

The starling is omnivorous, taking leatherjackets, centipedes, spiders, moths, earthworms, berries, seeds, and fruits.

Biology & Reproduction

Starlings nest in holes, as separate pairs or in loose colonies. Birds from a colony will often forage together. The male builds a nest of grass and straw, which the female lines with feathers. Usually 4-7 eggs are laid in April/May. All the females within a colony will start to lay eggs within a few days of each other. Incubation is largely carried out by the female. The chicks hatch 12-13 days later and are fed by both parents. The young birds fledge after three weeks and continue to be fed by their parents for some time. Usually there is only a single brood, but occasionally two in the south.

National Distribution

The starling is widespread, occurring everywhere except for the highest parts of the Scottish highlands but is most abundant in the South. It is Britain's most common garden bird and can be seen all year round. The estimated number of UK starlings is 9.5 million all of which are residents and in their second year

are able to breed (Robinson 2005). The number of starlings in the UK increases in October with the arrival of birds from northern Europe.

London Distribution

During the 1970s the sight of large flocks of starlings in central London was common. Today numbers are down, but this species is still a common bird and breeds over most of the Greater London area. In recent years, there is evidence that the decline in numbers experienced in the country as a whole has been more pronounced in the capital (LNHS 2002).

Olympic Park Distribution

The Breeding Birds of the London Area indicates that the starling is a breeding species in the Olympic Park area. It breeds in all four Olympic host boroughs (LNHS 2002).

Legal Status

The starling and its nest are fully protected under the Wildlife and Countryside Act 1981 (as amended). In England the provision to control starlings under a general licence was removed from the Act in 2005 (but is still in place in Scotland and Wales).

Conservation Status

The starling is Red Listed by the JNCC (2008) as a species of high conservation concern. It is a UKBAP priority species (UKBP 2007) and listed under Priority Species and Species of Conservation Concern in the London BAP (LBP 2008).

Factors Causing Loss or Decline

The main causes of decline are changes in farming practices and the increase in use of farm chemicals which has reduced the availability of leatherjackets - the bird's main source of food. The domestic cat may have an effect on population numbers, particularly during the breeding season. (UKBP 2007).

Desired Outcome

The overall objective is for starlings to be regularly observed in the Olympic Park and to create conditions with the potential to attract a breeding population by 2014. This will be achieved by creating suitable terrestrial feeding and nesting habitats in the form of species-rich lawns and the provision of nest boxes and structures with nesting holes.

Action To-date

Surveys have been carried out for birds (including starling) as part of preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

The implementation of the Built environment, Brownfield, Parks, squares & amenity space, Trees & scrub and Species-rich grassland habitat action plans will provide the necessary habitat to attract and secure the future of this species. A total of 200 starling nest boxes will be installed on large trees, buildings and structures by 2014. A significant number of these nestboxes will be installed by 2012.

Related Olympic BAPs

Built environment
Brownfield habitats
Parks, squares and amenity spaces
Trees and scrub
Species-rich grasslands

Other Relevant BAPs

L B Waltham Forest BAP
L B Tower Hamlets BAP
Lee Valley Regional Park Action Plan
London BAP

References

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

London Natural History Society (LNHS), 2002, *The Breeding Birds of the London Area*.

Robinson, R.A., 2005, *BirdFacts: profiles of birds occurring in Britain & Ireland (v1.2, Jan 2008)*.

UKBP 2007, *UK Biodiversity Action Plan-UK List of Priority Species*. <http://www.ukbap.org.uk/UKPlans.aspx?ID=279>



3.16 Swift

Biodiversity Action Plan

Description

The swift *Apus apus* lands only to nest and breed with some staying on the wing for the first 2-3 years of their lives. They are small birds (16-17 cm in length) and dark in appearance with a pale throat patch. Their wings are long and pointed (wingspan is 40-44 cm) and their tail is short and forked.

Habitat

The swift is an aerial feeder. It nests on buildings and occasionally in old trees.

Diet

Swifts feed on small airborne invertebrates like flies, mosquitoes, midges, moths, flying ants, spiders and harvestmen.

Biology & Reproduction

The breeding season starts in early May when the birds arrive back from their African wintering grounds. Nests, which tend to be above 5m in height, are built under tiles or in holes in walls. They tend to reoccupy traditional nest sites every year. Swifts are gregarious and colonial nesters. Colony size depends on the availability of nest sites. The nest is made of dry grasses, straw and dead and green leaves stuck together by saliva. These birds are monogamous, with each bird staying faithful to its mate. One to three eggs are laid and incubated for up to 20 days by both parents. Both parents feed the young. Depending on the food supply, the young fledge 5 to 8 weeks after hatching. Once fledged, they do not return to the nest. Adult birds start to leave for Africa in early August while the young leave in September.

National Distribution

The swift is widespread across most of the UK, but absent from the extreme north and west. It is most common in the warmer and drier south and east where flying insects are more abundant. The total UK population of swifts is estimated to be about 100,000 pairs. Nationally there was an 18% decline in the breeding population during the 1990s.

London Distribution

The swift is widespread across London, with a suggestion that it may be increasing in inner and eastern London (LNHS 2002).

Olympic Park Distribution

The Breeding Birds of the London Area

indicates that the swift does occur in the Olympic Park area and breeds nearby in Hackney (LNHS 2002).

Legal Status

The swift and its nest are fully protected under the Wildlife and Countryside Act 1981 (as amended). It is included in Appendix II of the Bern Convention, which requires signatory nations to give strict protection to the species listed.

Conservation Status

The swift is listed as a Priority Species and Species of Conservation Concern in the London BAP (LBP 2008).

Factors Causing Loss or Decline

Modern buildings tend not to have holes for swifts to nest in and when older buildings are renovated it is usual for holes to be blocked. Therefore suitable nesting sites for swift are being lost. There is also concern about the general decline in insect abundance.

Desired Outcome

The overall objective is to create conditions which have the potential to attract a breeding population of swift in the Olympic Park by 2014. This will be achieved by creating wetland and terrestrial habitats that generate flying insects and by providing artificial nest sites.

Action To-date

Surveys have been carried out for birds (including swift) as part of preparation for the Environmental Statement and throughout Enabling Works.

Action & Targets

The implementation of all the terrestrial and wetland habitat action plans will generate the food for this species - flying insects. A total of 200 swift nesting boxes are to be erected on buildings and bridges by 2014. A significant number should be erected on bridges and permanent buildings by 2012. Boxes should be in groups, more than 5m above the ground and north facing (out of direct sunlight). There should be clear airspace in front of each box (London's Swifts 2008).

Related Olympic BAPs

Built environment
Brownfield habitats
Parks, squares and amenity spaces
Trees and scrub
Species-rich grasslands

Reedbed

Rivers

Ponds

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

London BAP

References

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplnfo/PriorityVerts01.08.xls>

London Natural History Society (LNHS), 2002, *The Breeding Birds of the London Area*.

London's Swifts, 2008. *London's Swifts* <http://www.londons-swifts.org.uk>

Robinson, R.A., 2005, *BirdFacts: profiles of birds occurring in Britain & Ireland (v1.2, Jan 2008)*.

UKBP 2007, *UK Biodiversity Action Plan-UK List of Priority Species*. <http://www.ukbap.org.uk/UKPlans.aspx?ID=279>



Below: Swift box (inset) installed behind hole in facade (indicated). Photographs courtesy of Edward Meyer/ London's Swifts



Introduction

This Species Action Plan deals with bats (Chiroptera) collectively because they all enjoy the same level of legal protection, their conservation is likely to be addressed collectively by bat specialists and many of the problems they face are similar. However it is important to note that a measure designed to benefit one species may not be applicable to all.

Description

Bats are highly adapted nocturnal mammals (the only ones to have evolved true flight). Their nocturnal habits mean they are most often seen only briefly at dusk and dawn. Many bats have adapted to roost in buildings. The complex ecological requirements of bats leave them highly sensitive to environmental changes. There are 17 species of bat in the UK. 12 of these have been recorded in Greater London, 8 breed in the capital (LBG 2004) and 5 species have been recorded from the Olympic Park, namely:

Serotine bat *Eptesicus serotinus*

Noctule bat *Nyctalus noctula*

Common pipistrelle *Pipistrellus pipistrellus*

Soprano pipistrelle *Pipistrellus pygmaeus*

Brown long-eared bat *Plecotus auritus*

Diet

British bats are insectivores. A single pipistrelle bat can eat 3000 midges in a night.

Distribution and Habitat

Daubenton's bat is widespread in London and feeds over water. Noctule bat is widespread in London but uncommon. It feeds over trees and woodland. The two pipistrelle species are widespread and common, being often seen in gardens, on woodland edge and near water. Brown long-eared bat is rarely recorded in central London, being normally associated with the outer suburbs. It is associated with landscapes with plenty of trees (LBG 2004)

Legal Status

Like all wild mammals, 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 (Natural Habitats & c.) Regulations, 1994 - the latter further

implements European legislation protecting bats. Bats are also protected from ill-treatment by the Wild Mammals (Protection) Act, 1996.

Conservation Status

Brown long-eared bat, noctule bat and soprano pipistrelle bat are UKBAP Priority Species (UKBP 2007). All the bats recorded from the Olympic Park site are listed under Priority Species and Species of Conservation Concern in the London BAP (LBP 2007).

Factors Causing Loss or Decline

Bats are amongst the most difficult of animals to study, consequently, there is a lack of information on their population dynamics and the relative impact of the factors believed to be causing their decline. A survey in London (Guest *et al* 2002), found that there has been a significant decline in the bat population of Greater London since the mid-1980s. Possible reasons for this include: loss of maternity roost sites in buildings or trees; loss of and disturbance to other roost sites; loss of feeding habitat; disturbance to commuting routes (e.g. loss of flight line features such as hedgerows).

Desired Outcome

The overall objective is to continue to have bats regularly recorded within the Olympic Park and to see an increase in numbers by 2014. This will be achieved by creating feeding habitat and roosting sites.

Action To-date

The ODA has safeguarded existing habitat and mature trees in areas where bats have been observed (i.e. Old Ford Nature Reserve and the Old River Lea). Regular surveys have been carried out for bats as part of preparation for the Environmental Statement and throughout the Enabling Works.

Action & Targets

The implementation of all the terrestrial and wetland habitat action plans will generate the food for this species - flying insects. The planting of lines of trees and shelter belts will create future roosting and commuting routes for bats. A total of 150 purpose-built robust and durable roosting boxes will be erected within the Olympic Park by 2014. A significant number of these should be erected by 2012. Locations for these boxes will include bridges and permanent buildings and structures. There is an

opportunity to create sculptures within the park which will serve as bat houses (for example see the Bat House Project 2007)

Each project team is expected to take into consideration the impact of lighting on bats, as part of the park-wide lighting strategy. See BCT/ILE for further information.

Related Olympic BAPs

Built environment

Brownfield habitats

Parks, squares and amenity spaces

Trees and scrub

Species-rich grasslands

Reedbed

Rivers

Ponds

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

London BAP

References

Bat House Project 2007. <http://www.bathouseproject.org/competition/>

Bat Conservation Trust/ Institute of Lighting Engineers, 2007. *Bats and Lighting in the UK*. Bats and the Built Environment Series: <http://www.ile.org.uk/uploads//File/Technical/BATS%20AND%20LIGHTING%20IN%20THE%20UK%20-%202007%20version.pdf>

Guest, P, Jones, K E and Tovey, J. 2002. *Bats in Greater London: unique evidence of a decline over 15 years*. *British Wildlife*, 14 (1).

London Bat Group (LBG), 2004, *Greater London Bat Action Plan*. <http://www.londonbats.org.uk/lbpsap.htm>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

UKBP 2007, *UK Biodiversity Action Plan- UK List of Priority Species*. <http://www.ukbap.org.uk/UKPlans.aspx?ID=279>

3.18 Water vole

Biodiversity Action Plan

Description

The European water vole *Arvicola terrestris* is a small dark coloured mammal. Adults reach between 120 and 235 mm in length. They are expert swimmers and divers and active both day and night. They are territorial, with the adults fighting for and marking their territory. On rivers and streams, territory lengths vary from 20-300m depending on overall population density, season, habitat quality and the sex of the animal. The territories of males are larger and generally overlap that of several females.

Habitat

The water vole favours wetlands with slow-moving water with a fairly steady water level. They prefer unshaded sites. Water voles excavate extensive burrow systems into the banks of waterways, setting nesting/sleeping chambers at various levels of the steepest parts of the river banks. The entrances for these chambers are usually located underwater to assure them a secure route for escape if danger threatens. Water voles can be found in the majority of British freshwater habitats, from marshland and small flushes to ponds, lakes, streams, canals, ditches and rivers. They may also occur, (though often at lower densities), within dry ditches, hedgerows and at the edges of saltmarsh (Strachan & Jefferies 1993).

Diet

This is a herbivorous mammal, feeding mainly on grasses and waterside vegetation. They are also known to consume fruits, twigs, bulbs and roots. They eat up to 80% of their body weight daily.

Biology & Reproduction

Water voles breed from spring to autumn. The gestation period lasts for 21 days on average. The female gives birth to a litter of eight each time.

National Distribution

In Britain, they are most common in the lowland areas of south and east England. They are absent from Ireland and rare in Scotland.

London Distribution

In Greater London water vole distribution is sparse with most records concentrated along the Thames estuary. The most significant populations can be found in the dykes in the marshes

at Rainham, Essex and Crayford, Kent. Other healthy populations occur on rivers such as the Ingrebourne, Beam, Crane, Colne, Frays and the Lee Valley (LWT 2008). There is a single record of water vole from the Stratford City attenuation pond, close to the Olympic Park.

Olympic Park Distribution

There are no records of water vole from within the Olympic Park.

Legal Status

Since 1998 it has been an offence to damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or to disturb them while they are using such a place. In April 2008 the water vole received an increased level of protection under the Wildlife and Countryside Act 1981 (Variation of Schedule 5) (England) Order 2008. The water vole is now protected against intentional killing, taking or injury, possession and sale.

Conservation Status

The water vole is listed in the London BAP and listed in the UK BAP as a Priority Species

Factors Causing Loss or Decline

Water voles are the fastest declining mammal in the UK (UKBP 2007). Reasons for this decline include the introduction of the American mink in the UK, which kills the water vole, loss and degradation of habitat and persecution - water vole are often mistaken for brown rats. (Strachan 1998)

Desired Outcome

The overall objective is to create suitable conditions within the Olympic Park, by 2014. Habitat connectivity for this species should be improved. This will allow any remnant populations in the area to expand and will also allow for the re-introduction of water vole (i.e. for the Olympic Park to become a suitable receptor site for this species).

Action To-date

None

Action & Targets

Water vole need undisturbed, soft river banks. The full implementation of all measures described in the River HAP and Reedbed HAP will create such conditions within the Olympic Park. The area should be monitored for American mink, which if found should

be controlled. Consideration will be given to introducing water vole once conditions are considered suitable.

Related Olympic BAPs

Reedbed

Rivers

Other Relevant BAPs

L B Waltham Forest BAP

L B Tower Hamlets BAP

Lee Valley Regional Park Action Plan

London BAP

References

LBAP, 2007, *London Biodiversity Action Plan – Priority Species and Species of Conservation Concern*. <http://www.lbp.org.uk/londonhabspp.html#watervole>

LB Waltham Forest BAP (*Water vole*).

<http://www.ukbap.org.uk/lbap.aspx?id=404>

London Biodiversity Partnership (LBP) 2007, *London Biodiversity Action Plan, Priority and Species of Conservation Concern*. <http://www.lbp.org.uk/downloads/PrioritySpplInfo/PriorityVerts01.08.xls>

Lee Valley Regional Park BAP. <http://www.ukbap.org.uk/lbap.aspx?id=375> London Wildlife Trust 2008. Water Vole Project. http://www.wildlondon.org.uk/projects_10036.php

Strachan, R. 1998. *Water vole conservation handbook*. English Nature, Environment Agency and the Wildlife Conservation Research Unit, Oxford.

Strachan, R. and Jefferies, D.J. 1993. *The water vole Arvicola terrestris in Britain 1989-90: Its distribution and changing status*. The Vincent Wildlife Trust: London.

UKBP 2007, *UK Biodiversity Action Plan - UK List of Priority Species*. <http://www.ukbap.org.uk/UKPlans.aspx?ID=279>



Water vole

Description

The Eurasian otter *Lutra lutra* is between 55 and 110 cm in length and weighs 7-10kg. Males are heavier than females. They have a long slim brown body and powerful jaws. They are semi-aquatic mammals with webbed toes, a powerful rudder-like tail and the ability to close their nostrils and ears while underwater. They are solitary and secretive, normally sleeping during the day in a holt (a den in thick vegetation, a burrow excavated by other animals or a natural hole in the river bank). They live at low population densities in part due to habitat requirements and the linear nature of their territories: 40 km in the case of a mature male and 20 km in the case of a mature female (Jeffries 1989). Otters mark their home ranges by droppings (spraints) and anal jelly secretions on prominent landmarks such as fallen trees or ledges under bridges. Female territories often overlap while in males overlapping rarely happens.

Habitat

The otter lives on river banks, around lakes and occasionally on the coast. Otters spend most of their time in and around water.

Diet

The diet is mainly fish (about 70%) but small birds, mammals and frogs may also be taken.

Biology & Reproduction

There is no clearly defined breeding season. Gestation lasts for about 63 days and each litter averages 3 cubs, which remain inside the holt for about 2 weeks. Cubs are weaned after 3-4 months and reach sexual maturity at 3 years old.

National Distribution

Healthy populations remain in Wales, south-west England and much of Scotland. There is also a significant population of otters in Northern Ireland (UKBP 2007). Recent surveys are indicating that otter numbers are increasing and populations are spreading south and east as water quality improves and channelised rivers are re-profiled in order to soften their banks.

London Distribution

The otter has returned to London but is still rare. Otters are known to live in the Upper Roding and the River Lea.

Olympic Park Distribution

A single otter was found dead in Limehouse in September 2006. It is believed to have travelled down the River Lea to the Thames via the Olympic Park site (Law 2006).

Legal Status

The otter and its habitat is strictly protected under the Wildlife & Countryside Act (as amended) 1981 and the Conservation (Natural Habitats, etc) Regulations 1994. It is also listed in Appendix II of the Bern Convention, which prohibits capture, killing and destruction of its breeding sites. The Eurasian otter is also listed in Appendix I of CITES, an agreement to prevent international trade.

Conservation Status

The otter is listed in the 2000 IUCN Red List as Globally Threatened and in the UKBAP and London BAP as a Priority Species

Factors Causing Loss or Decline

Once common and widespread in the UK (Stephens 1957), otter populations underwent a serious decline during the 1960s and 1970s. The collapse is thought to have been triggered by pollution, reduction in fish stocks, hunting and the loss and degradation of suitable habitat. The decline appears now to have halted (UK BAP) and otters are known to be re-colonising former habitats.

Desired Outcome

The overall objective is to make the Olympic Park site attractive to, and suitable for, the otter, so that this animal becomes a regular visitor and signs are found during regular surveys.

Action To-date

None

Action & Targets

The full implementation of the River & Streams, Wet Woodland and Reedbed Habitat Action Plans will create the necessary conditions to make the Olympic Park more attractive to otters. Two artificial otter holts will be constructed in undergrowth close to the River Lea in the North Park.

Related Olympic BAPs

Reedbed
Rivers
Wet woodland

Other Relevant BAPs

L B Waltham Forest BAP
L B Tower Hamlets BAP
Lee Valley Regional Park Action Plan
London BAP

References

- Jeffries, D.J. 1989, *The changing otter population of Britain 1700-1989*. Biological Journal of the Linnean Society, 38, 61-69.
- Law, P. 2006, *London's first wild Otter found*. <http://www.thisislocalondon.co.uk/display.var.946018.0.0.php>
- Lee Valley Regional Park Action Plan (Otter)*. <http://www.ukbap.org.uk/lbap.aspx?id=375>
- London BAP, 2007, *London Biodiversity Action Plan – Priority Species (Otter)* <http://www.lbp.org.uk/downloads/PriorityVertebrates/Otter.pdf>
- Stephens, M.N., 1957, *The Natural History of the Otter*. Universities Federation for Animal Welfare, London, England.
- UKBP, 2007, *UK Biodiversity Action Plan – UK List of Priority Species (Otter)* <http://www.ukbap.org.uk/UKPlans.aspx?ID=428>
- Wayre, P. 1979, *The private life of the otter*. Book Club Associates, London.



Otter

4.1 Management & Monitoring

Management

The London Development Agency, which is responsible for the legacy park in the interim, is preparing a business plan and governance structure for the legacy Olympic Park. Consideration is being given to how governance can maximise private and public investment for the regeneration of the area and stewardship of the permanent assets being created. Through consultation, in particular with the Lee Valley Regional Park Authority, which is a significant land owner, a governance structure is being developed for the Park and this will be considered by the key partners by the end of 2008. Decisions on the governance structure as well as the management and maintenance of the legacy parklands will depend on the detail of the legacy proposals for the parklands put forward in the Legacy Masterplan Framework and associated business plan. Only then will roles, responsibilities and funding arrangements be established. The ODA Planning Decisions Team will be updated on management and maintenance arrangements for permanent parklands in 2009.

Planning condition OD.0.28 requires that the ODA prepares a management plan for any retained or created habitats within the Olympic Park. This should be a 10 year management plan. The park will be constructed and planted during the period 2008-2011. During this phase, emphasis will be on ensuring that planting, seeding and installations are undertaken according to the Parkland and Public Realm design and the requirements of the BAP. Any failures of planting and seeding during this period will be made good by contractors as a requirement of each contract.

The 10 year management plan will be prepared according to guidance provided by CABE Space (see Guide to Producing Park and Open Space Management Plans (<http://www.cabe.org.uk/AssetLibrary/2109.pdf>)).

The main purpose of both plans will be to agree aims, objectives and priorities. The management plans will be important to direct work programmes, set budgets, to communicate these considerations both internally and externally and to describe how the management and condition of the park

will be monitored.

Standards for the management of the Olympic Park will follow the Green Flag scheme, which requires that parks are safe, secure, well maintained, clean, sustainable, take account of conservation and heritage, involve the community and are well promoted.

The management of the Olympic Park will also be related to the Olympic Park BAP, to ensure that all the HAPs and SAPs are conscientiously implemented.

The management plan will contain information on the following:

- Policy background
- Site description
- Vision
- Analysis and assessment
- Aims and objectives
- Work plans
- Finance and resources
- Monitoring and review

The long term development of the various habitats described in this BAP will require patient, careful and sophisticated management along the lines of that developed by the managers of nature reserves. For example grassland management will involve a number of cutting regimes to allow a mosaic of grassland types to be created. Some areas will be cut frequently through the growing season to maintain a short sward, whilst other areas will be cut in late summer or autumn after wild flowers have set seed. In some locations cuttings will need to be removed and in other marginal areas grass will be left uncut through the winter (as required by the brown banded carder bee SAP for example). Invasive alien plants pose a threat to waterways and wetlands and managers will need to remove these as they recolonise and before they become re-established. Reedbeds will require occasional cutting. In the long term, wetlands may require de-silting. Tree groups and young woodlands will need to be kept free of competing vegetation until established. Later thinning or coppicing of woodlands may be required. Installations to attract wildlife (e.g. nest boxes) will need to be maintained. For the purposes of preparing a management plan the park will be divided into compartments, with aims, objectives and work plans

Biodiversity Action Plan

clearly set out for each. The BAP will need to be reviewed following legacy transformation to ensure that it takes account of the emerging Legacy Masterplan Framework.

Monitoring

In order to measure the effectiveness of the BAP it is essential that regular monitoring is undertaken. This is important to ensure that objectives are met, but monitoring will also provide valuable feedback, allowing managers to fine tune their efforts to establish and improve habitats and help species of conservation concern to thrive. The UKBAP Steering Group has indicated that BAP targets should be SMART (i.e. Specific, Measurable, Achievable, Relevant and Time-bound) and monitoring should be devised with this in mind. During construction, monitoring will be undertaken by ecologists working for the various construction contractors and an independent Environment & Sustainability Monitoring Service, all under the direction and supervision of the ODA's Delivery Partner. Survey information will be linked to the Olympic Park Geographical Information System through a dedicated central data warehouse. Monitoring will be continued by park managers following the construction and establishment phase. Detailed specifications for the programmes of monitoring will be included in the 10 year management plan.

Olympic Delivery Authority
One Churchill Place,
Canary Wharf,
London, E14 5LN
Reception 0203 2012 000
Email enquiries@london2012.com
www.london2012.com



**LOTTERY
FUNDED**

© 2008 Olympic Delivery Authority.

The official Emblem of the London Organising Committee of the Olympic Games and Paralympic Games Ltd is protected by copyright. © London Organising Committee of the Olympic Games and Paralympic Games Ltd 2007. All rights reserved.



department for
**culture, media
and sport**

The Olympic Delivery Authority is funded by the National Lottery through the Olympic Lottery Distributor, the Department for Culture, Media and Sport, the Mayor of London and the London Development Agency.

Published February 2009. Printed on recycled paper.

MAYOR OF LONDON

**LONDON
DEVELOPMENT
AGENCY**