

Bruntsfield Links Golf Course
Bird Survey and Conservation Recommendations



Chris Bailey Advisory Manager
RSPB Scotland

Contents page

Summary	3
1. Introduction	4
2. Methods	4
2.1 <i>Study site</i>	4
2.2 <i>Bird survey methods</i>	4
3. Results	5
Species	6
3.1 <i>Grassland Birds</i>	9
3.2 <i>Woodland Birds</i>	9
4. Discussion and Recommendations for Management	15
4.1 <i>Grassland</i>	15
4.2 <i>Woodland</i>	14
4.2.1 <i>Woodland Structure</i>	14
4.2.2 <i>Deadwood</i>	15
4.2.3 <i>Ivy</i>	15
4.2.4 <i>Hedgerows</i>	16
4.3 <i>Open Water</i>	16
4.4 <i>Nestboxes</i>	18
4.5 <i>Wildlife Interpretation</i>	17
4.6 <i>“Birds and golf courses” publication</i>	20
5. Acknowledgements	20
6. References and sources of information	21
7. Appendix 1 : Bird Species List	22

Summary

In the spring of 2014, RSPB Scotland carried out a series of bird surveys of Bruntsfield Links Golf Course following an initial approach from member Geoff Ball to Stuart Housden Director for RSPB Scotland.

In total 46 species were recorded over the four visits with 31 confirmed or suspected of breeding on site. 19 of the species recorded are of high conservation concern. Four additional species were recorded in a later autumn visit.

The majority of the confirmed or suspected of breeding species were typical of a parkland course containing a mix of woodland, wetlands and grassland habitats. The most characteristic species of grassland were starling, song thrush and mistle thrush all of which used the woodland for nesting. The wooded areas including the quarry were important for warbler species including Willow Warbler, Chiffchaff and Blackcap.

Within the constraints of providing a prime golfing environment, Bruntsfield Links in general, is managed sympathetically for birds and other wildlife and many actions currently undertaken will enhance the species and habitats within the golf course and its immediate surroundings. Some additional suggestions are made in this report for further enhancing the golf course for key species and habitats. These include:

- 1) Promotion of more flower-rich habitats within the rough grassland. Flower-rich habitats will provide more nectar sources for bumblebees, butterflies and moths and more insect food for birds.
- 2) Restructuring some of the woodland on the edge of the golf course will increase the shrub and field layer, amount of natural regeneration and deadwood.
- 3) Monitoring of deer population to assess the effect on the woodland structure.
- 4) Installation of starling and kestrel nestboxes in the woodland blocks and house sparrow nestboxes around the clubhouse to increase nesting possibilities for these species of conservation concern.

1. Introduction

The range of natural and semi-natural habitats often associated with golf courses can be very important for wildlife with those in urban settings often providing important sanctuaries for species which would have otherwise disappeared from the vicinity. If managed appropriately, golf courses provide important breeding and foraging habitats for many bird species, as well as supporting plants and invertebrates. The roughs and out-of-play areas are of particular importance to wildlife, as they are often managed less intensively and therefore more sympathetically towards biodiversity. Wildlife populations, in particular, can be enhanced through the simple but effective management of the roughs and out-of-play areas.

For a large number of courses throughout the UK, history has shown that golf and wildlife can thrive together in these special places because of the good working relationships that have developed between the clubs and environmentalists.

Golf courses, therefore, provide not just a quality playing experience, but play an important role in maintaining good quality habitat for key bird species, several of which are scarce or declining nationally across the wider and often more intensively managed countryside.

2. Methods

2.1 Study site

Bruntsfield Links Golf Course was established in 1898 at Barton 3 miles west of the city of Edinburgh. This parkland course which was originally laid out by Willie Park Junior has been reconstructed on several occasions. The course occupies an area of approximately 60ha. Key habitats found on the course include grassland with sporadic large specimen trees, small copses of mixed woodland and wetland. The largest wetland feature is an ex quarry which is cited in the centre of the course.

The mosaic of different habitats at Bruntsfield Links provides important feeding and breeding areas for a diversity of wildlife. A number of locally scarce or nationally declining bird species have been found on the course. Many of these occur in greater numbers than in the surrounding residential areas.

2.2 Bird survey methods

The golf course was surveyed four times between April and June 2014 under calm, dry conditions. The area was systematically walked-over between first light and 09h30 following a route that allowed full coverage of the area in terms of locating birds by sight or sound. The species, number, sex, and activity of each bird were plotted on a field map. At the end of the four visits individual species maps were generated with territory numbers estimated using standard common bird census methodologies (Marchant et.al 1990).

Species were then mapped using RSPB's GIS systems with separate maps produced for the main golf course and quarry.

3. Results

The generally conspicuous behaviour of the birds at this time of year allow for an accurate assessment of the numbers and varieties of birds present. The majority of birds were detected by call, song, or display-flight, notably of territorial males. Territory numbers were only estimated for species which appeared on more than one occasion following standard Common Bird Census methodologies.

In total, 46 species were recorded over the four visits with 30 confirmed or suspected of breeding on site. 19 of the 46 species recorded are of conservation concern. Four additional species were found on a subsequent autumn visit (heron, fieldfare, redwing and woodcock). Table 1 list the species recorded that are considered to be breeding at Bruntsfield Links. Table 2 lists the other non breeding species recorded.

Further details and comments together with the non-breeding species observed, are given in Appendix 1.

Figures 1 and 2 show the distribution and abundance of birds recorded on the wider golf course and quarry areas during the surveys.

Species in the tables below are colour coded:

Red listed species are the most at risk, having undergone serious decline over the last 25 years, and need urgent action to safeguard their status

Amber listed species are at moderate risk and require some action to arrest declines or enhance low populations

Green listed species are considered to be under no present threat, although some may have declined locally.

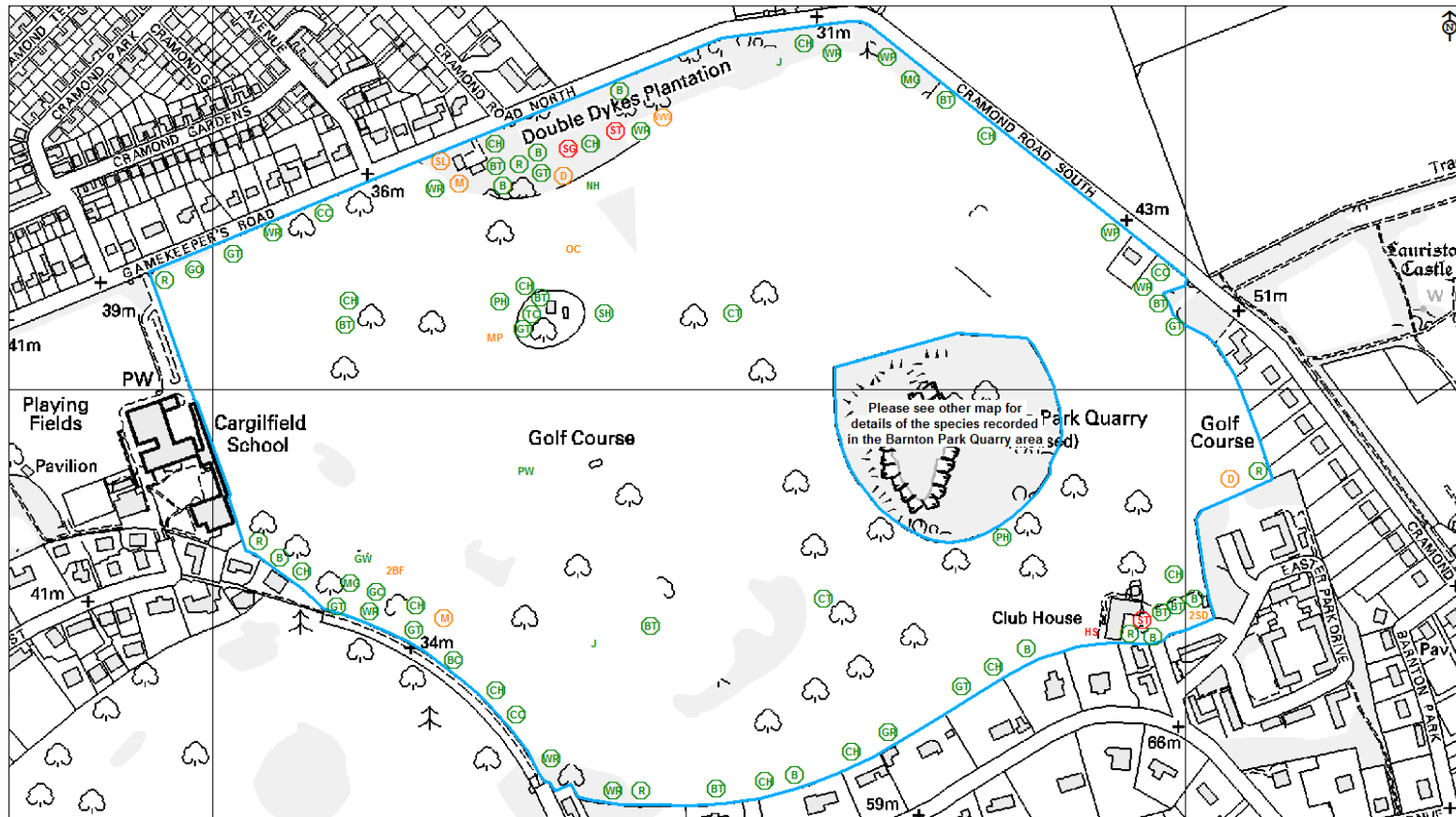
Table 2 Other species recorded during the visits but not considered breeding

Bullfinch	Collared Dove
Feral Pigeon	Garden Warbler
Grey Wagtail	Greater Black-backed gull
Herring Gull	House Martin
House Sparrow	Kestrel
Lesser Black-backed gull	Long-tailed tit
Meadow Pipit	Oystercatcher

Four species were subsequently recorded during a November visit these were fieldfare, grey heron, redwing and woodcock.

Table 1. Breeding birds of Bruntsfield Links Golf Course. (Red coloured species are those of high conservation concern, green listed species being of lower conservation concern.

Species	Inferred/confirmed breeding population (pairs)
Blackbird	9
Blackcap	2
Blue Tit	11
Buzzard	1
Carrion Crow	1
Chaffinch	15
Chiffchaff	4
Coal Tit	1
Collared Dove	1
Dunnock	3
Goldcrest	1
Goldfinch	2
Great Spotted Woodpecker	1
Great Tit	9
Greenfinch	1
Jackdaw	1
Magpie	2
Mallard	2
Mistle Thrush	2
Pheasant	2
Pied Wagtail	1
Robin	5
Song Thrush	3
Sparrowhawk	1
Starling	2
Swallow	1
Tree Creeper	1
Whitethroat	1
Woodpigeon	6
Willow Warbler	1
Wren	11



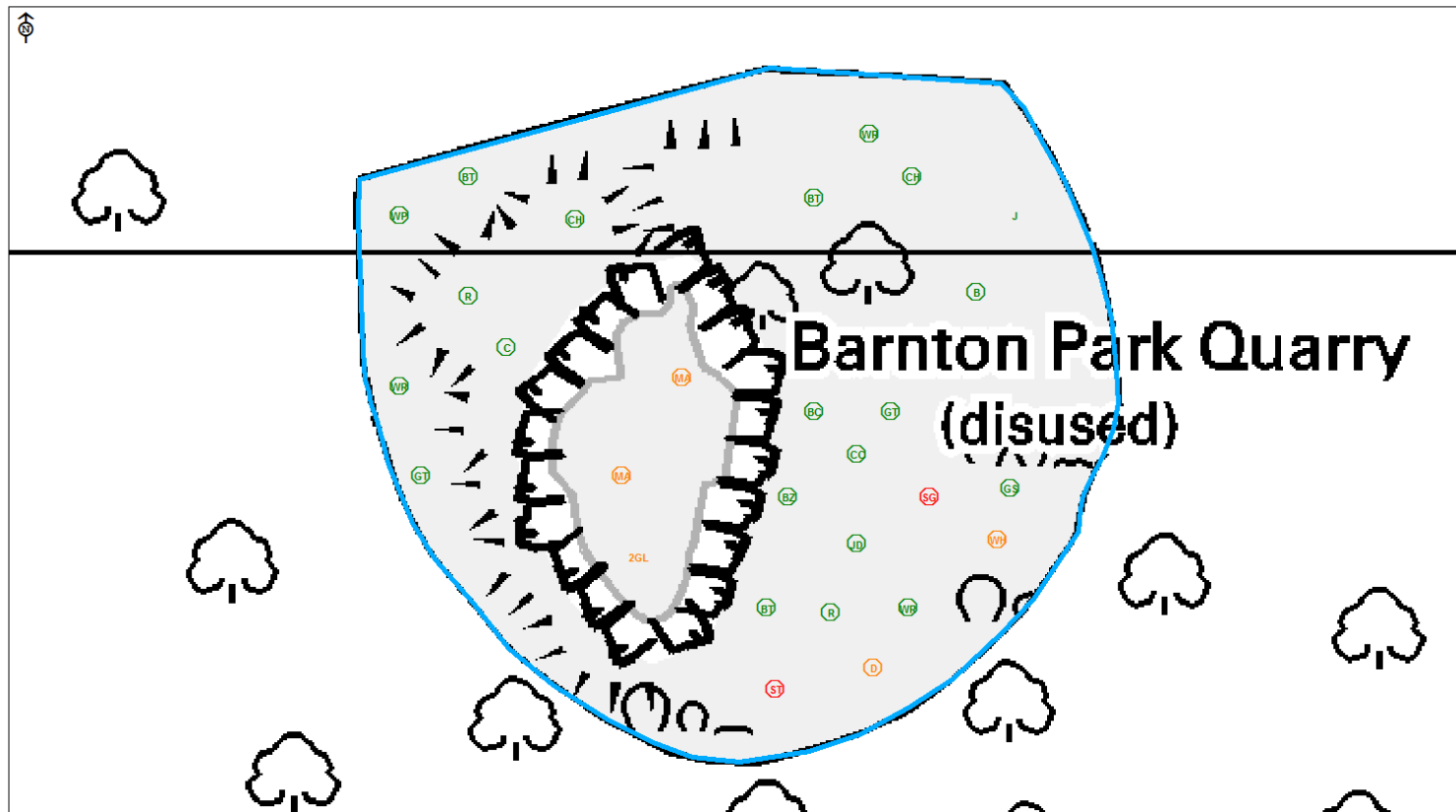
Bruntsfield Links Golf Course Bird Survey 2014 - Key Results

Species Key			
B	blackbird	GW	garden warbler
BC	blackcap	GC	goldcrest
BT	blue tit	GO	goldfinch
BF	bullfinch	GT	great tit
CH	chaffinch	GR	greenfinch
CC	chiffchaff	HS	house sparrow
CT	coal tit	J	jay
D	duncock	MG	magpie
MP	meadow pipit	M	mistle thrush
NH	nuthatch	OC	oystercatcher
PH	pheasant	SH	sparrowhawk
PW	pie wagtail	SG	starling
R	robin	SD	stock dove
ST	song thrush	SL	swallow
TC	tree creeper	WR	wren
WW	willow warbler		
WP	woodpigeon		

Symbols Key	
RED	Species of high conservation concern
AMBER	Species of medium conservation concern
GREEN	Species of lower conservation concern
Circles denote territories	
Oystercatcher was seen flying over	

Scale 1:3749; central grid reference: NT195759
 Mapping data licenced from Ordnance Survey with the permission of the Controller of Her Majesty's Stationary Office. © Crown copyright 2014. All rights reserved. Licence number 100021787.
 Registered charity England & Wales no 207076, Scotland no SCO37654
 LOTH/14/01

Figure 1 Bird Results from Main Course excluding quarry



Bruntsfield Links Golf Course Bird Survey 2014 - Key Results

Species Key			
B	blackbird	CC	chiffchaff
BC	blackcap	D	dunnock
BT	blue tit	GS	great spotted woodpecker
BZ	buzzard	GT	great tit
C	carrion crow		
CH	chaffinch		
GL	grey wagtail	JD	jackdaw
J	jay	MA	mallard
R	robin		
SG	song thrush	ST	starling
WH	whitethroat	WP	woodpigeon
WR	wren		

Symbols Key	
RED	Species of high conservation concern
AMBER	Species of medium conservation concern
GREEN	Species of lower conservation concern
Circles denote territories	

Scale 1:1125; central grid reference: NT195759

Mapping data licenced from Ordnance Survey with the permission of the Controller of Her Majesty's Stationery Office. © Crown copyright 2014. All rights reserved. Licence number 100021787.

Registered charity England & Wales no 207076, Scotland no SC037654
LOTH/14/01

Figure 2 Bird results from Quarry

3.1 Grassland Species

Bruntsfield Links golf course is dominated by grasslands the majority of which are mown. Relatively small areas of semi-rough or rough grassland were found principally around the edge of the course and next to woodland. The mixture of sward heights provides ideal feeding conditions for song thrush, mistle thrush and starling which were regularly recorded feeding on grassland probing for invertebrates such as earthworms. These birds will nest in trees so were often recorded in the woodland as well. Figure 3 shows the recorded territories of song thrush and mistle thrush.



Song Thrush (Picture: Andy Hay: rspb images)

Identification: A stocky thrush with a relatively short tail, medium brown underparts and small black spots all over buff breast and flanks. Song thrushes are territorial during the breeding season often maintaining these territories throughout the winter period. Their song comprises a series of short phrases each repeated 3-5 times.

Habitat: Often found in habitats containing trees and bushes, gardens, parks feeding under trees and bushes. Song thrush feed on snails, earthworms, caterpillars and other insects. In the autumn fruit and berries supplement their regular diet.

Conservation: Results produced from surveys produced by the British Trust for Ornithology (BBS 2014) show a rapid decline in song thrush abundance which began in the mid 1970s. In Scotland this decrease started later than in England. This species is of highest conservation concern.



Mistle Thrush (Picture: Richard Brooks: rspb images)

Identification: Larger than a song thrush with longer wings and tail this species has grey-brown upperparts, large bold spots on a whitish breast. On the ground it is very upright feeding in the open, well away from cover. Mistle thrush sings from the tops of trees and other exposed perches. Its call is a loud rattling and chattering given when the bird is alarmed.

Habitat: Require open woodland and open places such as golf courses where there are tall trees for nesting and for song posts, and also areas of short grass for feeding. Mistle thrushes have a similar diet to song thrush feeding on insects, earthworms and other invertebrate.

Conservation: Populations have declined significantly since the mid 1970s. The species was moved from the green to the amber list because of population decline, and BBS data show that this decline is continuing in Scotland.



Starling (picture rspb images)

Identification: Smaller than a blackbird. Stocky bird with pointy bill which is yellow in the breeding season. Feathers are blackish and strongly tinged with a green blue sheen. Both sexes sing throughout the year with song consisting of harsh and rattling notes.

Habitat: Requires open grassland to feed probing for crane-fly larvae (leatherjackets) and other invertebrates. Nests in holes in trees and buildings.

Conservation: Changes in agriculture and the loss of permanent pasture have resulted in declines in numbers across the UK. In Scotland this decline has been less severe. Starlings can be helped by the provision of nestboxes if nest sites are a limiting factor.

3.2 Birds of woodland

This is the second largest habitat recorded on the golf course. Woodland supported a range of common species including chaffinch, great spotted woodpecker and treecreeper. The areas were also important for warbler species including willow warbler, chiffchaff and blackcap.

Many of these warblers have similar nest and food requirements requiring a mixture of mature trees, dense bushes and scrub to provide suitable nesting sites and insect rich habitats during the breeding season. These species are also migratory arriving in the spring from North Africa before returning to Africa in the autumn. Figure 4 shows the warbler territories



Blackcap

Identification: One of the larger warblers, male has grey underparts and a jet black crown and forehead. Females have a reddish-brown cap. A melodic song similar to Garden Warbler with obvious phases.



Whitethroat

Identification: Similar size to a great tit. Male has a grey head, white throat and brown back. Female has a browner head than male. Whitethroats can often be picked out by a “tacc tacc” call.



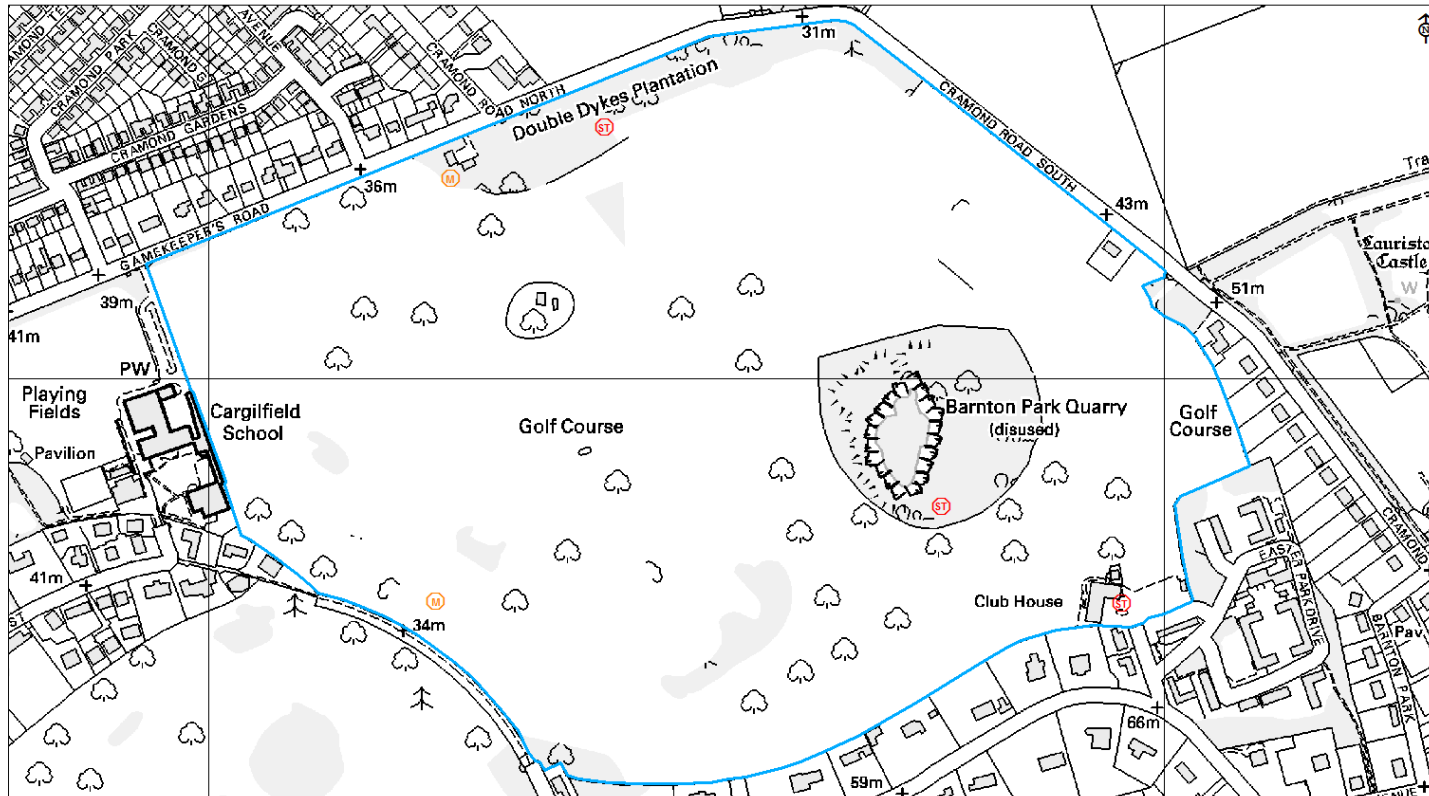
Chiffchaff

Identification: About the size of a blue tit. Slightly more compact than the willow warbler. Upperparts are dull green to olive brown. Legs are dark brown. Its song is repeated “chiff” “chaff” phases.



Willow Warbler

Identification: Similar size to the chiffchaff. Greenish brown upperparts and yellowish underparts. It has pale underparts. The song is descending series of notes which starts quietly but ends in a flourish.



Bruntfield Links Golf Course
 Song thrush and Mistle thrush records 2014

Species Key
 M. mistle thrush
 ST song thrush

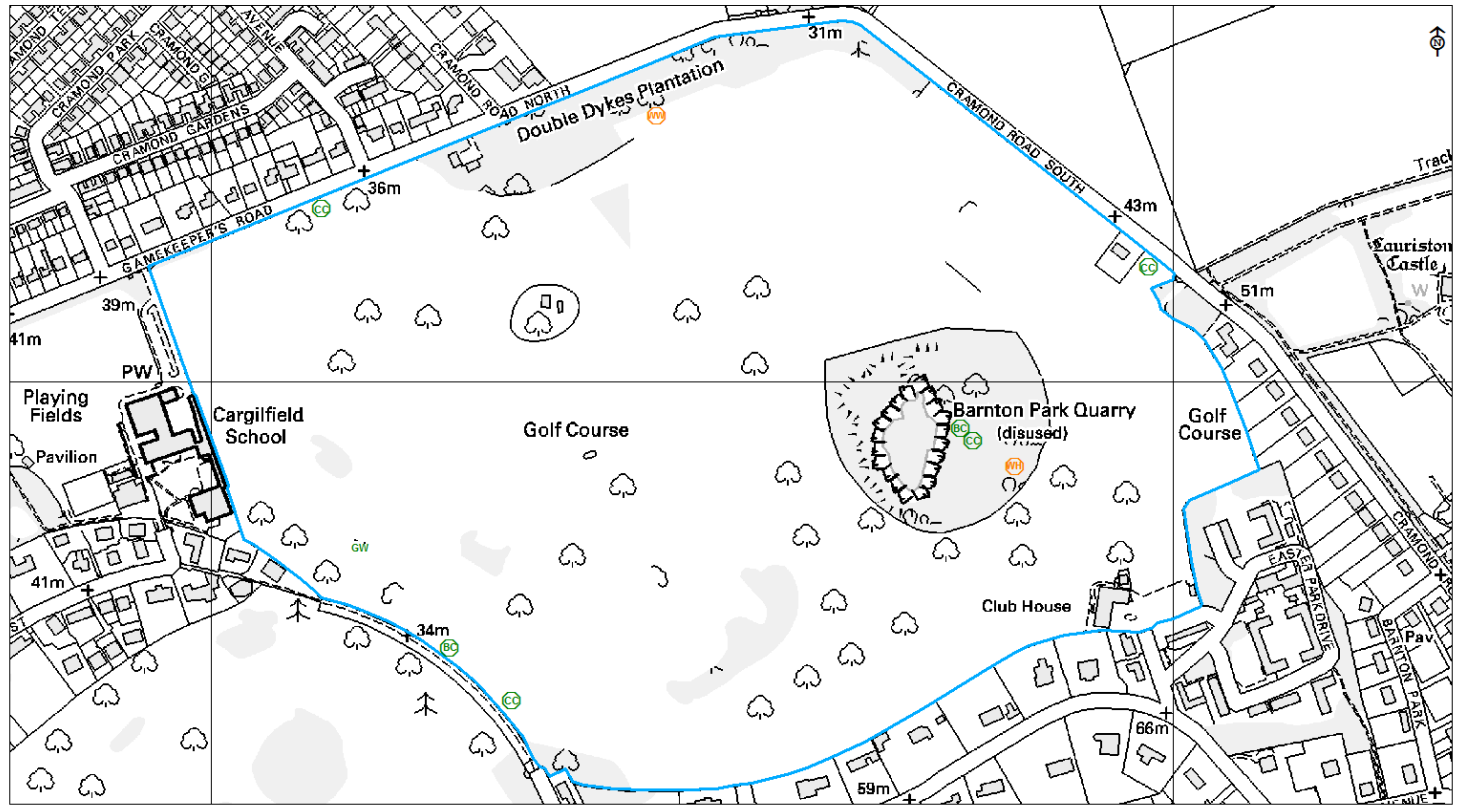
Symbols Key
 RED Species of high conservation concern
 AMBER Species of medium conservation concern
 GREEN Species of lower conservation concern
 Circles denote territories

Scale 1:3749; central grid reference: NT195759

Mapping data licenced from Ordnance Survey with the permission of the Controller of Her Majesty's Stationery Office. © Crown copyright 2014. All rights reserved. Licence number 100021787.

Registered charity England & Wales no 207076, Scotland no SCO37854 LOTH/14/01

Figure 3 Song Thrush and Mistle Thrush territories



Bruntsfield Links Golf Course
Warbler records 2014

- Species Key**
- BC blackcap
 - CC chiffchaff
 - GW garden warbler
 - WH whitethroat
 - WW willow warbler

- Symbols Key**
- RED Species of high conservation concern
 - AMBER Species of medium conservation concern
 - GREEN Species of lower conservation concern
- Circles denote territories

Scale 1:3749; central grid reference: NT195759

Mapping data licenced from Ordnance Survey with the permission of the Controller of Her Majesty's Stationary Office. © Crown copyright 2014. All rights reserved. Licence number 100021787.

Registered charity England & Wales no 207076, Scotland no SC037654 LOTH/14/01

Figure 4 Warbler records in 2014

4. Discussion and Recommendations for Management

Given the open nature of the habitat and the high detection levels of the birds in song or display flight at this time of year, the surveys do provide an accurate picture of the numbers and species of birds present. The species found during the surveys were typical of a parkland course with highest diversity and numbers found in the woodland and quarry areas.

4.1 *Golf course - Grassland*

The design and structure of the golf course aims to provide a playing experience of the highest quality. This need not and should not, however, preclude good environmental practice allowing maintenance and enhancement of the biodiversity attributes of the site. Indeed, at Bruntsfield Links, the club recognises the importance of the site for wildlife

The presence of species such as song thrush, mistle thrush and starling reflect the relatively open nature of this parkland course which provides a valuable mix of habitats including grassland, woodland and hedgerows. These species feed on invertebrates such as earthworms on the open course but nest in the woodland or hedgerows.



Fairways provide good feeding areas for starling and song thrush.

The course has small areas of rough grassland which provide corridor linkages between the woodland blocks. The rough grassland is home to a range of mammals including voles, shrew and mice provides ideal hunting habitat for kestrels and foxes, both of which were recorded during the surveys. Cutting rough grassland on a rotational basis is advised in the autumn.



An example of the rough at Bruntsfield Links.

One area of existing management, which could be altered for the benefit of birds and invertebrates, is the promotion of more flower-rich habitats within the rough grassland. Encouraging flowers such as red clover, bird's foot trefoil and white clover has benefits for bees and other invertebrates.

Creation of wildflower-rich habitat will require careful management. Wildflowers depend on fine leaved, slow growing grasses and thick, rank rough grassland as in the picture above will smother the flowers quickly. It would therefore be best practice to break up the sward, cutting and lifting the rank growth to aid establishment.

Whilst creation of wildflower grassland has best chance of success on low fertility soils, creating wildflower grassland on fertile soils is possible with careful management. Further advice on how to choose the best site, considering factors such as shade, soil type and soil moisture along with appropriate seed composition can be sort from various seed suppliers e.g. Scotia Seeds www.scotiaseeds.co.uk or from RSPB.

4.2 Woodland

4.2.1 Woodland Structure.

Many of the priority species recorded during the surveys rely on woodland for part, if not all of their lifecycle. It is therefore important that the right structures are in place to enable good breeding success. A well-structured wood will include the following layers: a ground layer, shrub layer, field layer, understory and canopy. This diversity offers a wide range of niches for birds, invertebrates and plants.



Features of a well structured woodland including the presence of mature trees with snags, deadwood, younger replacement trees and a well developed shrub layer (picture reproduced from Symes & Currie)



The woodland within the quarry at Bruntsfield Links is well structured with young and mature broadleaved trees and deadwood present throughout the quarry site. Relatively little management appears to have taken place within this area resulting in the woodland developing a semi-natural appearance. Additional broadleaved trees have been planted within the last decade on the edge of the quarry which adds to the diversity of structures. A small population of deer are present on site has resulted in a relatively sparse field layer. Deer numbers should be monitored to assess possible longer-term impacts on the woodland structure.

The woodland on the edge of the course which is composed of more even stands would benefit from restructuring to increase the structural diversity. This should only be undertaken following discussion with LBAP or Arboricultural Officer.

4.2.2 Deadwood

Deadwood is a particularly important for biodiversity with birds using it as nesting habitat and a source of food. Invertebrate species of rotten lying deadwood are available to ground feeding birds including thrushes, blackbird and dunnocks. Dead snags in trees provide woodpeckers with larvae and dead stumps provide nest sites. Great spotted woodpecker, jackdaw and starling were all recorded breeding in trees with deadwood.

Deadwood can be created relatively easily during woodland operations. Standing deadwood is achieved by killing the tree in situ by ring barking. Where woodland needs restructuring, or where non native species are being removed, a proportion can be killed using this method rather than being felled. Fallen deadwood can be

provided in one of two ways either by felling or winching. Ideally creation of deadwood would be spread around the wood rather than concentrated on any one area with trees left where they land unless there are issues of public safety.



The quarry area already has good quantities of fallen and standing deadwood (above pictures) it is therefore advised that any further deadwood creation is concentrated on the small woodland areas along the edge of the golf course where it could be created as part of the general woodland restructuring.

4.2.3 Ivy



An evergreen climber which has outstanding value for birds and other wildlife. It is recommended that ivy is encouraged across the site. Ivy provides good cover for nests, abundant berries which are valuable for thrushes and nectar during the autumn for insects. Ivy is not parasitic so will not cause harm to the trees so there should be no need to remove it.

4.2.4 Hedgerows



Hedgerows are an important feature of this golf course, particularly around the boundary of the site. Hedgerows have the potential to be rich in wildlife with many bird species associated with hedgerows. Woodland birds such as blackbird, song thrush and robin are common in taller wider hedges.

Preferably, in areas where neighbours do not need to be considered, hedges should be managed on a 2-3 year cycle with cutting taking

place in January or February to allow birds to take full advantage of berries in the autumn. This is general advice, management will vary dependant on species composition of the hedge and local circumstances. More advice can be found from the Hedgeline website www.hedgeline.org.uk .

4.3 Open Water



The quarry is the significant open water feature on Bruntsfield Links providing breeding and overwinter sites for species including mallard and grey heron. Although there is some structural diversity within the quarry the majority of the quarry is made up of deep water. As there is limited opportunity to alter the structure of the quarry area and access is difficult management possibilities are limited.

4.4 Nest boxes

Several of the species recorded on Bruntsfield Links often nest in buildings on a golf course. Gaps or spaces between the roof and eaves can offer suitable nesting sites for starling and house sparrows, with barns and outbuildings providing sites for swallows, kestrel and barn owl.

After assessing the site it is recommended that nest boxes targeted for house sparrow, starling and kestrel are considered.

Kestrel – Natural sites include large holes in mature trees. A large open-fronted box placed high in standard trees, within 50 m of the woodland edge may attract them.

Starling – Natural tree holes are used where available close to the woodland edge. The ideal box and hole size are shown within the attached leaflet.

House sparrows - Nests in the eaves of buildings.

Further information is available on suitable designs for nestbox, citing and management via the nestbox leaflet attached to this report. The RSPB website www.rspb.org.uk/homes also provides further information with suggestions of how increasing the value of gardens to birds and other wildlife

4.5 Wildlife interpretation

Golf courses provide an excellent opportunity for promoting and explaining biodiversity and conservation. Birds are often the most conspicuous wildlife that can easily be seen on a golf course, and species such as skylark may be more abundant on here than in the wider countryside. Because there are close links between species and the habitats in which they live, managing habitats well for birds will likely bring benefits for a wide variety of other wildlife, particularly wild flowers, invertebrates such as butterflies and mammals. As with many other golf courses across the UK, it would be highly desirable to see wildlife value and sensitive management promoted to members through interpretation such as information boards and pamphlets. RSPB can provide advice on such matters.

4.5 "Birds and golf courses" publication

"Birds and golf courses: a guide to habitat management" has been published by the RSPB and the R&A (Duff & Symes). This publication provides a vital resource for advice on the sustainable management of golf courses for birds and other wildlife giving detailed information on techniques and illustrated with good examples of management on courses throughout the country. Two copies have been provided to the golf course to accompany the report.

6. Acknowledgements

This survey was carried out at the instigation of club member Mr Geoff Ball. I thank the Secretary, for permission to carry out the work, and to the Course Manager, for advice and the provision of maps.

7. References and sources of information

Duff, K. L. & Symes, N. (2009). *Birds and golf courses: a guide to habitat management*. The RSPB, Sandy and The R&A, St Andrews.

Forrester, R, and Andrews, I. (Eds). 2007. *The Birds of Scotland*. Scottish Ornithologists' Club, Aberlady.

Marchant, J H et al. 1990 *Population Trends in Breeding Birds* BTO Tring

Scottish Environment Group advice leaflets

Scottish Ornithologists' Club, Lothian Branch. (Annual) *Lothian Bird Report*. Scottish Ornithologists' Club, Aberlady.

Symes N and Currie F (2005) *Woodland Management for birds: a guide to management for declining woodland birds in England*. RSPB, Sandy

8. Appendix 1 : Bruntsfield Links Bird Species List, April - June 2014

Blackbird (*Turdus merula*). Nine territories recorded with many registrations bordering neighbouring gardens

Blackcap (*Sylvia atricapilla*). Two territories linked to woodland.

Blue Tit (*Parus caeruleus*). 11 territories. One nest box occupied.

Bullfinch (*Pyrrhula pyrrhula*) Male and female recorded during the first visit.

Carrion Crow (*Corvus corone*). One territory centred on the quarry. Occasionally other birds flying over or foraging.

Chaffinch (*Fringilla coelebs*). Six singing males in scrub along the course boundary, one in the bushes at the services buildings near the main gate, seven in dune scrub on the east and south-west boundaries.

Chiffchaff (*Phylloscopus collybita*) Four territories recorded around the site strongly associated with the woodland patches around the course.

Coal Tit (*Parus ater*). One territory recorded. Small numbers recorded around the course

Collared Dove (*Streptopelia decaocto*). Recorded on two visits common in surrounding gardens. One territory focused on the car park.

Common Buzzard (*Buteo buteo*) Four were recorded during the second visit with at least one breeding territory centred on the quarry.

Common Whitethroat (*Sylvia communis*). A male singing in isolated hawthorns in the southern section of the dunes.

Dunnock (*Prunella modularis*). Three territories recorded strongly associated with neighbouring gardens

Feral Pigeon (*Comumba livia domest.*) Occasional birds flying over or foraging.

Garden Warbler (*Sylvia borin*) Single male singing in the quarry during the second visit.

Goldcrest (*Regulus regulus*). One territory with other single birds registered in conifers.

Goldfinch (*Carduelis carduelis*). One territory recorded.

Great Black-backed Gull (*Larus marinus*) Occasional birds flying over or foraging.

Great Spotted Woodpecker (*Dendrocopos major*) Recorded on every visit with at least one territory. Drumming was regularly heard on the first two visits.

Great Tit (*Parus major*)

Greenfinch (*Carduelis chloris*) One territory bordering neighbouring gardens

Grey Wagtail (*Motacilla citreola*) Male and female seen together in the quarry. They appeared to be assessing potential nest sites within the quarry. Not seen after the first visit.

Herring Gull (*Larus argentus*) Occasional birds flying over or foraging.

House Martin (*Delichon Urbica*) Six birds recorded moving between Cargilfield School playing fields and golf course.

House Sparrow (*Passer Domesticus*) One male recorded near the clubhouse

Jackdaw (*Corvus monedula*). Occasional on and over the course one territory in dead tree in the quarry. Biggest party was five birds feeding with a small number of rooks.

Jay (*Garrulus glandarius*) Two records

Kestrel (*Falco tinnunculus*). One male recorded on the first visit hovering over the 8th hole. No sign of breeding on the course although there is some suitable nesting sites in the woodland. The rough would provide good feeding opportunities.

Lesser Black-backed Gull (*Larus fuscus*) Occasional birds flying over or foraging.

Long-tailed tit (*Aegithalos Caudatus*)

Magpie (*Pica pica*) Two territories recorded with up to eight birds seen. Six birds were seen chasing a male sparrowhawk with kill.

Mallard (*Anas platyrhynchos*) Two pairs seen and up to 8 juveniles recorded swimming around the quarry.

Meadow Pipit (*Anthus pratensis*). One bird recorded in the rough.

Mistle thrush (*Turdus viscivorus*) Two territories. Adults seen carrying food to nests after probing on the fairways,

Nuthatch (*Sitta Europaea*) A single bird has heard during the first visit. This species is progressively moving up Scotland and is now recorded regularly in Edinburgh

Oystercatcher (*Haematopus ostralegus*) One bird flying over the golf course.

Pheasant (*Phasianus colchicus*). A maximum of 4 cock birds encountered on the course with 5 hens. No hens were seen in later visits. They were likely to be sitting tight on eggs at this time. The roughs and woodland edges provide suitable nesting habitat.

Pied Wagtail (*Motacilla alba*). One territory with records of male birds foraging on the course. Nestboxes could be provided to encourage breeding.

Robin (*Erithacus rubecula*). One singing in scrub along the eastern edge of the course.

Song Thrush (*Turdus philomelos*) Three territories recorded on site. Birds seen regular feeding on the course.

Sparrowhawk (*Accipiter nisus*) Male and female birds were recorded. The male seen carrying a dead woodpigeon was mobbed by six magpies.

Starling (*Sturnus vulgaris*). Two territories found with birds nesting in trees. Sixteen birds on the 13th fairway was the largest flock recorded.

Swallow (*Hirundo rustica*). Recorded on the second visit onwards. At least one pair nested in the green keepers sheds.

Treecreeper (*Certhia familiaris*) One territory recorded

Woodpigeon (*Palumba columba*). Small numbers seen around the course with suitable breeding habitat available on both the golf course and surrounding gardens. Maximum number seen was 12 on visit three. A small number of territories were recorded on the course.

Willow Warbler (*Phylloscopus trochilus*). Two singing males in the woodland.

Wren (*Troglodytes troglodytes*). 11 territories were recorded around the site

Table 3 Species recorded on each visit.

Species	Link to picture of Bird	Visit 1 02/04/2014	Visit 2 05/05/2014	Visit 3 16/05/2014	Visit 4 05/06/2014
Blackbird	http://tinyurl.com/q4mw7oj	x	x	x	x
Blackcap	http://tinyurl.com/l6ldurg	x	x	x	x
Blue Tit	http://tinyurl.com/oed7uqu	x	x	x	x
Bullfinch	http://tinyurl.com/mccvzta	x			
Buzzard	http://tinyurl.com/m5raubt	x	x	x	x
Carrion crow	http://tinyurl.com/ndh68u5	x	x	x	x
Chaffinch	http://tinyurl.com/n7rogdo	x	x	x	x
Chiffchaff	http://tinyurl.com/kw6d3za	x	x	x	x
Coal tit	http://tinyurl.com/kdxahmk	x	x	x	x
Collared dove	http://tinyurl.com/lft83k6			x	x
Dunnock	http://tinyurl.com/kbmwqj4	x	x	x	x
Feral pigeon		x	x		x
Garden warbler	http://tinyurl.com/munvoaq		x		
Goldcrest	http://tinyurl.com/ludy2w3	x	x		x
Goldfinch	http://tinyurl.com/mspdo3j	x	x	x	x
Great black-backed gull	http://tinyurl.com/kdpdfd3	x			
Great spotted woodpecker	http://tinyurl.com/osx2l3o	x	x	x	x
Greenfinch	http://tinyurl.com/py8wavr	x		x	x
Grey wagtail	http://tinyurl.com/qew3t9l	x			
Herring gull	http://tinyurl.com/q29xea9	x	x	x	x
House martin	http://tinyurl.com/ov42tjp			x	x
House sparrow	http://tinyurl.com/nqurjzn		x		
Jackdaw	http://tinyurl.com/oef42du	x	x	x	x
Jay	http://tinyurl.com/p372ooh	x	x		
Kestrel	http://tinyurl.com/q244vfk	x			
Lesser black-backed gull	http://tinyurl.com/no3wt6h	x	x	x	
Long-tailed tit	http://tinyurl.com/nmv4dki			x	x
Magpie	http://tinyurl.com/nnfqw78	x	x	x	x
Mallard	http://tinyurl.com/nbs2le3	x	x	x	x
Mistle thrush	http://tinyurl.com/oj8ebxq	x	x	x	x
Nuthatch	http://tinyurl.com/qbbbk7g	x			
Oystercatcher	http://tinyurl.com/q8lykce		x		
Pheasant	http://tinyurl.com/qcjtzwu	x	x	x	x
Pied wagtail	http://tinyurl.com/n9dkecb		x	x	x
Robin	http://tinyurl.com/o7udvtw	x	x	x	x
Rook	http://tinyurl.com/qxfqsgn	x	x	x	x
Song thrush	http://tinyurl.com/kk86ln4	x	x	x	x
Sparrowhawk	http://tinyurl.com/njwe7dq	x			x
Starling	http://tinyurl.com/k4dlbq7	x	x	x	x
Swallow	http://tinyurl.com/kstq6ru		x	x	x
Treecreeper	http://tinyurl.com/moxdao9	x	x		x
Whitethroat	http://tinyurl.com/nqe9snb	x		x	
Willow warbler	http://tinyurl.com/q4n9npo	x	x		
Wood pigeon	http://tinyurl.com/ps4l3nu	x	x	x	x
Wren	http://tinyurl.com/phly8ty	x	x	x	x