

# All of a Buzz Scotland

## Identifying Open Mosaic Habitats outside of the Central Scotland Green Network area



Buglife – The Invertebrate Conservation Trust  
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## SUMMARY

This project assessed 274 sites 'derelict' sites on the Scottish Vacant and Derelict Land Register that were located outside of the Central Scotland Green Network area. 82 sites were identified for ground-truthing due to having features indicative of Open Mosaic Habitats. An excel spreadsheet was produced containing the details of all sites assessed, together with notes on the features found on each site and whether they were selected for ground truthing. Boundaries of each site identified for ground-truthing were digitised and made available in an ArcGIS Shapefile.

The outputs of this project will be used to safeguard important sites and ensure that brownfield sites are taken into account in development plans. In addition it will lead to improved management of open space in our cities and towns, leading to the maximisation of our urban biodiversity.

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## 1 INTRODUCTION

The rich industrial heritage of Scotland has resulted in over 10,000 hectares of land being listed as vacant or derelict. These brownfield sites can be incredibly important for UK biodiversity, often supporting nationally important populations of rare and endangered invertebrates, alongside other wildlife such as birds, reptiles, plants and lichens. With the loss of natural habitats in the wider countryside through agricultural intensification and development, wild areas within the urban environment have become crucial to the survival of many increasingly threatened species in the UK. As a result Open Mosaic Habitat on Previously Developed Land (OMHPDL/OMH) has been recently included as a UKBAP habitat.

The National Planning Framework aims to bring this land back into productive use for housing, for economic purposes and to create attractive environments however there is potential for this vision to conflict with the conservation of OMHPDL. This project identified the sites where this priority habitat was thought to occur. This will enable a more strategic re-use of derelict sites by planning authorities and others, while also delivering conservation action for a UKBAP priority habitat.

## 2 AIMS

- To assess sites listed as 'derelict' on the Scottish Vacant and Derelict Land Register for their potential to satisfy the criteria for the UKBAP priority habitat: Open Mosaic Habitats on Previously Developed Land'.
- To select sites for subsequent ground-truthing.

## 3 METHODS

This project assessed 274 sites listed as 'derelict' on the Scottish Vacant and Derelict Land Register 2009 for their potential to qualify as the UKBAP habitat 'Open Mosaic Habitats on Previously Developed Land'.

Riding, et al. (2010) lists the criteria to be used to identify OMHPDL:

Criterion 1	The site is at least 0.25 ha in size
Criterion 2	Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.
Criterion 3	The site contains some vegetation. This will comprise early successional communities consisting mainly of stress tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of a) annuals or b) mosses/liverworts or c) lichens or d) ruderals or e) inundation species or f) open grassland or g) flower-rich grassland or h) heathland.
Criterion 4	The site contains unvegetated, loose bare substrate and pools may be present.
Criterion 5	The site shows spatial variation, forming a mosaic of one or more of the early successional communities plus bare substrate, within 0.25 ha.

The large number of potential sites present in the study area makes site visits impractical. A desk study was therefore undertaken in accordance with the Remote

Assessment Approach for OMH Priority Habitat Sites (Riding, et al., 2010) to identify sites that should be visited for ground-truthing.

As a first step, derelict sites on the Scottish Vacant and Derelict Land Register 2009 were excluded from consideration if they were under 0.25 hectares in area. The remaining derelict sites were plotted on Google Earth and the aerial photography was examined in relation to each of the OMH Priority Habitat definition criteria. Sites were excluded from further consideration if they were (i) recently developed; (ii) landscaped; (iii) lacked any vegetation; (iv) were completely covered with late successional vegetation such as woodland, scrub or homogenous grassland or (v) were under agricultural use. The apparent absence of a mosaic was not used as an excluding factor, since the mosaic cannot necessarily be seen from aerial photography. Details of the decision making process, plus any notes on the sites were stored in a Microsoft Excel spreadsheet.

Sites which satisfied the OMH criteria were allocated for ground-truthing and their boundaries digitised using ArcGIS 10.

#### 4 RESULTS

82 sites were identified that required ground-truthing to establish whether they qualified as sites with Open Mosaic Habitats on Previously Developed Land. The majority of sites selected for ground-truthing were in Highland (33 sites). In contrast, Moray and the Orkney Islands had no sites that qualified for ground-truthing (Table 1 and 2).

Local Authority	Yes	No	Unknown	Total
Aberdeen City	1	10	-	11
Aberdeenshire	2	9	-	11
Angus	9	14	1	24
Argyll & Bute	1	3	-	4
Dumfries & Galloway	10	9	2	21
Dundee City	2	8	-	10
Highland	33	54	3	90
Moray	-	5	-	5
Orkney Islands	-	3	-	3
Perth & Kinross	5	25	1	31
Scottish Borders	9	50	-	59
Shetland Islands	2	2	1	5
<b>Total</b>	<b>74</b>	<b>192</b>	<b>8</b>	<b>274</b>

Table 1: Sites selected for ground-truthing by Local Authority area (sorted alphabetically).

Local Authority	Yes	No	Unknown	Total
Highland	33	54	3	90
Dumfries & Galloway	10	9	2	21
Angus	9	14	1	24
Scottish Borders	9	50	-	59
Perth & Kinross	5	25	1	31
Aberdeenshire	2	9	-	11
Dundee City	2	8	-	10
Shetland Islands	2	2	1	5

Aberdeen City	1	10	-	11
Argyll & Bute	1	3	-	4
Moray	-	5	-	5
Orkney Islands	-	3	-	3
<b>Total</b>	<b>74</b>	<b>192</b>	<b>8</b>	<b>274</b>

Table 2: Sites selected for ground-truthing by Local Authority area (sorted by number selected).

In total over 1,215 hectares of derelict land potentially satisfies the criteria for Open Mosaic Habitats on Previously Developed Land. The majority of this land, nearly 87%, is in Highland and Dumfries and Galloway (Table 3).

<b>Local Authority</b>	<b>Area (Ha)</b>
Highland	856.58
Dumfries & Galloway	199.86
Angus	72.82
East Lothian	48.00
East Dunbartonshire	35.83
Stirling	34.44
South Ayrshire	28.41
Aberdeenshire	24.01
Dundee City	23.49
East Renfrewshire	22.07
Scottish Borders	18.88
Clackmannanshire	17.70
Perth & Kinross	10.07
Shetland Islands	5.13
Inverclyde	4.27
Argyll & Bute	3.12
Aberdeen City	1.79
Moray	-
Orkney Islands	-
<b>Total</b>	<b>1215.75</b>

Table 3: Area of sites selected for ground-truthing.

Of the 192 sites that were not considered to satisfy the criteria for OMHPDL the main reason was that late successional vegetation was present on the site (Figure 1). It is possible that the sites might have satisfied the criteria for OMHPDL in the past however the processes of succession mean that these sites no longer qualify. A number of sites appeared to be in agricultural use while others had been landscaped or recently developed and were therefore not eligible for listing as a UKBAP priority habitat. 46 sites were excluded from ground-truthing due to a lack of any vegetation on the site. It should be noted that some of the aerial photography used to assess these sites was over 12 years old and that some of the sites that lacked vegetation in this desk study may now have early successional vegetation and may therefore qualify as OMHPDL.

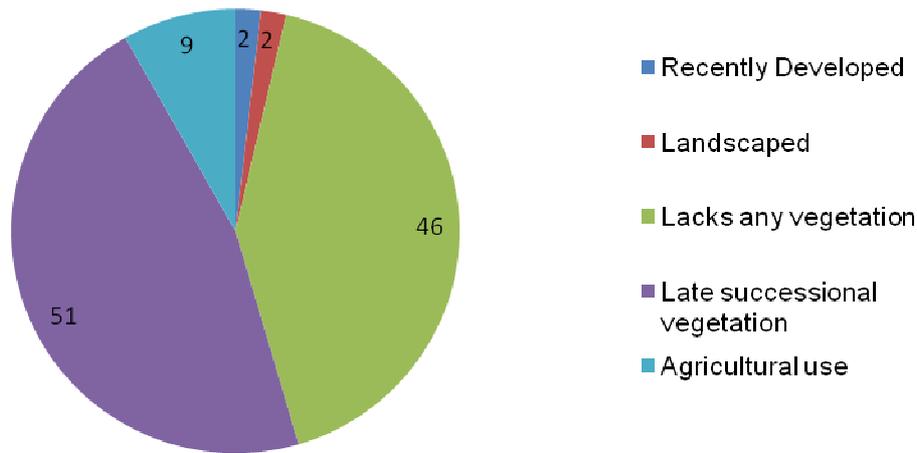


Figure 1: Reasons for excluding sites from ground-truthing (NB. some sites may be represented more than once).

## 5 DISCUSSION

This project has helped to identify land on the Vacant and Derelict Land register which is potentially of importance for biodiversity conservation. If properly managed, Brownfield sites with high value for biodiversity can not only deliver suitable habitat for many species, but can also transform themselves into wild city spaces full of wildflowers that will attract pollinators and other animals. Such sites are an important part of the habitat network, providing corridors for species to disperse around and through urban areas. Brownfield sites can also provide valuable open spaces for local people and are often seen as being the only truly ‘wild’ city spaces remaining for the public to enjoy – the ‘unofficial countryside’. There is great potential to make many of these sites more accessible, safe and enjoyable through imaginative planning and positive management. In many built-up areas, brownfield sites may be the sole natural greenspace available. If properly managed, they could help significantly to reduce the number of areas deficient in accessible open space, and contribute to the delivery of urban green networks. Improving access to green spaces will bring attendant quality of life and health benefits to residents, as well as economic benefits.

The importance of brownfield wildlife in urban areas must be recognised and valued if it is to be protected and managed as a vital component of the townscape. Its long-term survival will depend on the support of the local people who use and value their local environment. Developing opportunities for people to see, enjoy and learn about brownfield invertebrates will help increase awareness and understanding of the value of biodiversity in urban areas.

The outputs of this project provide the foundations for ensuring that sites of importance for biodiversity conservation are identified and protected. This study revealed that around 30% of the sites listed as derelict on the SVDL register in the study area have potential to satisfy the criteria for the UKBAP Priority Habitat ‘Open Mosaic Habitats on Previously Developed Land’. The next step is to ground-truth the results of the desk study by visiting the sites identified as of potential interest and put in place management or protection for the sites that survive this ground-truthing process.

It should be noted that this study only assessed sites listed as 'derelict' on the SVDL register. A detailed study of 'brownfield' sites in Falkirk (Bairner and Macadam, in prep.) noted that many sites listed as 'vacant' on the register may also qualify as OMHPDL. Consideration should be given to undertaking a similar desk study on the 382 vacant sites on the register to assess them for their fit with the OMHPDL site selection criteria.

This data set will provide a valuable tool for Local Authority planners and ecologists when dealing with planning application on OMH sites. By knowing which sites potentially qualify as UKBAP priority habitat the Local Authority can ensure that developers conduct adequate ecological surveys as part of the Environmental Impact Assessment procedure.

Subsequent phases of this project will provide advice and information on how to survey a brownfield site for its invertebrate interest, including guidance on the key species to look out for, the level of surveying necessary and the times of year it should be carried out. This could be delivered through a best practice workshop and written guidance.

Tools for mitigation – including green and brown roofs, and off-site habitat creation – will also be identified in a future phase and best practice guidance produced. Advice and best practice guidance on the management of invertebrate habitats will also be produced and disseminated to land owners, managers, planners and developers. The project will promote more natural habitats, native plant species, and a 'less tidy' approach to land management both within developments and in the wider urban landscape. The aim will be to enhance existing habitats for wildlife within the urban environment.

It is important to understand that the OMHPDL elements of a site are transitory. Without active management succession will proceed and the site will lose its value as a UKBAP priority habitat. This is not necessarily a problem as new 'brownfield' sites are always being created. However this means that the assessment process started in this study should be revisited every 10 years.

The transitory nature of these sites means that the extent of this habitat will fluctuate as a result of succession, redevelopment and dereliction. The species that inhabit these sites will colonise and retreat in response to the availability of the habitat in each local authority area however it is important that a series of 'stepping stones' are provided as refugia for these species. These 'stepping stone' sites should be managed to retain their OMHPDL habitats to provide stability for the species that depend upon these habitats.

The successful completion of this study has provided a solid start to what will be a pioneering project in Scotland. The information gathered will help the regeneration sector in a number of ways. An expansion of current knowledge of key species, new data on important habitat factors, dispersal ability and minimum viable areas for population will create a better understanding of how to:

- survey brownfield sites in Scotland for their key species and groups
- mitigate against the impacts of site redevelopment
- create new habitat and incorporate existing habitat into developments
- improve existing management regimes to benefit wildlife
- deliver targets for UKBAP priority species
- develop local biodiversity action plans for OMHPDL

## **6 REFERENCES**

Bairner, S.Z. and Macadam, C.R. (in prep.). Brownfield biodiversity in Falkirk. Forth Naturalist and Historian.

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