Natural England Commissioned Report NECR337

West Penwith Moors, Cornwall. Collation of existing bird data - 2013.

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Foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England.

Background

Since 2012, Natural England has been gathering evidence to ascertain whether land in the Penwith Moors in west Cornwall meets the published guidelines for the selection of Sites of Special Scientific Interest (SSSIs). This report is one of many commissioned by Natural England to provide the evidence required to identify those areas which should be included in an SSSI designation, to identify the features to be designated and to inform definition of the SSSI boundary. This report will also help to inform future site monitoring and to provide land management advice.

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Further information
This report can be downloaded from the Natural England Access to Evidence Catalogue: **http://publications.naturalengland.org.uk/** . For information on Natural England publications contact the Natural England Enquiry Service on 0300 060 3900 or e-mail **enquiries@naturalengland.org.uk**.

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West Penwith Moors, Cornwall

Collation of existing bird data - 2013

S Crummay FInstILM

West Penwith Moors, Cornwall – Collation of existing bird data

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Executive Summary

Ornithological records and data for the period since 2005/6 from the British Trust for Ornithology (BTO), Cornwall Birdwatching and Preservation Society (CBWPS) and from reliable local observers has been examined against several criteria within the JNCC Guidelines for Designation of Biological SSSIs for an area of the West Penwith Moors in west Cornwall.

The following ornithological features meet the JNCC criteria for designation under the current, published SSSI notification guidelines:

1. HEN HARRIER under Criterion 3.3 as a wintering feature
2. DARTFORD WARBLER under Criterion 3.1 as a rare breeding bird
3. The breeding bird assemblage for heath and scrub under Criterion 3.5 with the following species listed; QUAIL,CUCKOO, NIGHTJAR, STONECHAT, WHEATEAR, GRASSHOPPER WARBLER, DARTFORD WARBLER, LINNET, WHITETHROAT, BLACKCAP, GARDEN WARBLER

In addition, it is recommended Nightjar should be considered under Criterion 3.1 as a rare breeding bird given the significance of the West Penwith population within the context of the UK Nightjar breeding population.

Inclusion of the above ornithological features would enable the potential for increases in existing population abundances and diversity to be achieved through the added protection and positive management inputs that SSSI Notification will produce.

However, more recent but yet to be published, threshold data is available for Dartford Warbler (32 pairs) and wintering Hen Harrier (1710) (*pers com Allan Drewitt, Senior Ornithologist, Natural England)*. This data has been used to inform the national Special Protection Area Review by the JNCC. The West Penwith population figures do not meet these more recent threshold figures for Dartford Warbler and Hen Harrier.

It is recommended that a rigorous Breeding Bird Survey is repeated to further support the notification of SSSI for Breeding Bird Assemblage for Lowland Heath and Scrub.

Contents

Introduction and background information

Natural England is gathering evidence to support the potential notification of key areas of semi-natural habitat in the West Penwith Moors area of west Cornwall as a Site of Special Scientific Interest (SSSI). Habitat and specialist species surveys are being commissioned within the overall area shown on Map 1.

The area under investigation lies mainly within the West Penwith part of the Cornwall Area of Outstanding Natural Beauty (AONB) (www.cornwall-aonb.gov.uk). It is also mainly within the former West Penwith Environmentally Sensitive Area (ESA) boundary and is focussed on areas of semi-natural habitat associated with the ESA roughland tier.

The area has an outstanding archaeological heritage, particularly from the Bronze Age and Iron Age periods. The international importance of the industrial heritage associated with metalliferous mining is recognised through inclusion in the St Just Mining District part of the Cornwall and West Devon Mining Landscape World Heritage Site (www.cornish-mining.org.uk).

A currently informal partnership of key organisations and stakeholders is working to establish a consensus for a vision for the future sustainable management of the area.

The area supports a rich assemblage of heath, scrub and farmland birds, including important populations of several species including breeding grasshopper warbler, cuckoo and nightjar, and wintering hen harrier. The area is an Important Bird Area (IBA) for Stonechat.

Existing Ornithological Data

This study is a desk exercise to collate existing data on birds to inform Natural England's decision making process regarding the potential qualification of the area shown on Map 1 (or part of it) as a Site of Special Scientific Interest (SSSI) for bird feature(s). The SSSI selection criteria for birds are set out in chapter 14 of the Guidelines for the selection of biological SSSIs. These are available at http://jncc.defra.gov.uk/pdf/SSSIs_Chapter%2014_corrected.pdf and Appendix 1.

Details of this study are as follows.

1. Natural England's initial consideration of the SSSI site selection criteria suggests that the following criterion is likely to be worthy of detailed assessment:
   - 3.3 Localities regularly used by non-breeding birds, specifically in respect of wintering hen harrier.

   Existing data has been collated and compiled to enable Natural England to determine the potential of this feature to meet SSSI site selection criterion 3.3.

2. Natural England's initial consideration of the SSSI selection criteria suggests that the site is not likely to qualify for selection under the following criteria:
   - 3.1 Breeding aggregations and localities of rare species, for example nightjar;

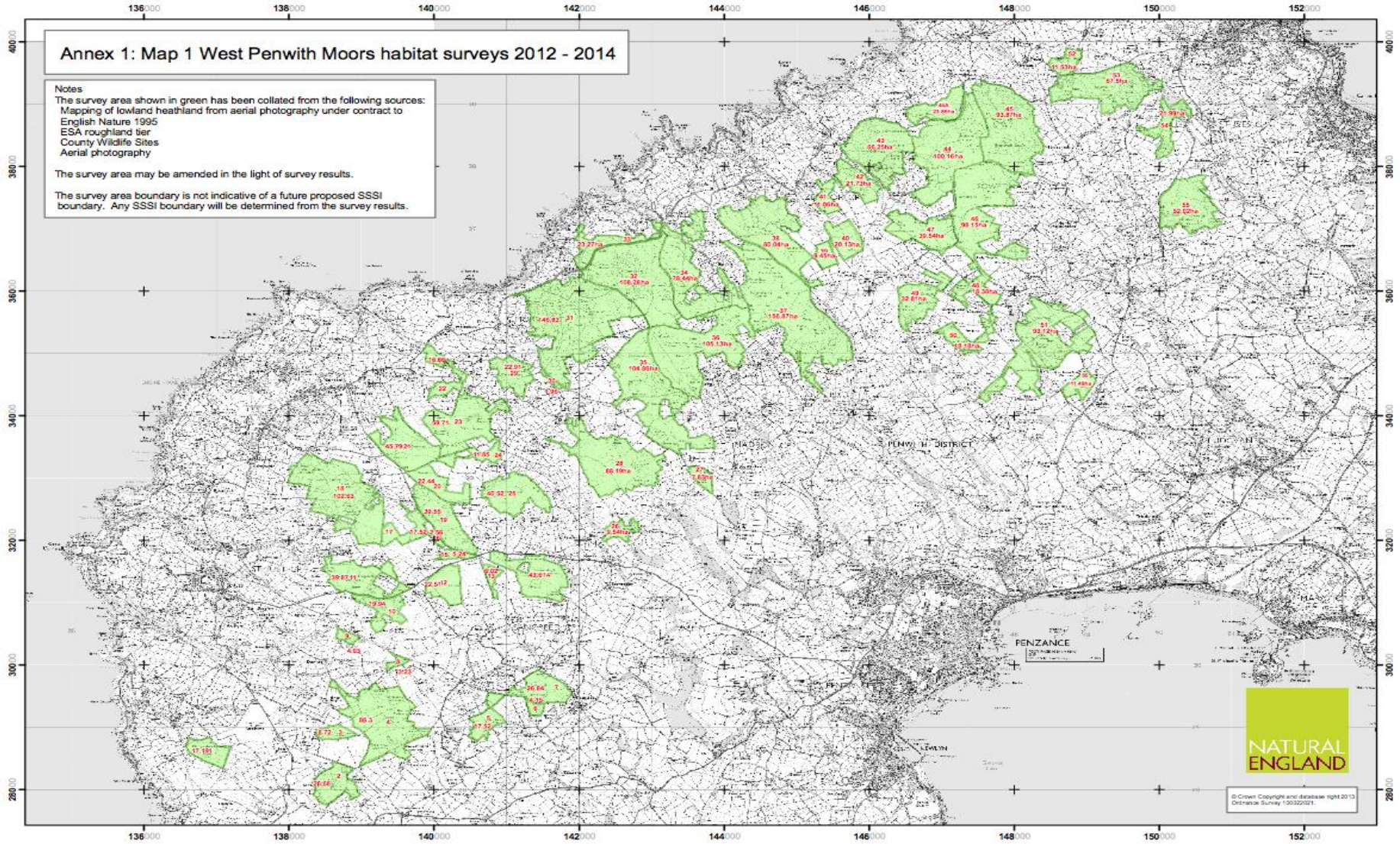
- 3.5 Assemblages of breeding birds, specifically for the following habitats: lowland heath, scrub (excluding heath), and woodland – see Table 28 in chapter 14 of the Guidelines.

Collation of data has been done to provide the evidence base confirming whether or not these are likely to be qualifying features meeting the relevant SSSI selection criteria.

3. Key localities for rare species are identified and described using place names and grid references, with a note of relevant habitat or habitat features utilised, information on behaviour including breeding activities (where recorded), time of year, and numbers. Details of data sources, including dates of records, are provided.

4. Additional information relating to existing data to help inform Natural England's decision making process. E.g. population trends and habitat management changes.

5. Data has been analysed on a 1km Grid Square basis where only data for 1km squares that wholly or significantly occur within the site boundaries have been used. Similarly, BTO data is only held at the tetrad level and only tetrads that wholly or significantly occur within the site boundaries have been used.


Annex 1: Map 1 West Penwith Moors habitat surveys 2012 - 2014
Notes
The survey area shown in green has been collated from the following sources:
Mapping of lowland heathland from aerial photography under contract to English Nature 1995
ESA roughland tier
County Wildlife Sites
Aerial photography
The survey area may be amended in the light of survey results.
The survey area boundary is not indicative of a future proposed SSSI boundary. Any SSSI boundary will be determined from the survey results.
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Assessment against JNCC Criterion 3.3

Localities regularly used by non-breeding birds, specifically in respect of wintering hen harrier.

Criterion 3.3 states:

Localities which regularly contain 1% or more of the total British non-breeding population of any species at any season are also eligible. The main use of this guideline will be for wintering populations, but, where data are available, it can be applied also at other seasons (e.g. for pre- and post-breeding gatherings, non-breeding summer flocks, moulting flocks and passage concentrations). The best available current estimates for wintering populations are included in Appendix B and Table 27. Updated figures for 1% levels in winter, and in a few cases at passage times, are given for waterfowl and wader species in the annual booklet Wildfowl and wader counts produced by the Wildfowl Trust and the British Trust for Ornithology under contract to the NCC. This booklet is supplied annually to all NCC regions. The use of this guideline for passage, rather than moulting or wintering, populations requires particular care because of the difficulty in assessing national population sizes at times of major movements: consult the CSD Ornithology Branch. Feeding and roosting areas on croplands, including agriculturally improved grasslands (other than those washlands etc. which are regularly flooded in winter), should not usually be selected, since the birds concerned are rarely restricted to special parts of such areas, the significance of which may alter with a change of crop. Sites where the total area of such croplands is relatively restricted may be exceptions. (See also C.1, 11.2.19.)

The threshold figure for the UK Hen Harrier wintering population is 1% of 750 (from Table 27 in Appendix 1) – this is taken to be 7 birds by rounding down from 7.5.

Records have been gathered from Cornwall Birdwatching and Preservation Society (CBWPS), The RSPB and The Hawk and Owl trust via BTO.

Since 2005 there has been a regular coordinated winter Hen Harrier roost survey programme for numerous sites across West Penwith – part of the Hen Harrier Wintering Roost Survey (HHWRS), how these locations fit with the Natural England Penwith Moors Project area is shown in Map 2. Surveys were initially coordinated by the RSPB but subsequently taken over by the Hawk and Owl Trust with data being correlated by the BTO. The survey follows the methodology outlined in Appendix 2 which also includes the full survey reports for 2005/6, 2006/7 and correlated data for the years from 2008 to 2012.

A summary of counts from these surveys is shown in the table below:

	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12
Total No. of Birds	7	4	N/A	7	7	N/A	N/A

The BTO Hen Harrier data shows there are 5 roosts in the formally recorded database that overlap with the outline of the proposed site. Another 2 sites are

contained in an earlier database that lacks details from before the BTO took over organisation of the HHWRS There are no count data from these two sites since the early 1990s, so they have not been included..

A close examination of the CBWPS and BTO data shows that if one takes the maximum seen on any given night at each site each year, and sums across sites, the total comes to 12 birds in 08/09 and 10 in 09/10. However, the counts are coordinated to avoid over- or under-counting caused by the movement of birds between sites in a given winter; if one instead totals the maximum numbers seen on any given count night, the greatest count is 7. This correlates with the figure for 2005/6 from the RSPB coordinated data which also shows a total of 7 birds.

Earlier records show that in the mid 1980's there were up to 12 birds using the West Penwith sites having risen from counts of just 1 bird in 1965 (watch effort will have increased significantly over this time) (Conway G.J. The Changing Status of the Hen Harrier in Cornwall, CBWPS 60th Annual Report 1990) so it would appear that with fluctuations that probably relate to severity of winter weather in both the immediate area and across the wider north west Europe range Hen Harriers are using for winter roosting, numbers have remained strong and regularly meet the 1% threshold figure for inclusion under criterion 3.3.

The importance of the West Penwith Moors winter Hen Harrier roost sites cannot be underestimated when set against the recent trends in UK breeding Hen Harrier populations. The latest survey, in 2010, reveals a decline of around 18% since the 2004 survey (Holling & RBBP 2012) with current populations for UK being estimated as between 550 – 740 breeding pairs. However, when one looks solely at the England population the significance of birds over-wintering becomes much greater given that there has been a significant decline in breeding pairs in England (Natural England: A Future for the Hen Harrier in England 2009) and only 1 pair bred in England in 2012. It has been noted that 1 pair bred successfully on the Lizard peninsula in 2002 confirming the potential for the heaths and moors of west Cornwall to provide valuable breeding habitat as well as over-wintering sites. This is perhaps particularly significant given that the west Cornwall moors and heaths are not managed for grouse and other game species so some of the pressures normally associated with Hen Harrier success are absent.

Roosting over wintering birds are potentially vulnerable to disturbance and the West Penwith Moors are frequently used for much recreational access as well as illegal off-road motorcycling. Inclusion of wintering Hen Harrier as a "feature of interest" would enable greater protection from disturbance, enable enforcement against 3rd party damage to an SSSI "Feature of interest" and help in reducing off road motorcycling for example.

Recommendation

Given the pressure that Hen Harrier populations are under across the UK it would appear to be eminently reasonable to adopt a precautionary philosophy to notification of further sites to contribute to their conservation and help prevent further population decline.

The presence of appropriate habitat for wintering and roost sites and the regular use of this by 1% of UK wintering population coupled with the potential for this to be utilised by Hen Harriers for breeding, appears to strongly justify the inclusion of Hen Harrier as a "feature of interest" for any potential SSSI notification of the West Penwith Moors.

However, a more recent figure of 1,710 non-breeding population (wintering individuals) (pers comm. Allan Drewitt, Senior Ornithologist, Natural England 2013) has been used for the national SPA Review by JNCC. This figure is based on the latest published figure of 570 breeding pairs (Musgrove. A *et al* 2013) multiplied by three to provide an estimate of the non-breeding population. This is a standard approach to deriving a non-breeding population estimate from the breeding population. The West Penwith Hen Harrier figures do not meet this threshold. Nevertheless, it is recommended that careful consideration should be given for including overwintering Hen Harrier on the basis that the population is remote from other sites geographically and is the most westerly mainland UK population. Recent work has shown that the UK overwintering populations are likely to largely be derived from British breeding populations and as such their significance is emphasized by the decline in England's breeding population.

It is recommended Hen Harrier should be considered for inclusion as a "feature of interest" in any future SSSI Notification as meets the current published Guidelines criteria.

Map 2 - Hen Harrier Roost Sites in West Penwith

QuickTime™ and a
decompressor
are needed to see this picture.

Assessment against JNCC Criterion 3.1

Breeding aggregations and localities of very rare species

Criterion 3.1 states:

Localities which normally contain 1% or more of the total British breeding population of any native species and seabird colonies of over 10,000 breeding pairs are eligible for selection. In practice, this guideline covers mainly colonial species (e.g. seabirds and herons), semi-colonial species (e.g. some grebes, ducks and waders) and rare species. For estimates of British populations, use the values in Appendix B and Table 27. In view of the mobility of some birds, this guideline applies to sites used for other essential activities by breeding birds, for example display sites of lekking species and feeding areas as well as nesting sites. For its application to rare species (including further naturally colonising species not listed in Appendix B) it is important that any site considered should be used regularly and should normally be large enough to include all the areas required by the individuals concerned; it will rarely be appropriate for single pairs of wide-ranging species. Care should be exercised also if the presence of rare birds is the only reason for considering a largely artificial habitat. In both cases the CSD Ornithology Branch should be consulted.

Analysis of BTO Breeding Atlas data and CBWPS data as well as reliable records provided from individual sources has been carried out against this criterion for Nightjar and Dartford Warbler. Appendix B and Table 27 from the JNCC **Guidelines for the selection of biological SSSI's Part 2: Detailed guidelines for habitats and species groups** are included in Appendix 1 of this report for reference.

The threshold figures for each species are:

Dartford Warbler	<200 (UK Pop.)	1% = 2 Pairs
Nightjar	<2100 (UK Pop.)	1% = 21 pairs

Dartford Warbler

The BTO data (shown in Appendix 3) records Dartford Warbler as Probable Breeding and/or Confirmed Breeding in a total of 4 separate tetrads in 2 different 10km grid squares across the period which relate to locally named sites as follows:

SW32 Z	Bartinney
SW43 I	Carn Galva
SW43 U	Eagles Nest/Zennor
SW43 Z	Rosewall Hill

This reflects a minimum of 4 breeding pairs in the Project Area and meets the Threshold for Criterion 3.1 for Dartford Warbler.

CWBPS data for Dartford Warbler is summarized below:

N.B. It is assumed that unless supported by accurate and reliable observer evidence each site is recorded as having a maximum single Probable Breeding record. Details of reliable observer evidence is provided in the following section as supporting evidence of Probable Breeding.

2006	LOCATION	G.R.	NO.OF PAIRS	BEHAVIOUR IF RECORDED	HABITAT
	Zennor Hill/Foage	SW4637	1	Pair seen together	Gorse/scrub

2007	LOCATION	G.R	NO. OF PAIRS	BEHAVIOUR IF RECORDED	HABITAT
	Carn Galva	SW4235	1	Singing male	Gorse/scrub
	Men-an-tol	SW4234	1	Singing male	Gorse/scrub
Total Prob Pairs			**2**		

2008	LOCATION	G.R.	NO.OF PAIRS	BEHAVIOUR IF RECORDED	HABITAT
	Men-an-tol	SW4234	1		Gorse/scrub
	Carn Galva	SW4235	1		Gorse/scrub
	Zennor Hill/Foage	SW4637	1	Fledgling flying	Gorse/scrub
	Foage Valley	SW4538	1	Carrying Food	Gorse/scrub
Total Prob Pairs			**4**		

2009	LOCATION	G.R.	NO.OF PAIRS	BEHAVIOUR IF RECORDED	HABITAT
	Men-an-tol	SW4234	1		Gorse/scrub
	Bartinney	SW3829, 3929	3	Singing	Gorse/scrub
	Eagles Nest	SW4738, 4837	1		Gorse/scrub
Total Prob Pairs			**5**		

2010	LOCATION	G.R.	NO.OF PAIRS	BEHAVIOUR IF RECORDED	HABITAT
	Bartinney	SW3829	1		Gorse/scrub
Total Prob Pairs			**1**		

2011	LOCATION	G.R.	NO.OF PAIRS	BEHAVIOUR IF RECORDED	HABITAT
	Bartinney	SW3829	1	Adult + Juv	Gorse/Scrub

	Mulfra	SW4535	1	Carrying Food	Gorse/Scrub
	Eagles Nest	SW4738, 4737	1		Gorse/Scrub
	Zennor Hill/Foage	SW4638	1	Displaying	Gorse/Scrub
	Men-an-tol	SW4234	1		Gorse/Scrub
	Carn Galva	SW4236	1		Gorse/Scrub
Total Prob Pairs			**6**		

2012	**LOCATION**	**G.R.**	**NO.OF PAIRS**	**BEHAVIOUR IF RECORDED**	**HABITAT**
	Bartinney	SW3829	1	Adult + Juv	Gorse/Scrub
	Mulfra	SW4535	1	Carrying Food	Gorse/Scrub
	Eagles Nest	SW4738, 4737	1		Gorse/Scrub
	Zennor Hill/Foage	SW4638	1	Displaying	Gorse/Scrub
	Men-an-tol	SW4234	1		Gorse/Scrub
	Carn Galva	SW4236	1		Gorse/Scrub
Total Prob Pairs			**6**		

From the above analysis the CBWPS data shows between 1 and up to 6 pairs as Probable Breeding records at several sites across the Project Area.

Analysis of Informal Personal Records from Notable Individuals.

(raw data Appendix 4)

Mr V Stratton is one of West Penwith's most notable bird recorders and observers with over 60 years experience of detailed observation and recording in the Project Area. He has recorded Dartford Warblers as having first bred at Eagles Nest in 2002 and annually successfully since then. In 2013 he has observed 4 breeding pairs in the Zennor Hill/Eagles Nest area.

Mr P Clarke is another experienced and reliable observer who has recorded Dartford Warbler at Bartinney Downs and Botallack for several years, only Bartinney Downs is included in the Project Area. His data for Bartinney is summarized below:

YEAR	**No. of Pairs Probable Breeding**
2008	1
2009	3
2010	1
2011	2
2012	1
2013	1

Informal data from D Parker, the CBWPS County Recorder for 2013 shows at least 1 pair using the Men-an-tol site.

Combining these observations shows a minimum of 6 pairs as Probable Breeding in the Project Area at sites covering the western and eastern extremities of the Project Area for 2013.

Recommendation

Dartford Warbler regularly exceeds the 1% of the UK threshold figure of >2 pairs to satisfy Criterion 3.1 and should be considered for inclusion as "feature of interest" in SSSI notification.

The pattern of breeding and use of sites shows that different sites are used in different years and also the known impact of severe winters can be seen by the changes in numbers of breeding pairs across different years.

All records for breeding are within areas of mature Gorse and Scrub habitat. Some of the sites e.g. Carn Galver are under recent grazing management which is helping to improve the habitat diversity whilst at the same time maintaining elements of mature gorse that are essential for Dartford warbler breeding.

There is a long established understanding of the importance of gorse to Dartford Warblers for both breeding and foraging whilst feeding young (e.g. Webb. N. (1986) Heathlands a Natural History, Collins, Ch 11 and Bibby 1979). Inclusion of breeding Dartford Warbler as a "feature of interest" in SSSI Notification of the West Penwith Moors would strengthen the potential for improved future management and the likelihood of increases in the breeding population of Dartford Warblers.

More recent data gives a threshold figure of 32 pairs (Musgrove A *et al* 2013) and the populations do not meet this threshold. It is recommended notification should still be considered carefully given the peripherality and geographical context of the West Penwith Dartford Warbler populations. As such they are the most westerly mainland UK populations and as recent weather patters have given more frequent severe winters, the Penwith populations could become increasingly significant nationally in the future if such trends continue.

Inclusion of breeding Dartford Warbler as a "feature of interest" in SSSI Notification of the West Penwith Moors is strongly recommended as it satisfies Criterion 3.1 of the published guidelines

Nightjar

BTO Data

Historically Nightjar are known to breed at the sites known as Watch Croft and Carn Galva which occur in BTO tetrad SW43 I. Analysis of the BTO data shows Probable Breeding in only this tetrad . Anecdotal evidence suggests that this will normally be 1 -3 pairs depending on the particular year and weather conditions coupled with other variables.

CBWPS Data

The CBWPS data for Nightjar is summarized below:

Year	Site & Grid Ref	Probable	Habitat Notes

		Breeding Pairs	
2005	Watch Croft SW4136	2	Broken dwarf scrub & heathland
Total Pr Pairs		**2**	
2006	Watch Croft SW4136	2	Broken dwarf scrub & heathland
Total Pr Pairs		**2**	
2007	Watch Croft SW4136	2	Broken dwarf scrub & heathland
	Carn Galva SW4236	1	Broken dwarf scrub & heathland
Total Pr Pairs		**3**	
2008	Watch Croft SW4136	2	Broken dwarf scrub & heathland
	Carn Galva SW4236	1	Broken dwarf scrub & heathland
	Trewey Common SW4636	1	Broken dwarf scrub & heathland
Total Pr Pairs		**4**	
2009	Watch Croft SW4136	2	Broken dwarf scrub & heathland
	Carn Galva SW4236	2	Broken dwarf scrub & heathland
	Trewey Common SW4636	1	Broken dwarf scrub & heathland
Total Pr Pairs		**5**	
2010	Carn Galva SW4236	2	Broken dwarf scrub & heathland
	Trewey Common SW4636	1	Broken dwarf scrub & heathland
Total Pr Pairs		**3**	
2011	Carn Galva SW4236	2	Broken dwarf scrub & heathland
	Trewey Common SW4636	1	Broken dwarf scrub & heathland
Total Pr Pairs		**3**	

For the period covered in the data set Probable Breeding pairs vary from 5 to 2 pairs with the most frequently used sites being the Carn Galva and Watch Croft sites. These 2 sites have significant areas of broken dwarf scrub and heathland with open

patches known to be preferred by Nightjar as breeding sites.

Informal Evidence from Notable Observers for 2013

V Stratton has recorded Nightjar as breeding at Rosewall Hill – SW4939, Little Trevalgan Hill SW4839 and Buttermilk Hill, SW 4839 with 3 pairs being observed in 2013. Again all these sites have the broken dwarf scrub and heathland habitat that is traditionally used by Nightjar in west Cornwall. (Appendix 5)

Together with a minimum of 2 pairs recorded at Carn Galva and Watch Croft for 2013 provided by D Parker (County Recorder) this gives a total of 5 Probable Breeding Pairs for 2013 (Appendix 5)

Recommendation

The numbers of Nightjar breeding pairs does not qualify against Criterion 3.1 since the threshold figure is 21 pairs.

However, the breeding population of Nightjar in west Cornwall does have some national significance for the following reasons.

1. The population is the most westerly breeding population of Nightjar and is somewhat isolated from the nearest neighbouring populations.

2. The breeding habitat and sites are not typical of the type of sites normally preferred by Nightjar in the UK. The majority of breeding sites have a strong association with either coniferous plantation or broadleaf woodland with the edges of these areas being used substantially for foraging by breeding Nightjar. Coniferous and broadleaf woodland are habitats that do not occur with any great significance within the ranges of breeding sites in west Penwith. As such this makes the West Penwith atypical when compared with other UK Nightjar sites.

It is recommended that further consideration should be given to including Nightjar as a “feature of interest” given that the population has significance.

<u>Assessment against JNCC Guidance Criteria 3.5</u>

Assemblages of Breeding Bird Species

Localities are eligible which support an especially good range of bird species characteristic of the habitat, as defined by a 'BTO index' equal to or exceeding the value for the appropriate habitat given in Appendix C and Table 28. Different habitats support different numbers of bird species, and there are geographical differences within the same habitat type. Therefore the index denoting a breeding assemblage of special quality differs between habitats and may differ geographically in order to maintain the range of the birds concerned. Refer to Appendix C and Table 28 for details and for comments on sites consisting of mixed habitats.

Appendix C and Table 28 are included in Appendix 1 of this report

Information and records were examined against this criterion in accordance with the methodologies set out in the guidance and using the BTO index scores for sites that support an especially good range of species. Lowland Heath, Scrub (excluding Lowland Heath) and Woodland were examined.

Note that detailed Woodland analysis has been excluded on 2 grounds:

1. Initial analysis showed that there is a very minor woodland component within the project area as mapped. Most of the woodland component consists of small areas of willow carr, isolated small patches of mixed woodland and 1 or 2 small areas of conifer plantation. As such these do not form a significant enough component of the site to warrant consideration as a feature of interest on habitat grounds.

2. Initial analysis of breeding records quickly established that the BTO Index scores for Woodland would not meet the threshold score required.

Data from the BTO Breeding Atlas data for all years 2006-2011

Appendix 3 contains the full BTO data set and details of the Data Request as submitted. The data includes 2006 to 20012 to ensure that it captured the survey effort used to inform the most recent Bird Atlas surveys from 2007 onwards.

Confirmed /Probable Breeding records for tetrads that correlate with sites as mapped in Map 1 are the only records included.

LOWLAND HEATH
(Threshold Score required 20)

SPECIES	BTO INDEX SCORE	No. of Tetrads with Probable Breeding	SCORE
Montagu's Harrier	6		
Hobby	4		
Quail	5	1	5
Stone-curlew	4		
Snipe	2		
Curlew	2		
Redshank	2		
Cuckoo	2	9	2
Long-eared Owl	3		
Nightjar	3	1	3
Woodlark	4		
Tree Pipit	1.5		
Whinchat	2		
Stonechat	2	12	2
Wheatear	2	1	2
Grasshopper Warbler	2	4	2

Dartford Warbler	4	4	4
Red-backed Shrike	5		
Linnet	1	5	1
TOTALS			21

Confirmed/Probable Records for tetrads correlating to site as mapped in Map 1

SCRUB (excluding Lowland Heath)
(Threshold Score required 15)

SPECIES	**BTO INDEX SCORE**	**No. of Tetrads with Probable Breeding**	**SCORE**
Turtle dove	1.5		
Cuckoo	2	9	2
Long-eared owl	3		
Nightjar	3	1	3
Tree pipit	1.5		
Nightingale	3		
Winchat	2		
Stonechat	2	12	2
Grasshopper warbler	2	4	2
Whitethroat	2	14	2
Lesser whitethroat	2		
Garden warbler	1	1	1
Blackcap	1	7	1
Red-backed shrike	5		
Linnet	1	5	1
Cirl bunting	4		
TOTALS			**14**

Given the nature of the habitat of the site and that geographically it is spread across a wide area with complexities of slope aspect, altitude and drainage, it is reasonable to assume that both Scrub (excluding Lowland Heath) and Lowland Heath occur as a mosaic within each “cell” of the site as mapped. Where a site incorporates 1 or more habitat types the JNCC Guidance provides the following:

If two habitats are included in one well-defined site, the indices for species which are on both habitat lists and have been recorded for the site should be double-counted. Other species score in the usual way. For the site to qualify on this basis, its total score should exceed the qualifying threshold value for the two habitats combined.

Combining the BTO Breeding Atlas Records for both habitats gives the following results for SCRUB (Excluding Lowland Heath) and LOWLAND HEATH:

Threshold Score 35

SPECIES	COMBINED HABITAT SCORE
QUAIL	5
CUCKOO	4
NIGHTJAR	6
STONECHAT	4
WHEATEAR	2
GRASSHOPPER WARBLER	4
DARTFORD WARBLER	4
LINNET	2
WHITETHROAT	2
BLACKCAP	1
GARDEN WARBLER	1
TOTAL	**35**

Analysis of Cornwall Birdwatching and Preservation Society Data

Appendix 4 contains the full data set for CBWPS records of Probable and Confirmed Breeding records for species listed under Lowland Heath and Scrub (Excluding Lowland Heath) for years from 2005 to 2012 to ensure the most comprehensive data information would be captured.

Records are at the OS 1km Grid Square level and only OS 1 km squares that occur within the site as mapped in Map 1 are recorded.

Analysis of this data is shown for each habitat type below:

LOWLAND HEATH- Threshold 20

SPECIES	BTO INDEX SCORE	No. 1km Sq's with Probable Breeding	SCORE
Montagu's Harrier	6		
Hobby	4		
Quail	5	2	5
Stone-curlew	4		
Snipe	2		
Curlew	2		
Redshank	2		
Cuckoo	2	>10	2
Long-eared Owl	3		
Nightjar	3	6	3
Woodlark	4		
Tree Pipit	1.5		
Whinchat	2		
Stonechat	2	>10	2
Wheatear	2	>10	2
Grasshopper Warbler	2	>5	2
Dartford Warbler	4	>5	4
Red-backed Shrike	5		
Linnet	1	>5	1
TOTALS			21

SCRUB (EXCLUDING LOWLAND HEATH) - Threshold 15

SPECIES	BTO INDEX SCORE	No. 1km Sq's with Probable Breeding	SCORE
Turtle dove	1.5		
Cuckoo	2	>10	2
Long-eared owl	3		
Nightjar	3	6	3
Tree pipit	1.5		
Nightingale	3		

Winchat	2		
Stonechat	2	>10	2
Grasshopper warbler	2	>5	2
Whitethroat	2	>10	2
Lesser whitethroat	2		
Garden warbler	1	2	1
Blackcap	1	>5	1
Red-backed shrike	5		
Linnet	1	>5	1
Cirl bunting	4		
TOTALS			**14**

Combining the CBWPS Records for both habitats in accordance with the JNCC Guidance gives the following results for SCRUB (Excluding Lowland Heath) and LOWLAND HEATH:

(Threshold Score Required 35)

SPECIES	COMBINED HABITAT SCORE
QUAIL	5
CUCKOO	4
NIGHTJAR	6
STONECHAT	4
WHEATEAR	2
GRASSHOPPER WARBLER	4
DARTFORD WARBLER	4
LINNET	2
WHITETHROAT	2
BLACKCAP	1
GARDEN WARBLER	1
TOTAL	**35**

Analysis of both data sets shows that the project area meets the threshold for Criterion 3.5 – Assemblages of Breeding Birds on 2 cases - Lowland Heath and the combined habitats of Lowland Heath and Scrub (Excluding lowland heath).

In both cases the actual score is equal to the threshold score which meets the criterion as defined.

Recommendation

The West Penwith Moors ESA was launched in 1987 covering some 7,176 ha of heathland and farmland. The area was subsequently increased to 9,567 ha following revision in 1997. Environmental objectives for the ESA were set in 1994 (MAFF, 1994), covering landscape, archaeology and nature conservation. However, only one

of the four objectives refers to nature conservation, this being: To maintain the wildlife conservation value and landscape quality of ‘rough land’. (Rough land being defined as heathland, wetland, semi-natural grassland and scrub.)

There has been outstanding success towards meeting this objective. Before the revision of the area in 1997, 91% of the eligible area of rough land had been entered into agreement, and there has been minimal direct loss of rough land since the ESA was launched (ADAS, 1997). However, critically, performance monitoring by ADAS concludes that, despite the high uptake, “the optimum management regimes for rough land have yet to be attained”.

From this it is clear that the potential for improved abundance and diversity of breeding bird assemblages exists. The current already high scores against Criterion 3.5 could, with notification as SSSI be increased with improvements in habitat management that would inevitably follow notification and the increased likelihood of inclusion of the Project Area in future Higher Level Stewardship schemes.

It is therefore recommended that in any future SSSI Notification consideration should be given to including Assemblages of Breeding Birds as a feature of interest in line with Criterion 3.5

This should be supported by a new, extensive Breeding Bird Survey of the Project Site to help support the historical data sets

Appendix 1

Guidelines for the selection of biological SSSI's
Part 2: Detailed guidelines for habitats and species groups

14 BIRDS

To view other chapters of the guidelines visit : http://jncc.defra.gov.uk/page-2303

14 BIRDS

1 Introduction

1.1 The aim of SSSI selection procedures for birds is similar to that for other wildlife, but the high degree of mobility of birds gives rise to a rather different set of problems. Even within the breeding season, individual birds may depend on sites separated by considerable distances and consisting of very different habitats. This wide use of different localities may occur within a single day or may involve progressive changes during the season. Outside the breeding season many bird species are even more mobile. The simple view of migration between a single breeding area and a single non-breeding area is being shown to be incorrect for an increasing number of species. Other areas are regularly used also and provide resources essential for the wellbeing of the population. Such areas may include those used for pre- and post-breeding gatherings, migration staging posts, moulting and different stages of the winter.

1.2 There may also be year-to-year differences in distribution, for example particular sites on different sides of the North Sea for individual wintering grey plovers according to the severity of weather. This use of alternative wintering sites probably occurs in other species also, but the location of severe weather refuges may be less predictable, and birds of some species are less strongly attached to particular sites than others, for reasons related to their ecological requirements. The scale of movements varies also, from within a single part of Britain to between continents. This international mobility, combined with the strong popular interest in birds, has caused birds to become the focus for several international governmental commitments to conservation (see 2 below and Appendix A).

1.3 The high yet variable mobility of birds causes difficulties in basing site selection guidelines mainly on distribution patterns. Furthermore, the international conventions and directives tend to base selection on estimates of population size. The selection guidelines used here are thus also based mainly on population sizes, for which there are good data.

1.4 Site selection on this basis underlies guidelines 3.1 to 3.4. The threshold of 1% of population has gained wide acceptance from conservationists and governments because it selects the sites of importance to those species whose specialised requirements cause them to concentrate into relatively few sites. This threshold level also provides for protection for rare species in a manner roughly equivalent to that used for other taxa.

1.5 Some species occur in concentrations any one of which tends to be less than 1% of the British population. Part of guideline 3.2 caters for these species and provides extra coverage for seabirds, for which Britain has a particular international responsibility owing to its world importance for the breeding populations of many species.

1.6 In most species which occur in breeding concentrations, these concentrations also produce most of the young. However, there are exceptions; for example, more young shelducks are produced where the species breeds in a dispersed pattern than at the more famous colonial sites. Another part of guideline 3.2 allows for such information, if available, to be used for effective conservation.

1.7 For species adapted to dispersed breeding, adequate samples of the population will not be conserved on the basis of guidelines 3.1 and 3.2. Some habitats have been destroyed so extensively that it is possible to survey almost the whole of the bird population on the remaining fragments and assess sites on the basis of this survey. This is the case for lowland wet meadows in England and Wales (see 3.8).

1.8 For such fragmented habitats, it is often relatively simple to delimit a site. This is less so for more continuous habitats, particularly in the uplands. For this reason, guideline 3.6 uses density of breeding birds. In such situations, if boundaries are drawn too widely, average densities within the site will be lower than with more restricted boundaries. Attention must, however, be paid to maintaining the conditions to provide for the continuance of the habitat concerned.

1.9 There would be obvious benefits in taking account of density in other habitats so as to ensure the conservation of adequate population samples of other dispersed species. The site-surveying task would, however, be immense. Part of guideline 3.8 allows for such information to be used in exceptional cases, but coverage is provided mainly by guideline 3.5, which uses the more usually available information on regular presence of species.

1.10 Mosaics of habitats may be very important for birds as for some other animals. Selection presents problems and is discussed elsewhere in these guidelines (B, 6). Some consideration of the implications for birds is given in guidelines 3.5 and 3.7.

2 International commitments

2.1 Certain categories of sites of importance to birds qualify for protection under either the Council of the European Communities' Directive 79/409/EEC on the Conservation of Wild Birds or the 'Ramsar' Convention on Wetlands of International Importance especially as Waterfowl Habitat or both (see B, 3.2). The criteria for such sites are given in Appendix A. Those sites identified by 1987 by the NCC as eligible for designation are listed in Policy and Procedure Guideline 1/88, which also describes the notification procedure. Potential changes to the lists should be discussed with the CSD Ornithology Branch.

2.2 Any site that meets the ornithological criteria of the 'Ramsar' Convention, notably the quantitative criteria for waterfowl, will also fall within these guidelines for SSSIs, particularly 3.1 and 3.3. Marine areas are an exception because they cannot be notified as SSSIs.

2.3 The EEC Bird Directive requires special conservation measures concerning the habitat of rare or vulnerable species (listed in its Annex 1) and of regularly occurring migratory species sufficient to ensure the maintenance of their distributions. These measures should include the designation of Special Protection Areas where appropriate. The wetland aspects have been deliberately designed to parallel the 'Ramsar' Convention's requirements, and guidelines 3.1 and 3.3 should equally cover these requirements as they relate to wetlands. This also applies to the requirements of several Annex 1 species. Those species of Annex 1 which regularly occur in Britain are listed in Appendix A.

2.4 The requirements of the EEC Directive (except for marine areas) are covered mainly in guidelines 3.1, 3.3 and 3.6, but some elements are dealt with in the other guidelines also.

3 Site selection requirements

3.1 <u>Breeding aggregations and localities of very rare species</u>

Localities which normally contain 1% or more of the total British breeding population of any native species and seabird colonies of over 10,000 breeding pairs are eligible for selection. In practice, this guideline covers mainly colonial species (e.g. seabirds and herons), semi-colonial species (e.g. some grebes, ducks and waders) and rare species. For estimates of British populations, use the values in Appendix B and Table 27. In view of the mobility of some birds, this guideline applies to sites used for other essential activities by breeding birds, for example display sites of lekking species and feeding areas as well as nesting sites. For its application to rare species (including further naturally

colonising species not listed in Appendix B) it is important that any site considered should be used regularly and should normally be large enough to include all the areas required by the individuals concerned; it will rarely be appropriate for single pairs of wide-ranging species. Care should be exercised also if the presence of rare birds is the only reason for considering a largely artificial habitat. In both cases the CSD Ornithology Branch should be consulted.

3.2 Smaller isolated colonies of seabirds and other birds and other breeding sites

The largest colony of colonial seabird species (except herring gull and lesser black-backed gull) or of herons or of sand martins in the AOS is also eligible in cases where the nearest colony which includes the species concerned and which is selected under guideline 3.1 is in the next AOS or further away. Britain's seabird populations are of special international importance; guideline 3.1 is therefore supported by this additional category, which allows fuller geographical cover for colonial birds. Colonies must hold more than 10 pairs of the species concerned to qualify. In cases where relevant information is available, sites where breeding productivity is consistently higher than at other sites which meet the more usual guidelines based on population size or density may be selected, in consultation with the CSD Ornithology Branch.

3.3 Localities regularly used by non-breeding birds

Localities which regularly contain 1% or more of the total British non-breeding population of any species at any season are also eligible. The main use of this guideline will be for wintering populations, but, where data are available, it can be applied also at other seasons (e.g. for pre- and post-breeding gatherings, non-breeding summer flocks, moulting flocks and passage concentrations). The best available current estimates for wintering populations are included in Appendix B and Table 27. Updated figures for 1% levels in winter, and in a few cases at passage times, are given for waterfowl and wader species in the annual booklet Wildfowl and wader counts produced by the Wildfowl Trust and the British Trust for Ornithology under contract to the NCC. This booklet is supplied annually to all NCC regions. The use of this guideline for passage, rather than moulting or wintering, populations requires particular care because of the difficulty in assessing national population sizes at times of major movements: consult the CSD Ornithology Branch. Feeding and roosting areas on croplands, including agriculturally improved grasslands (other than those washlands etc. which are regularly flooded in winter), should not usually be selected, since the birds concerned are rarely restricted to special parts of such areas, the significance of which may alter with a change of crop. Sites where the total area of such croplands is relatively restricted may be exceptions. (See also C.1, 11.2.19.)

3.4 Localities used by birds in particular conditions

Localities which contain 1% or more of the total British wintering population regularly in definable conditions, even if not in most years, may also be selected. This category might cover areas used consistently by large numbers of birds in cold or windy weather. It does not apply to cases in which large numbers of birds occur without attributable cause, nor to occurrences of migrants driven off course by adverse weather. Croplands should not normally be selected (see 3.3). This guideline is unlikely to apply to many situations: consult the CSD Ornithology Branch.

3.5 Assemblages of breeding bird species

Localities are eligible which support an especially good range of bird species characteristic of the habitat, as defined by a 'BTO index' equal to or exceeding the value for the appropriate habitat given in Appendix C and Table 28. Different habitats support different numbers of bird species, and there are geographical differences within the same habitat type. Therefore the index denoting a breeding assemblage of special quality differs between habitats and may differ geographically in order to maintain the range of the birds concerned. Refer to Appendix C and Table 28 for details and for comments on sites consisting of mixed habitats.

3.6 Uplands (including blanket bogs)

Most sites of natural or semi-natural habitats in Britain tend to be well defined either because of the natural delimitation of the habitat or because of habitat fragmentation by man. This is not the case for many upland areas, and some of the above guidelines may be difficult to apply here. Defining boundaries presents particular problems (see B, 5.8 and C.9, 4). It is thus even more desirable for this habitat than for others to include where possible considerations of breeding density and adequate population samples, partly in order to assist the placing of limits on the areas of special interest. (If boundaries are drawn too widely, average densities will be lower: see 1.8.) Because the nature of upland habitats varies greatly through the country, surveys are necessary to assess the range of densities observed in the region as well as to identify areas of importance. Breeding waders are the most practicable species on which to base assessments of many upland habitats for birds, by identifying sites of relatively high densities. Predator populations provide the key in other areas, but suitable data are not yet available for general application. Two methods of assessment are used, for these survey data, one relating to key wader species and the other integrating wider avian interest.

3.6.1 Sites are of special quality if the mean density of a key indicator species exceeds by 50% the mean upland density for that species in that part of the country. Parts of Britain for which data are currently available and the densities which should be exceeded are listed in Appendix D.

3.6.2 A useful method of evaluating a range of sites where breeding bird information is available is the Moorland Bird Index. This method of evaluation is subject to the following constraints:

(a) it should only be used where there are several sites to compare (over seven as the minimum);
(b) sites should be roughly the same size, and inclusion of very large or very small sites in the sample should be avoided;
(c) sites should be surveyed by the same methods, to avoid methodological differences obscuring differences between sites;
(d) sites should be broadly comparable in terms of habitat composition and abundance.

It is thus ideal for the evaluation of widespread regional surveys. The method includes consideration of both quantitative information on densities and qualitative information on diversity and abundance, of certain typical moorland birds. Plots are scored on the basis of the abundance (pairs/km2) and occurrence of typical upland species and then placed into rank order.

As this method is applicable only as part of an extensive survey which will normally require CSD and regional discussions, further details are not included here. For further information and advice on the use of the index and for guidance on regional qualifying scores, contact the CSD's Moorland Bird Study team.

Note that guideline 3.5 may also be used for upland sites supporting a diverse assemblage of breeding birds. Note also that, particularly in blanket bog areas, the site selected must be hydrologically sustainable; this may require wider boundaries than are indicated directly by bird distributions and densities.

3.7 Variety of species

Localities consisting of semi-natural habitats where at least 70 breeding species or at least 90 wintering species or at least 150 species on passage have been recorded in recent years are also eligible for selection. This category may be more appropriate than guideline 3.5 for breeding sites with

mosaics of habitats, as well as for sites of great importance in the non-breeding season. On the basis of the figures given above, approximately 7.5%, 5% and 2% respectively of the sites included in the BTO Register of Ornithological Sites (which itself included mainly sites of considerable ornithological interest) would be eligible for consideration. Other sites from the Register would of course be eligible under other categories.

3.8 Rare species and features

Consideration should also be given to regularly used sites with unique or unusual features, such as isolated colonies outside the main range of a species, inland cormorant colonies, woodlands with exceptionally high densities of species of restricted distributions and sites with exceptionally high densities of breeding waders or other waterfowl. In the case of the particularly threatened habitat of wet meadows, a survey of England and Wales for breeding birds was undertaken in 1982 and specific recommendations were made to NCC regions in 1983 with regard to sites for consideration.

Appendix A

Criteria for 'Ramsar' sites and Special Protection Areas (see also PPG 1/88)

'Ramsar' sites

The Convention on Wetlands of International Importance especially as Waterfowl Habitat was finalised at a conference at Ramsar in Iran in 1971. Contracting parties (including the UK Government) are required to advise, without delay, the Bureau of the Convention (currently based at IUCN with technical support based at IWRB) if any wetland in its territory which it has designated under the Convention has changed, is changing or is likely to change as a result of technological developments, pollution or other human interference (Article 3.2).

The types of wetland which are eligible for consideration under the Convention are defined as "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres" (Article 1.1).

The boundaries of such wetlands "may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands, especially where these have importance as waterfowl habitat" (Article 2.1).

"Wetlands should be selected . . . on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology. In the first instance wetlands of international importance to waterfowl at any season should be included" (Article 2.2).

For the purpose of the Convention waterfowl are defined as "birds ecologically dependent on wetlands" (Article 1.2).

(Note that the potential for fulfilling the requirements either of the Convention or of the EEC Birds Directive in respect of British marine areas is severely limited at present.)

More specific criteria were adopted at the Conference of Contracting Parties to the Convention at Cagliari in Italy in 1980 and revised at the Conference in Regina in Canada in 1987. These are given below. It is likely that the non bird criteria will be refined progressively at future conferences as information becomes available to enable this.

Criteria for identifying wetlands of international importance

A wetland qualifies for one or more of the following reasons.

1. Criteria for assessing the value of representative or unique wetlands.

   A wetland should be considered internationally important if it is a particularly good example of a specific type of wetland characteristic of its region.

2. General criteria for using plants or animals to identify wetlands of importance.

   A wetland should be considered internationally important if

   a. it supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant or animal or an appreciable number of individuals of any one or more of these species

or b. it is of special value for maintaining the genetic and ecological diversity of a region because of the quality and pecularities of its flora and fauna

or c. it is of special value as the habitat of plants or animals at a critical stage of their biological cycles

or d. it is of special value for its endemic plant or animal species or communities.

3. Specific criteria for using waterfowl to identify wetlands of importance.

   A wetland should be considered internationally important if

   a. it regularly supports 20,000 waterfowl

or b. it regularly supports substantial numbers of individuals from particular groups of waterfowl indicative of wetland values, productivity or diversity

or c. where data on populations are available, it regularly supports 1% of the individuals in a population of one species or subspecies of waterfowl.

International 1% population levels relevant to Britain are included in the booklet Wildfowl and wader counts supplied annually to all NCC regions.

Special Protection Areas

The Council of the European Communities' Directive of 2 April 1979 on the Conservation of Wild Birds (79/409/EEC) requires Member States to take special conservation measures including the establishment of Special Protection Areas (SPAs) to protect (under Article 4.1) certain listed rare or vulnerable species and (under Article 4.2) regularly occurring migratory species. Article 4 is given below, followed by a list of those species on Annex 1 (as amended by the Commission's Directive of 25 July 1985, 85/411/EEC) which occur regularly in Britain. Finally a note on selection of SPAs is given.

Text of Article 4 of EEC Directive 79/409

1. The species mentioned in Annex 1 shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.

   In this connection, account shall be taken of:

   (a) species in danger of extinction;

   (b) species vulnerable to specific changes in their habitat;

   (c) species considered rare because of small populations or restricted local distribution;

   (d) other species requiring particular attention for reasons of the specific nature of their habitat.

   Trends and variations in population levels shall be taken into account as a background for evaluations.

   Member States shall classify in particular the most suitable territories in number and size as special protection areas for the conservation of these species, taking into account their protection requirements in the geographical sea and land area where this Directive applies.

2. Member States shall take similar measures for regularly occurring migratory species not listed in Annex 1, bearing in mind their need for protection in the geographical sea and land area where this Directive applies, as regards their breeding, moulting and wintering areas and staging posts along their migration routes. To this end, Member States shall pay particular attention to the protection of wetlands and particularly to wetlands of international importance.

3. Member States shall send the Commission all relevant information so that it may take appropriate initiatives with a view to the coordination necessary to ensure that the areas provided for in paragraphs 1 and 2 above form a coherent whole which meets the protection requirements of these species in the geographical sea and land area where this Directive applies.
4. In respect of the protection areas referred to in paragraphs). and 2 above, Member States shall take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article. Outside these protection areas, Member States shall also strive to avoid pollution or deterioration of habitats.

Species on Annex l of the EEC Bird Directive which occur regularly in Britain

Great northern diver
Black-throated diver
Red-throated diver
Slavonian grebe
Storm petrel
Leach's petrel
Bittern
Bewick's swan
Whooper swan
White-fronted goose
(Greenland race)
Barnacle goose
Honey buzzard
Red kite
White-tailed eagle
Marsh harrier
Hen harrier
Montagu's harrier
Golden eagle
Osprey
Peregrine
Merlin
Capercaillie
Spotted crake
Corncrake
Avocet
Stone curlew
Dotterel
Golden plover
Ruff
Wood sandpiper
Red-necked phalarope
Mediterranean gull

Sandwich tern
Roseate tern
Common tern
Arctic tern
Little tern
Black tern
Snowy owl
Short-eared owl
Nightjar
Kingfisher
Woodlark
Wren (Fair Isle race only)
Dartford warbler
Red-backed shrike
Chough
Scottish crossbill

Selection of potential SPAs

Any site that supports nationally important numbers of an Annex 1 species or of a migratory bird species (at any season of the year) should be given consideration as to whether it should be proposed as an SPA. Some sites holding lower numbers of some Annex 1 species may also need consideration in view of the requirement to maintain distributions. Any such site should qualify as a potential SSSI. These SSSI selection guidelines have been written to embrace such special interest. Article 4.2 is worded so that sites meeting 'Ramsar' waterfowl criteria will be eligible also for SPA designation. A list of potential SPAs is given in PPG 1/88. The CSD Ornithology Branch should be consulted about possible additions and deletions (see PPG 1/88).

Appendix B

An estimate of numbers of birds breeding and wintering in Britain

Table 27 provides a list of bird species breeding in Britain, with estimates of their current abundance based on a British Trust for Ornithology report to the NCC (Hudson & Marchant 1984) with some more recent information incorporated. Some estimates initially concerned Britain and Ireland. These have been adjusted to refer to Great Britain only.

The winter estimates are based on material collated for The atlas of wintering birds in Britain and Ireland (Lack 1986). Estimates have again been adjusted to refer to Great Britain only. The winter estimates for wildfowl and waders are based on the Wildfowl Trust's National Wildfowl Counts commissioned by the NCC, the BTO/NCC/RSPB Birds of Estuaries Enquiry and the Winter Shorebird Count jointly organised by the BTO and the Wader Study Group. Some information from the NCC's Seabirds at Sea Team is also incorporated.

The tabulated data give the following information.

Abundance

For each species the best estimate of the number of pairs attempting to breed is given; k indicates thousands and m millions.

Species indicated by * before the name are introductions and should not normally be taken into account for MI selection. Species indicated by + before the name have both natural and feral populations present in Britain.

Source

The next column lists the source of the information in Hudson & Marchant's (1984) report or provided subsequently. The atlas of breeding birds in Britain and Ireland (Sharrock 1976) has become the standard work in this field, but its data are now more than ten years old and in some cases incorporate earlier material (e.g. 1969-70 Operation Seafarer for seabirds). This current document updates the position. Where no new information is available for a species since the atlas, an A appears in the source column. CSC indicates that the population figure has been estimated from Common Birds Census data provided by the BTO, and this estimate will generally be post-1980. The Rare Breeding Birds Panel (RBBP) annually publishes data on the status of these species in British Birds. The coverage of Britain by this panel is incomplete, so some estimates which rely on this source may be too low. A notable example is that of the hobby, where some regions in which the species is known to nest do not submit annual records to the panel. Generally, however, accuracy is

reasonably good from this source, as many of the species have very small and carefully monitored populations. WSG indicates a review of wader populations in Britain undertaken by Dr T.M. Reed in 1985 for the Wader Study Group and the NCC. Where none of the foregoing sources can be used or in the case of special surveys, a date is given referring to the most recent available study or census. For seabirds, preliminary data from the Seabird Group/NCC Seabird Colony Register have been incorporated in some cases.

Reliability classification

The reliability classification, using asterisks, is:

*** Sound estimate, ** Census difficulties, * Informed guesswork.

Sound estimates usually result from a species which is simple to census or of which there has been a recent intensive and successful study (e.g. gannet, of which all birds are relatively easily counted at known sites). Two asterisks indicate a less reliable estimate, where a species is difficult to census or where there is an unexplained and marked deviation from the population figure given in the atlas (e.g. common snipe). A single asterisk is used where informed guesswork is the only means by which a figure can be given, for species which are almost impossible to census (e.g. water rail).

Population trend

Where applicable, trend is indicated: UP, UP?, DOWN or DOWN?. This shows any change in population size within the last 15 years. In several cases increases within this period are partial recoveries from earlier declines such as those caused by toxic chemicals. Where the trend is really, as yet, too small to have any significance or where detailed quantitative data are not yet available, a question mark is placed in the column.

Comments

The comments column records miscellaneous information. Not all species are commented on and the wording is kept as short as possible. Additional information is included on population size, especially the status of very rare species, and fluctuations are mentioned for those species in which they occur frequently (e.g. grey heron). Polygynous species and those with large non-breeding sections of the population (e.g. mute swan) are indicated, as is the method of survey where appropriate (e.g. location of singing males for nightingale).

Winter

The winter column gives the best estimate available for the size of the wintering population. Note that these totals refer to individuals, whereas the breeding season totals refer to pairs. These estimates are generally more difficult to obtain than those for the breeding season because birds tend to be more mobile in winter. Some birds may be nomadic and others have a series of areas used at different times in the non-breeding season. The figures given are the estimates of the total number present in December and January in a normal winter. Generally, the figures for wildfowl and coastal waders, which are the subject of regular counts, are fairly accurate, but those for some other species are rather less so. Estimates are not given for most seabirds, except where their distribution is mainly inshore. Seabird distributions and numbers at various seasons are the subject of current survey by the NCC's Seabirds at Sea Team; k indicates thousands; m millions; * variable numbers related to weather or other environmental factors.

Table 27 Abundance estimates of British breeding and wintering birds

	Abundance (pairs)	Source	Reliability	Trend	Comments	Winter (individuals)
RED-THROATED DIVER Gavia stellata	1-1.5k	1984	***	DOWN?	700 prs Shetland (50+%).	6-7k
BLACK-THROATED DIVER Gavia arctica	150	1985	***	-		1200
GREAT NORTHERN DIVER Gavia immer	0-1					2-3k
LITTLE GREBE Tachybaptus ruficollis	9-14k	1980	**	DOWN?	Fluctuating nos make estimations difficult.	8k+
GREAT CRESTED GREBE Podiceps cristatus	3-3.4k	1979	***	UP		*5-15k
RED-NECKED GREBE Podiceps grisegena	0-1	RBBP	***	-	Possible colonist.	100-170
SLAVONIAN GREBE Podiceps auritus	70-80	RBBP	***	UP		400
BLACK-NECKED GREBE Podiceps nigricollis	<20	RBBP	***	-	Only 3 regular breeding sites.	100
FULMAR Fulmarus glacialis	400k	1982	**	UP		At sea
MANX SHEARWATER Puffinus puffinus	240k	1984	**	-		At sea
STORM PETREL Hydrobates pelagicus	<100k	1984	*	-		At sea
LEACH'S PETREL Oceanodroma leucorrhoa	>10k	1984	*	-		At sea
GANNET Sula bassana	160k	1985	***	UP		At sea
CORMORANT Phalacrocorax carbo	6200	A	***	-		15-20k
SHAG Phalacrocorax aristotelis	30k	1985	***	-		75-120k
BITTERN Botaurus stellaris	47-51	RBBP	***	DOWN	Booming males surveyed.	* 50-150
LITTLE BITTERN Ixobrychus minutus	0-1	RBBP	***	-	Possible colonist.	
GREY HERON Ardea cinerea	3500-8500	1979	***	-	Fluctuates depending on winter.	25k
MUTE SWAN Cygnus olor	3100	1978	**	DOWN	Plus about 10k non-breeders.	18k
BE WICK'S SWAN Cygnus columbianus	-					5k
WHOOPER SWAN Cygnus cygnus	0-1	RBBP	***	-	Possible colonist; irregular attempts.	4500
BEAN GOOSE Anser fabalis	-					200-400
PINK-FOOTED GOOSE Anser brachyrhynchus	-					100k
EUROPEAN WHITE-FRONTED GOOSE Anser albifrons albifrons	-					6k
GREENLAND WHITE-FRONTED GOOSE Anser albifrons flavirostris	-					10k
+GREYLAG GOOSE Anser anser	600-1000	1987	**	-	Wild population in NW Scotland, plus several hundred feral pairs in former natural range elsewhere in Britain.	100k
+SNOW GOOSE Anser caerulescens	-					30
*CANADA GOOSE Branta canadensis	10k	1983	**	UP		40k
BARNACLE GOOSE Branta leucopsis - Greenland population	-					20k
BARNACLE GOOSE Branta leucopsis - Svalbard population	-					10k
LIGHT-BELLIED BRENT GOOSE Branta bernicla hrota	-					600-3400
DARK-BELLIED BRENT GOOSE Branta bernicla bernicla	-					90k
*EGYPTIAN GOOSE Alopochen aegyptiacus	300-400	A	***	-		0.5-1k
SHELDUCK Tadorna tadorna	15k	1983	**	UP?		75k
*MANDARIN Aix galericulata	300-400	A	***	-		Zk
WIGEON Anas penelope	300-500	A	**	-		200k
+GADWALL Anas strepera	260	A	***	-		4k
TEAL Anas crecca	3.5-6k	A	**	-		100k
MALLARD Anas platyrhynchos	40k+	A	**	-		500k
PINTAIL Anas acuta	16-41	RBBP	***	-	Fluctuates from year to year.	25k
GARGANEY Anas querquedula	<55	RBBP	***	-		

	Abundance (pairs)	Source	Reliability	Trend	Comments	Winter (individuals)
SHOVELER Anas clypeata	500	A	**	DOWN?	Fluctuates from year to year.	9k
*RED-CRESTED POCHARD Netta rufina	-					50-100
POCHARD Aythya ferina	200	A	**	DOWN?	Possible increase in SE England.	5Uk
LONG-NECKED DUCK Aythya collaris	-					10
*FERRUGINOUS DUCK Aythya nyroca	-					20
TUFTED DUCK Aythya fuligula	1.5-2k	A	**	-		60k
SCAUP Aythya marila	0-1	RBBP	***	-	Irregular attempts.	5k
EIDER Somateria mollissima	15-25k	A	**	-		50k
LONG-TAILED DUCK Clangula hyemalis	-					20k
COMMON SCOTER Melanitta nigra	75-80	1986	***	-		35k
VELVET SCOTER Melanitta fusca	-					*2.5-5ki
GOLDEN EYE Bucephala clangula	>40	RBBP	***	UP		15k
SMEW Mergus albellus	-					100
RED-BREASTED MERGANSER Mergus serrator	1-2k	A	**	-		10k
GOOSANDER Mergus merganser	900-1300	1977/8	***	-		5k
*RUDDY DUCK Oxyura jamaicensis	200-250	1983	**	UP		2k
HONEY BUZZARD Pernis apivorous	10-12	RBBP	**	-		
RED KITE Milvus milvus	40	RBBP	***	UP?		110-140
WHITE-TAILED EAGLE Haliaeetus albicilla	9	1988	***	UP	NCC reintroduction.	50
MARSH HARRIER Circus aeruginosus	20-23	RBBP	***	UP?		
HEN HARRIER Circus cyaneus	400	1983	***	UP?		750
MONTAGU'S HARRIER Circus pygargus	1-3	RBBP	***	-	More regular this decade.	
+GOSHAWK Accipiter gentilis	60	RBBP	**	UP	Presumably most are feral birds.	300
SPARROWHAWK Accipiter nisus	15-20k	1983	**	UP		75-130k
BUZZARD Buteo buteo	8-10k	A	**	-		20-30k
ROUGH-LEGGED BUZZARD Buteo lagopus	-					*0-100
GOLDEN EAGLE Aquila chrysaetos	>400	1982	***	DOWN?		1000-law
OSPREY Pandion haliaetus	50	1987	***	UP		
KESTREL Falco tinnunculus	30-40k	1983	**	DOWN?		75k
MERLIN Falco columbarius	<500	1981/3	**	DOWN	New RSPB data soon.	1500-2503
HOBBY Falco subbuteo	1k	1985			Information with RBBP incomplete.	
PEREGRINE Falco peregrinus	850	1987	***	UP	90% of 1930s level (Ratcliffe 19843.	3k
RED GROUSE Lagopus lagopus	300k	A	*	DOWN?		?lm
PTARMIGAN Lagopus mutus	10k	A	**	DOWN?		10-15k
BLACK GROUSE Lyrurus tetrix	10-50k	A	*	DOWN	Polygynoust nos of pairs inappropriate.	10-20k
CAPERCAILLIE Tetrao urogallus	1-10k	A	*	-	Polygynous: nos of pairs inappropriate.	
*RED-LEGGED PARTRIDGE Alectoris rufa	200-200k	A	*	-	Artificial stocking distorts estimate.	
GREY PARTRIDGE Perdix perdix	100-200k	A		DOWN		7
QUAIL Coturnix coturnix	<100	A	*	-	Wide yearly fluctuations.	
*PHEASANT Phasianus colchicus	400k	A	*	-	Artificial stocking distorts estimate.	? 8m
*GOLDEN PHEASANT Chrysolophus pictus	500-1000	A	**	-		1-2k
*LADY AMHERST'S PHEASANT Chrysolophus amherstiae	100-200	A	**	DOWN?		200-500
WATER RAIL Rallus aquaticus	1.5-3k	A	*	-		
SPOTTED CRAKE Porzana porzana	4-9	RBBP	***	-	<10 singing males per year 1977-1981.	
CORNCRAKE Crex crex	420-450	1987	**	DOWN		
MOORHEN Gallinula chloropus	200k	A	*	-		lm
COOT Fulica atra	40-80k	A	*	-		150k
OYSTERCATCHER Haematopus ostralegus	33-43k	WSG	**	UP?		280k
BLACK-WINGED STILT Himantopus himantopus	0-1	RBBP	***	-	Occasional attempts.	
AVOCET Recurvirostra avosetta	175	WSG	***	UP		500
STONE CURLEW Burhinus oedicnemus	150	1987	**	DOWN		

	Abundance (pairs)	Source	Reliability	Trend	Comments	Winter (individuals)
LITTLE RINGED PLOVER Charadrius dubius	475	1984	***	UP		
RINGED PLOVER Charadrius hiaticula	8600	1984	**	-		23k
KENTISH PLOVER Charadrius alexandrinus	0-1	RBBP	***	-	Irregular attempts.	
DOTTEREL Charadrius morinellus	500	1987	**	UP?		
GOLDEN PLOVER Pluvialis apricaria	23k	1987	**	DOWN?		200k
GREY PLOVER Pluvialis squatarola	-					21k
LAPWING Vanellus vanellus	180k	WSG	**	-		1m
KNOT Calidris canutus	-					220k
SANDERLING Calidris alba	-					14k
LITTLE STINT Calidris minuta	-					20
TEMMINCK'S STINT Calidris temminckii	<6	RBBP	***	UP	Tiny population established.	
PURPLE SANDPIPER Calidris maritima	1-3	RBBP	***	-	Recent attempts.	16k
DUNLIN Calidris alpina	10k	1987	**	DOWN?		430k
RUFF Philomachus pugnax	10-12	RBBP	***	-	Recent re-establishment.	1-2k
JACK SNIPE Lymnocryptes minimus	-					?15k
COMMON SNIPE Gallinago gallinago	30k	WSG	**	DOWN		?
WOODCOCK Scolopax rusticola	8-35k	A	*	-	Polygynous: nos of pairs inappropriate.	?
BLACK-TAILED GODWIT Limosa limosa	22-87	RBBP	**	-	Some range extension but decline in main areas.	4800
BAR-TAILED GODWIT Limosa lapponica	-					*61k
WHIMBREL Numenius phaeopus	430-500	1987	***	UP		-
CURLEW Numenius arquata	33-38k	WSG	**	DOWN?		91k
SPOTTED REDSHANK Tringa erythropus	-					200
REDSHANK Tringa totanus	31-34k	WSG	**	DOWN?		75k
GREENSHANK Tringa nebularia	1000	1987	**	DOWN?		300-500
GREEN SANDPIPER Tringa ochropus	-					300
WOOD SANDPIPER Tringa glareola	3-12	RBBP	***	-	Very small and fluctuating nos in Scotland.	
COMMON SANDPIPER Actitis hypoleucos	17-20k	WSG	**	-		40
TURNSTONE Arenaria interpres	0-1	RBBP	***	-	Possible colonist.	45k
RED-NECKED PHALAROPE Phalaropus lobatus	20-40	RBBP	***	-		
ARCTIC SKUA Stercorarius parasiticus	3200	1986	***	UP?	Apparent increase may be due to better survey techniques.	
GREAT SKUA Stercorarius skua	7400	1986	***	UP		
MEDITERRANEAN GULL Larus melanocephalus	1-3	RBBP	***	UP	Incipient colonist.	100
LITTLE GULL Larus minutus	0-2	RBBP	**	-	Irregular attempts.	300-500
BLACK-HEADED GULL Larus ridibundus	120-220k	A	**	-		2m
RING-BILLED GULL Larus delawarensis	-					100
COMMON GULL Larus canus	40k	A	**	-		635k
LESSER BLACK-BACKED GULL Larus fuscus	<70k	A	**	DOWN	Recent general decrease.	60k
HERRING GULL Larus argentatus	<300k	1976	**	DOWN	Recent general decrease.	300k
ICELAND GULL Larus glaucoides	-					*70-250
GLAUCOUS GULL Larus hyperboreus	-					200-500
GREAT BLACK-BACKED GULL Larus marinus	<21k	1985	**	DOWN	Recent general decrease.	
KITTIWAKE Rissa tridactyla	500k	1983	**	-	Up on east coast; down in Northern Isles; stable elsewhere.	At sea
SANDWICH TERN Sterna sandvicensis	13k	1982	***	UP		-
ROSEATE TERN Sterna dougallii	300-350	1982	***	DOWN		
COMMON TERN Sterna hirundo	10-12k	1985	**	-		
ARCTIC TERN Sterna paradisaea	75k	1982	***	UP		
LITTLE TERN Sterna albifrons	2k	1982	***	UP?		
BLACK TERN Chlidonias niger	0-1	RBBP	***	-	Irregular attempts.	
GUILLEMOT Uria aalge	630-700k	1985	**	UP?	= 0.9-1m counted birds.	At sea
RAZORBILL Alca torda	63-77k	1985	**	UP?	= 90-110k counted birds.	At sea

	Abundance (pairs)	Source	Reliability	Trend	Comments	Winter (individuals)
BLACK GUILLEMOT Cepphus grylle	12.5-15k	1985	**	-	= 25-30k counted birds; atlas estimate too low.	30-60k
LITTLE AUK Alle alle	-					At sea
PUFFIN Fratercula arctica	500k	1984	**	-		At sea
+ROCK DOVE/FERAL PIGEON Columba livia	100k	A	*	-		
STOCK DOVE Columba oenas	100k	1981		UP	Some recovery towards pre-crash levels.	9
WOOD PIGEON Columba palumbus	2-4m	A	**	-		9m
COLLARED DOVE Streptupelia decaocto	40k+	A	**	UP		100k
TURTLE DOVE Streptopelia turtur	100k	A	**	-		-
*RING-NECKED PARAKEET Psittacula krameri	500-1000	1983	***	-		lk
CUCKOO Cuculus canorus	175-350k	A	**	-		
BARN OWL Tyto alba	3-7k	A	**	DOWN		10-20k
SNOWY OWL Nyctea scandiaca	0-1	RBBP	***	-	Breeding attempts faltered since 1975.	
*LITTLE OWL Athena noctua	7-14k	A	**	-		19-38k
TAWNY OWL Strix aluco	50-100k	A	**	-		200-350k
LONG-EARED OWL Asio otus	2-8k	A	**	-		*8-2.7k
SHORT-EARED OWL Asia flammeus	1k	A	**	-		*4-40k
NIGHTJAR Caprimulgus europaeus	<2100	1983	***	DOWN		
SWIFT Apus apus	100k	A	*	-	Almost impossible to census.	
KINGFISHER Alcedo atthis	3-7k	A	**	-	Winter-dependent fluctuations.	6-10k
HOOPOE Upupa epops	0-4	RBBP	***	-	Irregular attempts.	
WRYNECK Jynx torquilla	0+	RBBP	***	DOWN	No proved breeding from 1981 onwards.	
GREEN WOODPECKER Picus viridis	10-15k	A	**	DOWN?		40-70k
GREAT SPOTTED WOODPECKER Dendrocopos major	30-40k	A	**	-		150-200k
LESSER SPOTTED WOODPECKER Dendrocopos minor	5-8k	A	**	DOWN?		20-40k
WOODLARK Lullula arborea	220-230	1987	***	DOWN	Local fluctuations.	150-200
SKYLARK Alauda arvensis	2m	CBC	**	-		20m
SHORE LARK Eremophila alpestris	0-1	RBBP	***	-	Irregular attempts.	*300-1500
SAND MARTIN Riparia riparia	100k		*	DOWN	Possibly down to 10% of atlas level.	
SWALLOW Hirundo rustica	500-600k	CBC	**	-		
HOUSE MARTIN Delichon urbica	200-500k	A	**	-		
TREE PIPIT Anthus trivialis	100k	CBC	**	-		
MEADOW PIPIT Anthus pratensis	1-1.5m	CBC	**	DOWN?	CBC poor on uplands.	0.7-2m
ROCK PIPIT Anthus spinoletta	40k	A	**	-		70-120k
YELLOW WAGTAIL Motacilla flava	175k	CBC	*	UP?	Very different from atlas estimate.	
GREY WAGTAIL Motacilla cinerea	15-40k	A	**	-		20k
PIED WAGTAIL Motacilla alba	300k	CBC	**	-		600-1500k
WAXWING Bombycilla garrulus	-					*100+
DIPPER Cinclus cinclus	20-25k	A	**	-		10-40k
WREN Troglodytes troglodytes	3-5m	CBC	**	-	Winter-dependent fluctuations.	9-15m
DUNNOCK Prunella modularis	2m	CBC	**	-		15m
ROBIN Erithacus rubecula	3.5m	CBC	**	-		8m
NIGHTINGALE Luscinia megarhynchos	3.2-4.8k	1982	***	DOWN	Singing males surveyed.	
BLACK REDSTART Phoenicurus ochruros	50-100	1981	***	-	Rarely above 100 pairs.	400
REDSTART Phoenicurus phoenicurus	140k	CBC	**	UP		
WHINCHAT Saxicola rubetra	15-30k	A	**	-		
STONECHAT Saxicola torquata	20-40k	A	**	-		60-80k
WHEATEAR Oenanthe oerianthe	60k	A	**	DOWN?		
RING OUZEL Turdus torquatus	6-12k	A	**	-		
BLACKBIRD Turdus merula	4.5-5m	CBC	**	-		I0-15m
FIELDFARE Turdus pilaris	1-12	RBBP	***	-	Tiny population probably established.	*800k+

	Abundance (pairs)	Source	Reliability	Trend	Comments	Winter (individuals)
SONG THRUSH Turdus philomelos	1.5m	CBC	**	-		5-8m
REDWING Turdus iliacus	20-52	RBBP	***	-	Fluctuating number, waning at present.	*800ki
MISTLE THRUSH Turdus viscivorus	300k	CBC	**	-		300-600k
CETTI'S WARBLER Cettia cetti	150-200	RBBP	**	UP	Meteoric rise flattening nut.	500-1000
GRASSHOPPER WARBLER Locustella naevia	12k	A	*	DOWN?		
SAW'S WARBLER Locustella luscinioides	6-30	RBBP	***	-	Small population established.	
SEDGE WARBLER Acrocephalus schoenobaenus	200k	A	**	-		
REED WARBLER Acrocephalus scirpaceus	40-80k	A	*	-		
MARSH WARBLER Acrocephalus palustris	<60	1985	***	DOWN		
DARTFORD WARBLER Sylvia undata	<200	RBBP	**	DOWN	Habitat loss now crucial.	800-1500
LESSER WHITETHROAT Sylvia curruca	80k	CBC	**	UP		
WHITETHROAT Sylvia communis	400k	CBC	**	-	Low population long after 1969 crash.	
GARDEN WARBLER Sylvia borin	200k	CBC	**	UP		
BLACKCAP Sylvia atricapilla	800k	CBC	**	UP		2k
WOOD WARBLER Phylloscopus sibilatrix	10-12k	CBC	**	DOWN?		
CHIFFCHAFF Phylloscopus collybita	500k	CBC	**	DOWN		400-800
WILLOW WARBLER Phylloscopus trochilus	2.5m	CBC	**	-		
GOLDCREST Regulus regulus	500k	CBC	**	DOWN		2-4m
FIRECREST Regulus ignicapillus	<100	RBBP	**	-	Overlooked: population probably larger.	200-400
SPOTTED FLYCATCHER Muscicapa striata	300k	CBC	**	DOWN		
PIED FLYCATCHER Ficedula hypoleuca	30-60k	A	**	UP	Atlas estimate too low: nestboxes.	
BEARDED TIT Panurus biarmicus	>600	1982	***	UP?	Population fluctuations.	3-5k
LONG-TAILED TIT Aegithalos caudatus	200k	CBC	**	UP?		70k
MARSH TIT Parus palustris	150k	CBC	**	-		200-400k
WILLOW TIT Parus montanus	50-100k	A	**	-		175-350k
CRESTED TIT Parus cristatus	900	1981	***	-		3600
COAL TIT Parus ater	500k	CBC	**	DOWN?		3m
BLUE TIT Parus caeruleus	3.5m	CBC	**	-		12m
GREAT TIT Parus major	2m	CBC	**	-		8m
NUTHATCH Sit ta europaea	50-100k	CBC	*	UP		60-80k
TREECREEPER Certhia familiaris	200-300k	CBC	**	-		800k
GOLDEN ORIOLE Oriolus oriolus	21-30	RBBP	***	-		
RED-BACKED SHRIKE Lanius collurio	<5	1987	***	DOWN		
GREAT GREY SHRIKE Lanius excubitor	-					150
JAY Garrulus glandarius	200k	CBC	**	UP?		250-350k
MAGPIE Pica pica	200k+	A	**	UP		
CHOUGH Pyrrhacorax pyrrhocorax	230-280	1983	***	-		500-1000
JACKDAW Corvus monedula	500k+	A	**	-		
ROOK Corvus frugilegus	805k	1978	***	UP		3m
CARRION/HOODED CROW Corvus corone	1m	A	**	UP?		2.5-3m
RAVEN Corvus corax	4k	A	**	DOWN?		15k
STARLING Sturnus vulgaris	3-6m	A	**	-		28m
HOUSE SPARROW Passer domesticus	3-6m	A	**	-		8-12m
TREE SPARROW Passer montanus	250k	CBC	**	DOWN		700k
CHAFFINCH Fringilla coelebs	5m	CBC	**	-		20-25m
BRAMBLING Fringilla montifringilla	0-1	RBBP	***	-	Irregular attempts.	*40k-1.8m
SERIN Serinus serinus	3-4	RBBP	***	UP	Recent establishment.	
GREENFINCH Carduelis chloris	800k	CBC	**	-	Atlas estimate too high.	3-5m
GOLDFINCH Carduelis carduelis	300k	CBC	**	-		200k
SISKIN Carduelis spinus	15-30k	A	**	-		*40-150k
LINNET Carduelis cannabina	700-800k	CBC	**	DOWN		1.5-2.5m
TWITE Carduelis flavirostris	15-30k	A	**	-		80-120k

	Abundance (pairs)	Source	Reliability	Trend	Comments	Winter (individuals)
REDPOLL Carduelis flammea	140-150k	CBC	**	DOWN?		250-650k
COMMON CROSSBILL Loxia curvirostris	<5000	A	**	DOWN?		*1-4k
SCOTTISH CROSSBILL Loxia scotica	500	1975	**	-	Variable.	1500
BULLFINCH Pyrrhula pyrrhula	300-350k	CBC	**	DOWN		0.8-1.1m
HAWFINCH Caccothraustes coccothraustes	5-10k	A	**	-		20k
LAPLAND BUNTING Calcarius lapponicus	0-16	RBBP	***	-	Possible colonist.	200-500
SNOW BUNTING Plectrophenax nivalis	6-21	RBBP	***	-	Small, unstable population.	8-12k
YELLOWHAMMER Emberiza citrinella	1.5m	CBC	**	UP?		3m
CIRL BUNTING Emberiza cirlus	130-160	1982	***	DOWN		500
REED BUNTING Emberiza schoeniclus	400k	CBC	**	-		lm
CORN BUNTING Miliaria calandra	100k	A	*	DOWN?		100k

Appendix C

Breeding bird assemblages of different habitats

The lists of birds of different habitats presented in Table 28 are based on Bird habitats in Britain (Fuller 1982) and further data from the NCC-funded BTO Register of Ornithological Sites on which this book is based. Each species listed is given an index of abundance from 0 to 6, which refers to the total number of breeding pairs in Britain (see Appendix B) as follows:

0	>1 million
1	100,000 - 1,000,000
2	10,000 - 100,000
3	1,000 - 10,000
4	100 - 1000
5	10 - 100
6	1-10

Where the population of a species falls on the border of two classes, an intermediate value may be given (e.g. 2.5).

The species list for each habitat is made up as follows. All species characteristic of the habitat and with indices of abundance of 4 to 6 (i.e. with a total British population less than 1,000 pairs) are included. Also included are more abundant species which are either primarily associated with this habitat or are associated with more than one habitat some of which are particularly threatened by habitat change (e.g. drainage of wetlands or loss of heath or scrub). All species of index 0 (i.e. with more than 1 million pairs) are omitted from the lists.

The index value for a site is calculated by summing the indices of abundance for species breeding in it. A species may be included if it has been recorded as probably breeding in a majority of recent years for which information is available. Species regularly using a site for essential activities (such as feeding) while breeding may be included even if they nest outside the site. To qualify under guideline 3.5, the index value for a site should exceed the threshold value given for the relevant habitat.

The threshold values were derived as follows. For each habitat, the theoretical maximum score which could be obtained for those species with indices of I to 4 was calculated. Those species with scores of 5 and 6 were excluded, as these species with British populations of less than 100 pairs are generally very restricted in geographical distribution. (In fact, this applies also to many species with an index of 3 or 4.) Although species with indices of 5 and 6 are excluded in the calculation of threshold values, any such species must be included in the calculation of a site index, as few, if any, will be present at any one site and inclusion allows the required

added importance to be given to the sites used by these rarer species. (Such sites will generally qualify also under guideline 3.1.) Even with these rare species included, it is most unlikely that the theoretical maximum score would be achieved at any site because species from all parts of Britain and all subdivisions of the general habitat category concerned are included in its calculation. For most habitats, a site reaching half the theoretical maximum as calculated above would be an especially good example of the breeding bird community. Thus it is this half-maximum value which is the threshold given for each habitat, with the following exception. For woodland, two-thirds of the theoretical maximum is taken as the threshold: this is because of the exceptionally large number of mainly passerine species which are fairly widespread and numerous but nevertheless characteristic of woodland.

The differences in distribution patterns shown by birds make the provision of national values difficult. For some habitats, different values are given for different parts of Britain to make some allowance for this. Even if a single threshold level is given, this may allow for the absences of some species in some parts of the country. It is of course impracticable to make the very fine geographical divisions which biological purists might suggest. No list is provided for certain habitats (e.g. cliffs). In these cases, it is envisaged that sites selected on the basis of other guidelines (e.g. 3.1 or 3.2) should provide for adequate population samples.

Mixed habitats

It is clearly impracticable to give lists for each possible combination of habitats within a site, although it is recognised that many bird species depend on a combination of habitats. Several approaches are possible.

(i) If one (or more) of the composite habitats reaches the threshold value for that habitat, the whole site may be selected if the other habitats clearly form integral parts of the site.

(ii) If two habitats are included in one well-defined site, the indices for species which are on both habitat lists and have been recorded for the site should be double-counted. Other species score in the usual way. For the site to qualify on this basis, its total score should exceed the qualifying threshold value for the two habitats combined (e.g. for a woodland and lowland heath combination 39 + 20 = 59).

(iii) For mosaics of habitats within a site, guideline 3.7 may be more appropriate.

In all cases, local knowledge of the site and its context is essential, as it is of course for all sites.

Table 28 Breeding bird assemblages of different habitats

Sand-dunes and saltmarshes

Shelduck	2	Roseate tern	4
Eider	2	Common tern	3
Red-breasted merganser	3	Arctic tern	2
Montagu's harrier	6	Little tern	3
Corncrake	4	Cuckoo	2
Oystercatcher	2	Short-eared owl	3
Ringed plover	3	Rock pipit	2
Lapwing	1	Whinchat	2
Dunlin	3	Stonechat	2
Snipe	3	Wheatear	2
Black-tailed godwit	5	Grasshopper warbler	2
Curlew	2	Sedge warbler	1
Redshank	2	Linnet	1
Black-headed gull	1	Reed bunting	1
Sandwich tern	2	Corn bunting	2

Threshold site-index value: 24

Lowland damp grasslands

Mute swan	3	Snipe	2
Shelduck	2	Black-tailed godwit	5
Gadwall	4	Curlew	2
Teal	3	Redshank	2
Pintail	5	Cuckoo	2
Garganey	5	Short-eared owl	3
Shoveler	4	Yellow wagtail	1
Marsh harrier	5	Whinchat	2
Quail	5	Grasshopper warbler	2
Corncrake	4	Sedge warbler	1
Lapwing	1	Reed bunting	1
Ruff	5		

Threshold site-index value: 16

See also guideline 3.8.

Lowland fen without open water
(Where this habitat occurs in combination with open water, use the open waters list instead.)

Little grebe	2.5	Snipe	2
Bittern	5	Cuckoo	2
Gadwall	4	Whinchat	2
Teal	3	Cetti's warbler	4
Garganey	5	Grasshopper warbler	2
Shoveler	4	Savi's warbler	5
Pochard	4	Sedge warbler	1
Marsh harrier	5	Reed warbler	2
Montagu's harrier	6	Marsh warbler	5
Spotted crake	6	Bearded tit	4
Water rail	3	Reed bunting	1

Threshold site-index values:
S & SE England, East Anglia & East Midlands: 20
Rest of Britain: 16

Lowland open waters and their margins

Little grebe	2.5	Avocet	4
Great crested grebe	3	Little ringed plover	4
Black-necked grebe	5	Ringed plover	3
Bittern	5	Snipe	2
Grey heron	3	Redshank	2
Mute swan	3	Red-necked phalarope	5
Shelduck	2	Common tern	3
Gadwall	4	Black tern	6
Teal	3	Cuckoo	2
Pintail	5	Kingfisher	3
Garganey	5	Yellow wagtail	1
Shoveler	4	Grey wagtail	2
Pochard	4	Cetti's warbler	4
Tufted duck	3	Grasshopper warbler	2
Red-breasted merganser	3	Savi's warbler	5
Marsh harrier	5	Sedge warbler	1
Montagu's harrier	6	Reed warbler	2
Spotted crake	6	Marsh warbler	5
Water rail	3	Bearded tit	4
		Reed bunting	1

Threshold site-index values:
NW & NE Scotland: 23
Rest of Britain: 31

Upland waters and their margins

Black-throated diver	4	Red-breasted merganser	3
Red-throated diver	3	Goosander	3.5
Little grebe	2.5	Osprey	5
Great crested grebe	3	Oystercatcher	2
Slavonian grebe	5	Ringed plover	3
Black-necked grebe	5	Dunlin	3
Grey heron	3	Snipe	2
Greylag goose (non-feral)	4	Curlew	2
Wigeon	4	Redshank	2
Teal	3	Greenshank	3
Shoveler	4	Wood sandpiper	6
Tufted duck	3	Common sandpiper	2
Scaup	6	Common tern	3
Common scoter	5	Grey wagtail	2
Goldeneye	5	Dipper	2

Threshold site-index values:
NW & NE Scotland: 27
Rest of Britain: 25

Upland moorland and grassland with water bodies

Black-throated diver	4	Dunlin	3
Red-throated diver	3	Snipe	2
Little grebe	2.5	Whimbrel	4
Slavonian grebe	5	Curlew	2
Greylag goose (non-feral)	4	Redshank	2
Wigeon	4	Greenshank	3
Teal	3	Wood sandpiper	6
Pintail	5	Common sandpiper	2
Scaup	6	Red-necked phalarope	5
Common scoter	5	Great skua	3
Goldeneye	5	Arctic skua	3
Red-breasted merganser	3	Snowy owl	6
Goosander	3.5	Short-eared owl	3
Hen harrier	4	Grey wagtail	2
Buzzard	3	Dipper	2
Golden eagle	4	Whinchat	2
Osprey	5	Stonechat	2
Merlin	4	Wheatear	2.
Peregrine	4	Ring ouzel	2.5
Red grouse	1	Chough	4
Black grouse	3	Raven	3
Golden plover	2	Twite	2
Temminck's stint	6		

Threshold site-index values:
Northern & Western Isles: 31
NW & NE Scotland (except Northern & Western Isles): 45 Rest of Britain: 34

See also guideline 3.6.

Upland moorland and grassland without water bodies

Teal	3	Redshank	2
Hen harrier	4	Greenshank	3
Buzzard	3	Wood sandpiper	6
Golden eagle	4	Great skua	3
Merlin	4	Arctic skua	3
Peregrine	4	Snowy owl	6
Red grouse	1	Short-eared owl	3
Black grouse	3	Whinchat	2
Golden plover	2	Stonechat	2
Temminck's stint	6	Wheatear	2
Dunlin	3	Ring ouzel	2.5
Snipe	2	Chough	4
Whimbrel	4	Raven	3
Curlew	2	Twite	2

Threshold site-index values:
Northern & Western Isles: 21
NW & NE Scotland (except Northern & Western Isles): 35
Rest of Britain: 28

See also guideline 3.6.

Montane grasslands and heaths

Buzzard	3	Dunlin	3
Golden eagle	4	Shorelark	6
Peregrine	4	Ring ouzel	2.5
Ptarmigan	3	Raven	3
Dotterel	4	Lapland bunting	6
Golden plover	2	Snow bunting	6
Purple sandpiper	6		

Threshold site-index value: 14

Lowland heath

Montagu's harrier	6	Woodlark	4
Hobby	4	Tree pipit	1.5
Quail	5	Whinchat	2
Stone-curlew	4	Stonechat	2
Snipe	2	Wheatear	2
Curlew	2	Grasshopper warbler	2
Redshank	2	Dartford warbler	4
Cuckoo	2	Red-backed shrike	5
Long-eared owl	3	Linnet	1
Nightjar	3		

Threshold site-index value: 20
(This does not readily apply to Wales, Scotland or northern England.)

Scrub (excluding heath)

Turtle dove	1.5	Grasshopper warbler	2
Cuckoo	2	Whitethroat	2
Long-eared owl	3	Lesser whitethroat	2
Nightjar	3	Garden warbler	1
Tree pipit	1.5	Blackcap	1
Nightingale	3	Red-backed shrike	5
Whinchat	2	Linnet	1
Stonechat	2	Cirl bunting	4

Threshold site-index value: 15
(This does not directly apply to Scotland or northern England.)

Woodland

Grey heron	3	Garden warbler	1
Honey buzzard	5	Blackcap	1
Red kite	5	Wood warbler	2
Goshawk	5	Chiffchaff	1
Sparrowhawk	2	Goldcrest	1
Buzzard	3	Firecrest	5
Osprey	5	Spotted flycatcher	1
Hobby	4	Pied flycatcher	2
Black grouse	3	Long-tailed tit	1
Capercaillie	3	Marsh tit	1
Woodcock	2	Willow tit	2
Stock dove	1	Crested tit	4
Cuckoo	2	Coal tit	1
Tawny owl	2	Nuthatch	2
Long-eared owl	3	Treecreeper	1
Nightjar	3	Golden oriole	5
Hoopoe	6	Jay	1
Wryneck	6	Raven	3
Green woodpecker	2	Serin	6
Great spotted woodpecker	2	Siskin	2
Lesser spotted woodpecker	3	Redpoll	1
Tree pipit	1.5	Scottish crossbill	4
Nightingale	3	Common crossbill	3
Redstart	1	Bullfinch	1
Fieldfare	6	Hawfinch	3
Redwing	5		

Threshold site-index values: NW & NE Scotland: 35
Rest of Britain: 39

Appendix D

Regional population densities in the uplands

The values given below are 1.5 times the average density for the region concerned. Sites qualify if the density of any key species listed here is exceeded (see 3.6.1), but the sites need to be large (generally at least 3 square km) and of fairly uniform habitat. Working on the basis of these species generally provides for population samples of other relevant species, but further work is in progress on these. Survey data are not yet available for other regions, but again further work is in progress. Contact the CSD Ornithology Branch (preferably the Moorland Bird Study team leader) for updated information or details of survey method instructions if surveys are required.

	Critical densities (pairs/km')		
	Golden plover	Dunlin	Greenshank
Central Wales	1.3	0.4	-
North York Moors	2.3	-	-
North Pennines	5.9	0.6	-
South Scotland and Northumberland	3.3	0.2	-
Perthshire	1.2	-	-
Caithness & Sutherland	2.6	3.6	0.5
Lewis	2.9	9.3	0.6
Shetland	2.4	1.0	-

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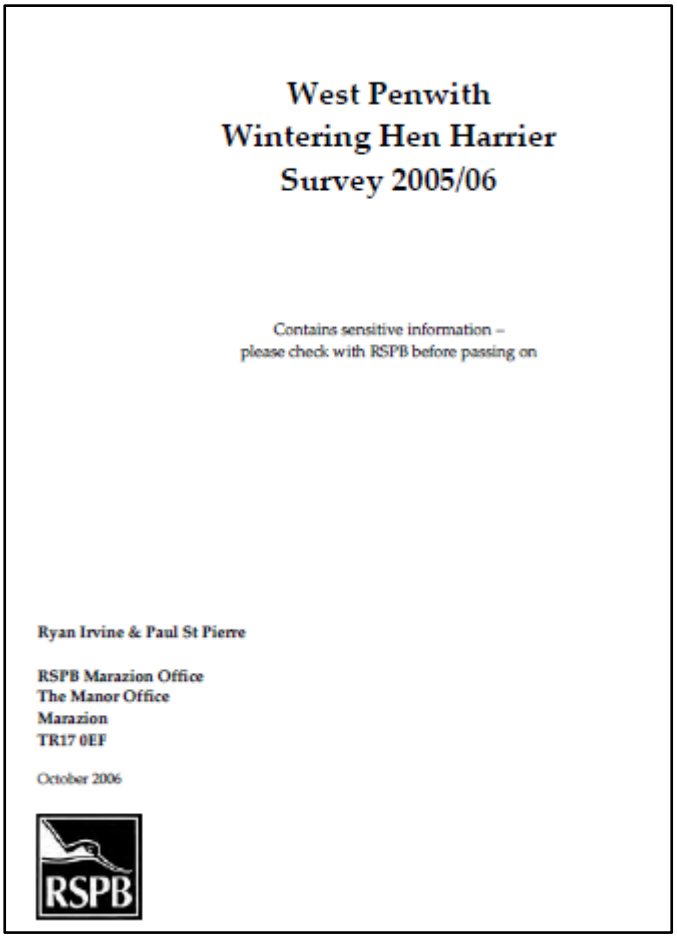
West Penwith Moors, Cornwall; Collation of existing bird data – 2013: Appendix 2

RSPB Wintering Hen Harrier surveys 2005/06 & 2006/07

Both reports contain sensitive information and are not published by Natural England. Should you wish to access these reports you are advised to contact RSPB.



West Penwith
Wintering Hen Harrier
Survey 2005/06

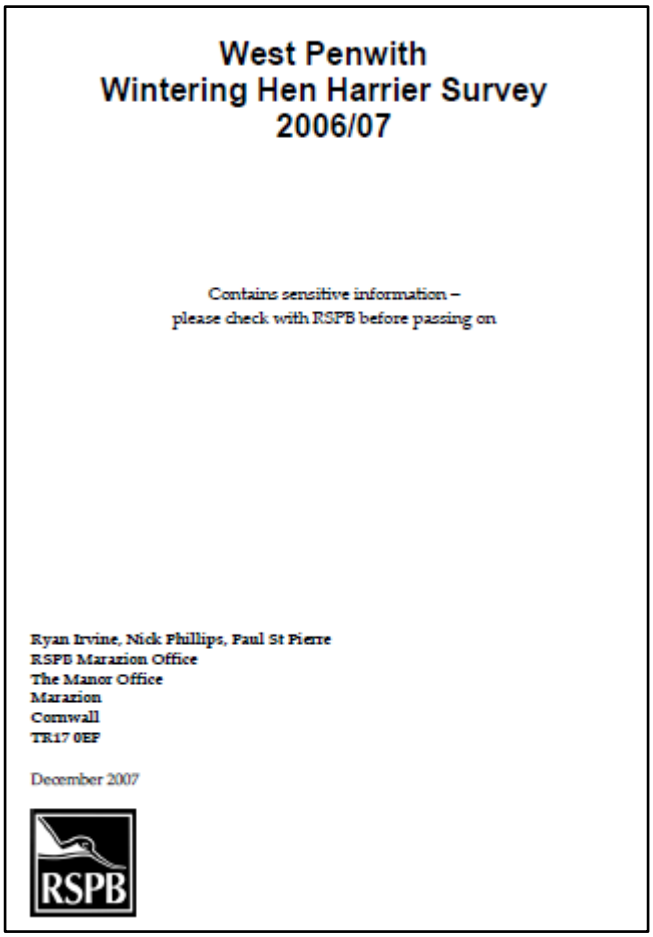
Contains sensitive information –
please check with RSPB before passing on

Ryan Irvine & Paul St Pierre

RSPB Marazion Office
The Manor Office
Marazion
TR17 0EF

October 2006

RSPB



West Penwith
Wintering Hen Harrier Survey
2006/07

Contains sensitive information –
please check with RSPB before passing on

Ryan Irvine, Nick Phillips, Paul St Pierre
RSPB Marazion Office
The Manor Office
Marazion
Cornwall
TR17 0EF

December 2007

RSPB

Appendix 3: BTO data

Key to Spreadsheet showing BTO Breeding Bird Data Set for West Penwith Moors – 2006-2012

Columns as labeled are:

speccode:	numeric species code.
cbc_code:	2-letter BTO species code.
Species :	species English name.
season:	B = breeding, or W = winter.
grid:	10-km square grid reference
res:	the grid resolution of the record
n10kms:	the number of 10-km squares occupied within the named grid square.
statusingrid:	highest recorded status category in the named grid square

Columns, labelled A to Z, containing the status reported for each of the 25 tetrads that cover the 5 OS 10km squares included in the project area. Codes used in the columns are season specific.

In winter P = present in the tetrad;

in the breeding season, codes are as follows:
P = Present
M = Migrant
U = Summering
F = Flying over
Po = Possible breeding
Pr = Probable breeding
Co = Confirmed breeding

Note that in most areas, fieldwork is aimed to maximise data collection at the 10-km square resolution, not at the tetrad resolution. Owing to this, the lack of a P code in winter, or missing or low breeding evidence in the breeding season cannot be used to infer absence in a tetrad.

speccode	cbc_code	Species	season	grid	res	n10kms	statusingrid	a	b	c	d	e	f	g	h	i	j	k	l	m	n	p	q	r	s	t	u	v	w	x	y	z	BOU_ORDER
110	BZ	Buzzard	B	SW32	10	1	Confirmed												P	Pr	Pr		Po	Co		Pr	Co	P	Po	Pr		Po		13000
132	Q.	Quail	B	SW32	10	1	Probable																								Pr			6200
192	SN	Snipe	B	SW32	10	1	Possible																				Po							20700
276	CK	Cuckoo	B	SW32	10	1	Confirmed										Po										Po	Po			Co	Pr		30500
308	G.	Green Woodpecker	B	SW32	10	1	Possible																P						Po		Po			33500
310	GS	Great Spotted Woodpecker	B	SW32	10	1	Confirmed													P		Pr					Po		Po		M			33700
354	WC	Whinchat	B	SW32	10	1	Possible																P									P		49500
355	SC	Stonechat	B	SW32	10	1	Confirmed													Pr		Pr	Pr	Co		Co	Co	Po				Co	Co		49700
357	W.	Wheatear	B	SW32	10	1	Confirmed													Po		P	Co									M	P		49900
384	GH	Grasshopper Warbler	B	SW32	10	1	Confirmed												Co	Po			Po								Po	Po			42200
401	DW	Dartford Warbler	B	SW32	10	1	Confirmed																										Co		41500
410	WH	Whitethroat	B	SW32	10	1	Confirmed													Co	Po		Co	Co	Co	Co	Co	Po	Co	Pr	Co	Co		41300
411	GW	Garden Warbler	B	SW32	10	1	Confirmed												Co	M			P	Po			Po			Po	Po			40800
412	BC	Blackcap	B	SW32	10	1	Confirmed												Co			Po	Po	Co		Pr	Co	Pr	Po	Pr	Po	Po		40700
422	CC	Chiffchaff	B	SW32	10	1	Confirmed												Co	Po		Po	Po	Co	Co	Co	Co	Pr	Po	Pr	Po	Co		40400
424	GC	Goldcrest	B	SW32	10	1	Possible																	Po										36200
431	LT	Long-tailed Tit	B	SW32	10	1	Confirmed												Co											Co	P			39100
437	GT	Great Tit	B	SW32	10	1	Confirmed												Co	Co		P	Po	Co	Co	Co	Pr	P	Co	Co	Co	Po		36600
438	NH	Nuthatch	B	SW32	10	1	Confirmed													Co										Po				44400
473	LI	Linnet	B	SW32	10	1	Confirmed												P	Pr	Pr	P	Po	Co	Co	Co	Co	P	P	P	Co	Co		53200
110	BZ	Buzzard	B	SW33	10	1	Confirmed											Po					Po	Co	Po			Po	P	Po				13000
276	CK	Cuckoo	B	SW33	10	1	Probable																					Po	Pr	Po				30500
308	G.	Green Woodpecker	B	SW33	10	1	Confirmed																											33500
310	GS	Great Spotted Woodpecker	B	SW33	10	1	Possible																	Po						P				33700
355	SC	Stonechat	B	SW33	10	1	Confirmed											Pr							Po	Pr	P		Pr		Pr			49700
357	W.	Wheatear	B	SW33	10	1	Confirmed																		Po	P				M	P			49900
384	GH	Grasshopper Warbler	B	SW33	10	1	Possible											P												Po	P			42200
410	WH	Whitethroat	B	SW33	10	1	Confirmed											Po					Pr	P	Po	P		Pr	Pr	Pr				41300
412	BC	Blackcap	B	SW33	10	1	Possible											Po					Po							P				40700
422	CC	Chiffchaff	B	SW33	10	1	Probable											Pr					Po					Po		Po				40400
437	GT	Great Tit	B	SW33	10	1	Confirmed											P					Co	Co	P	P		Pr	Pr	Pr				36600
473	LI	Linnet	B	SW33	10	1	Confirmed											Pr					Pr	Pr	Po	P		Po	Pr	Pr				53200
110	BZ	Buzzard	B	SW42	10	1	Confirmed			Po	Po	P		P			F			Po	P	Co				Po					Po		13000
276	CK	Cuckoo	B	SW42	10	1	Confirmed					Po										Po									Pr		30500
285	TO	Tawny Owl	B	SW42	10	1	Probable										Pr					Pr											31300
308	G.	Green Woodpecker	B	SW42	10	1	Confirmed					P		P			Co			P		Co											33500
310	GS	Great Spotted Woodpecker	B	SW42	10	1	Confirmed					P		P						P	P	Co											33700
355	SC	Stonechat	B	SW42	10	1	Confirmed				Pr	Po																						49700
410	WH	Whitethroat	B	SW42	10	1	Confirmed			Pr	Pr	Po		Po			P			Po	Po	Co												41300
411	GW	Garden Warbler	B	SW42	10	1	Probable										P					Pr									Po		40800
412	BC	Blackcap	B	SW42	10	1	Confirmed			Po	Po	Po		Po			Po			Po	Po	Co					Po	Po						40700
422	CC	Chiffchaff	B	SW42	10	1	Confirmed			Po	Po	Po		Po			Po			Po	Po	Co					Pr	Po						40400
424	GC	Goldcrest	B	SW42	10	1	Probable				Po			Po						Po	P							Po						36200
431	LT	Long-tailed Tit	B	SW42	10	1	Confirmed			Po							P			P	P	Co				Po								39100
437	GT	Great Tit	B	SW42	10	1	Confirmed			Po	Po			P			P			P	Co	Co				Pr	Po							36600
438	NH	Nuthatch	B	SW42	10	1	Confirmed													P		Co					Pr							44400
449	J.	Jay	B	SW42	10	1	Confirmed			Po	Po			P						P		Co												35500
473	LI	Linnet	B	SW42	10	1	Probable				Po	Po		P			P			P	P	P												53200
110	BZ	Buzzard	B	SW43	10	1	Confirmed	Po	Pr	P	P					Co	Po		Po	Pr	Pr	Co	Pr	Co	Co	Co	Pr	Co	Pr	Pr		Pr		13000
276	CK	Cuckoo	B	SW43	10	1	Confirmed		Pr	Pr	P				P	Pr			Po	Po	Pr			Po	Pr	Po	Po			Pr		Po		30500
285	TO	Tawny Owl	B	SW43	10	1	Confirmed											Co		Po	Po			Po	Pr									31300
289	NJ	Nightjar	B	SW43	10	1	Confirmed				P					Pr																		31700
308	G.	Green Woodpecker	B	SW43	10	1	Confirmed														F		Pr	Po	Co									33500
310	GS	Great Spotted Woodpecker	B	SW43	10	1	Confirmed													Po	Po	Po		Po	Co				Po	Co				33700
355	SC	Stonechat	B	SW43	10	1	Confirmed		Co	Po						Co	Pr				Pr	Pr			Co	Co	Co			Co		Pr		49700
384	GH	Grasshopper Warbler	B	SW43	10	1	Confirmed		Pr	Pr	P				Po	Pr			Pr		Po	Po					Pr					Po		42200
401	DW	Dartford Warbler	B	SW43	10	1	Confirmed									Pr			Pr								Pr					Pr		41500
410	WH	Whitethroat	B	SW43	10	1	Confirmed	Co	Co	Co	P					Co	Pr		Pr		Co	Co		Co	Co	Co	Co	Co	Po	Pr		Pr		41300
412	BC	Blackcap	B	SW43	10	1	Confirmed	Po								Po			Pr	Pr	Pr	Pr		Po	Co			Pr	Po	Po				40700
422	CC	Chiffchaff	B	SW43	10	1	Confirmed	Co	Po	Po						Po	Po		Po	Pr	Po	Pr	Pr	Co	Co			Po	Po	Co		Po		40400
424	GC	Goldcrest	B	SW43	10	1	Possible															Po							Po	Po				36200
431	LT	Long-tailed Tit	B	SW43	10	1	Confirmed									Po			Po		Co			Pr	Co				Po			P		39100
437	GT	Great Tit	B	SW43	10	1	Confirmed	Co	Co	Co						Pr	Pr		Co	Po	Co	Pr	Pr	Pr	Co			Co	Co	Po		Po		36600
438	NH	Nuthatch	B	SW43	10	1	Confirmed											Po		Po														44400
449	J.	Jay	B	SW43	10	1	Possible																P	Po	Po			Po						35500
473	LI	Linnet	B	SW43	10	1	Confirmed	Po	Po	Po						Pr	Pr		Po	Po	P	Co			Co		Po		Po	Co		P		53200
110	BZ	Buzzard	B	SW53	10	1	Confirmed	Co	Pr	Co	Pr	Pr	Po	Co	P			Po	Pr	Pr	Pr	P	Po	Pr	Pr	P	Po	Po	Pr	Po	Pr	Po		13000
120	HY	Hobby	B	SW53	10	1	Possible	Po											M															14100
192	SN	Snipe	B	SW53	10	1	Possible	F																								Po		20700
276	CK	Cuckoo	B	SW53	10	1	Probable																					Po						30500
285	TO	Tawny Owl	B	SW53	10	1	Confirmed		Co			Co	Po			Po																		31300
308	G.	Green Woodpecker	B	SW53	10	1	Confirmed		Co		Pr	Po		Pr	P					Po			P	Po			Po			Pr			33500
310	GS	Great Spotted Woodpecker	B	SW53	10	1	Confirmed	Po	Co					Pr	P				Po	Po				Po			Po		Po	Po				33700
355	SC	Stonechat	B	SW53	10	1	Confirmed	Co	Pr												P	Co					Po				Po		49700
357	W.	Wheatear	B	SW53	10	1	Possible	P	M				P								Po					Po							49900
384	GH	Grasshopper Warbler	B	SW53	10	1	Possible																					Po						42200
410	WH	Whitethroat	B	SW53	10	1	Confirmed	Po	Pr	Po			Po	Po					Co	Po		P	Po	Pr	Po	Pr	Co	Pr	Pr	Po	Po			41300
411	GW	Garden Warbler	B	SW53	10	1	Confirmed	P	Po	Pr																								40800
412	BC	Blackcap	B	SW53	10	1	Confirmed	Pr	Co	Pr	Pr	Co	P	Po	P			Co	Po	Pr	P		Pr	Pr	Po		Po	Po	Pr	Po	Pr	Po		40700
422	CC	Chiffchaff	B	SW53	10	1	Confirmed	Pr	Co	Co	Co	Co	Pr	Co	P			Po	Co	Pr	Pr	Po	Co	Pr	Pr	P	Po	Co	Pr	Po	Po	Po		40400
424	GC	Goldcrest	B	SW53	10	1	Confirmed	Po	Pr	Pr				Po				Co	Po	Po			Po											36200
431	LT	Long-tailed Tit	B	SW53	10	1	Confirmed	P	Co	Co		Co	P	Co	P			Co	Co	Co	P		Pr	Co						Co	Co	Pr		39100
437	GT	Great Tit	B	SW53	10	1	Confirmed	Co	Co	Co	Po	Co	Pr	Co	P			Pr	Co	Co	Pr		Pr	Co	Po	Po	Co	Pr	Co	Co	Pr	Co		36600
438	NH	Nuthatch	B	SW53	10	1	Possible			Po						Po												P						44400
449	J.	Jay	B	SW53	10	1	Confirmed			Pr		Po		Pr	P				Po	P			P				F	Co	P				35500

473	LI	Linnet	B	SW53	10	1	Confirmed	Po	Po	Po	Po	Pr	Po	Pr	P			Po	Po	P			Pr		Po	Co	Pr	Pr	Po	P	53200
105	HH	Hen Harrier	W	SW32	10	1	Present																								12500
167	GP	Golden Plover	W	SW32	10	1	Present														P	P		P		P	P	P	P	P	18000
105	HH	Hen Harrier	W	SW33	10	1	Present																								12500
167	GP	Golden Plover	W	SW33	10	1	Present															P				P	P				18000
105	HH	Hen Harrier	W	SW42	10	1	Present																								12500
167	GP	Golden Plover	W	SW42	10	1	Present			P						P															18000
105	HH	Hen Harrier	W	SW43	10	1	Present																								12500
167	GP	Golden Plover	W	SW43	10	1	Present								P	P			P	P		F	P	P	P			P		P	18000
105	HH	Hen Harrier	W	SW53	10	1	Present																								12500
167	GP	Golden Plover	W	SW53	10	1	Present	P	P			P								P							P	P		P	18000

Appendix 4: CBWPS Data for 2005 to 2012 as formally recorded

Species	2005	2006	2007	2008	2009	2010	2011	2012
Quail	SW4435 3+ 21/6/5 SW4435 5+ 22/6/5 SW4435 11 23/6/5 SW4435 1+ 24/6/5 SW4435 4 25/6/5 SW4435 6 26/6/5 SW4435 3+ 27/6/5 SW4435 11 2/7/5				SW3827 1 calling on 3/6/9			
Cuckoo	SW3728 singing 20/6/5	SW3828 2 7/6/6	SW4136 3 8/6/7	SW3933 4 4/5/8	SW3829 1 24/6/9	SW3828 Juv 5/8/10	SW3828 1 5/5/11	SW4134 1 27/4/12
	SW4129 1 8/5/5	SW4129 1 4/6/6	SW4234 2 26/4/7	SW4033 2 2/5/8	SW3829 1 24/6/9	SW3828 1 10/5/10	SW3828 1 30/4/11	SW4234 2 11/5/12
	SW4129 3 10/5/5	SW4129 1 27/5/6	SW4235 3 28/4/7	SW4129 1 27/4/8	SW3929 1 29/4/9	SW3929 2 16/5/10	SW3829 3 5/5/11	SW4737 2 7/5/12
	SW4129 2(m & f) 18/5/5	SW4236 6 8/5/6	SW4236 1 20/5/7	SW4129 1 25/5/8	SW4129 1 30/4/9	SW4029 3 23/5/10	SW3829 1 10/4/11	SW477383 1 28/4/12
	SW4129 1 29/5/5	SW4236 1 6/5/6	SW4436 2 29/5/7	SW4129 1 2/5/8	SW4134 1 5/5/9	SW4035 2 1/5/10	SW4129 1 2/6/11	SW4838 1 27/4/12
	SW4136 1 17/6/5		SW4538 1 27/4/7	SW4234 4 28/5/8	SW4136 1 23/5/9	SW4129 2 23/5/10	SW4129 1 4/6/11	SW4839 2 13/5/12
	SW4135 1 26/5/5		SW4636 2 8/6/7	SW4234 3 26/4/8	SW4136 1 29/4/9	SW4129 1 1/5/10	SW4129 1 8/5/11	SW4839 4 (2 pairs) 7/5/12
	SW4233 1 26/5/5		SW5136 1 21/5/7	SW4436 1 14/6/8	SW4234 3 30/4/9	SW4134 2 20/4/10	SW4134 1 18/4/11	SW4839 3 13/5/12
	SW4234 4 29/5/5		SW5136 1 30/4/7	SW4437 2 11/5/8	SW4234 1 29/4/9	SW4134 1 23/5/10	SW4234 1 9/5/11	SW4939 3 3/5/12
	SW4236 1 8/6/5			SW4437 1 5/5/8	SW4235 2 2/5/9	SW4134 1 22/6/10	SW4234 1 17/4/11	SW4939 3 2/5/12
	SW4236 3 30/5/5			SW4636 2 27/5/8	SW4636 1 4/6/9	SW4234 1 21/4/10	SW4236 1 5/6/11	SW4939 2 27/4/12
	SW4435 2 23/6/6				SW4638 1 29/4/9	SW4234 1 23/4/10	SW4236 1 2/6/11	
					SW4738 2 24/5/9	SW4236 2 3/6/10	SW4738 1 17/4/11	

					SW4837 1 29/4/9	SW4236 2 4/6/10	SW4738 2 11/5/11	
						SW4437 1 15/5/10	SW4837 1 21/4/11	
						SW4437 1 19/4/10		
						SW4835 2 25/4/10		
Nightjar	SW4136 4 26/5/5	SW4136 2 30/5/6	SW4135 4 29/6/7	SW4136 3 13/6/8	SW4136 2 3/6/9	SW3828 1 10/5/10	SW4236 3 2/6/11	
	SW4236 3 (2m & 1f) 30/5/5	SW4136 4 7/6/6	SW4136 6 8/6/7	SW4136 3 16/6/8	SW4136 23/5/9	SW4236 3 2/6/11	SW4636 1 30/6/11	
		SW4236 2 6/5/6	SW4236 1 3/7/7	SW4236 3 13/7/8	SW4236 2 3/6/9	SW4236 2 4/6/10		
			SW4738 1 8/6/7	SW4236 1 28/5/8	SW4236 2 24/5/9	SW4236 2 29/6/11		
				SW4636 1 25/7/8	SW4236 2 24/5/9	SW4236 1 14/6/10		
					SW4636 2 6/7/9	SW4236 1 3/6/10		
					SW4636 1 4/6/9	SW4636 2 21/6/10		
Stonechat		SW3828 1 7/6/6	SW4033 1 20/4/7	SW4033 1 2/5/8	SW3828 2 23/3/9	SW4636 3 15/4/10	SW4234 4 (2 pairs) 9/5/11	
			SW4033 1 6/7/7	SW4436 2 4/5/8	SW3829 4 5/4/9	SW4835 1 25/4/10	SW4236 4 28/3/11	
			SW4135 1 29/6/7		SW3929 4 2/4/9		SW4436 Pair 12/4/11	
			SW4436 3 3/7/7		SW3929 4 3/4/9			
			SW4436 3 3/7/7		SW3929 2 4/4/9			
					SW4234 2 15/3/9			
					SW4738 1 23/3/9			
Wheatear	SW4129 18 10/5/5		SW4235 1 20/4/7	SW3728 7 19/4/8	SW3929 4 19/4/9	SW3728 2 28/4/10	SW3828 3 19/4/11	
	SW4129 1 31/7/5			SW3933 2 4/5/8	SW3929 2 2/4/9	SW3828 1 8/4/10	SW3828 10 17/4/11	SW4739 38 13/5/12
	SW4129 4 11/5/5			SW4129 12 1/5/8	SW3929 2 3/4/9	SW3828 10 18/4/10	SW3828 1 6/4/11	SW4839 18 7/5/12
				SW4129 3 3/5/8	SW4029 2 19/4/9	SW3829 26 15/4/10	SW4129 2 9/5/11	SW4839 61 13/5/12
				SW4129 1 21/4/8	SW4129 1 2/5/9	SW3829 16 19/4/10	SW4134 1 12/4/11	SW4939 30 2/5/12
				SW4129 16 29/4/8	SW4129 1 22/5/9	SW3929 2 17/4/10	SW4436 9 17/4/11	SW4939 51 30/4/12

				SW4129 1 26/4/8		SW4129 11 13/5/10	SW4638 1 26/3/11	SW4939 45 1/5/12
				SW4129 15 30/4/8		SW4129 1 1/5/10	SW4939 2 (pair) 23/6/11	SW4939 49 27/4/12
						SW4129 5 18/4/10		SW4939 38 28/4/12
						SW4234 7 21/4/10		SW4939 19 24/4/12
						SW4234 39 23/4/10		SW4939 49 27/4/12
						SW4636 5 15/4/10		SW4939 12 3/5/12
						SW491392 15 15/4/10		
Grasshopper warbler	SW4136 1 17/6/7	SW4136 1 30/5/7	SW4033 4 6/7/7	SW4033 1 2/5/8	SW4136 1 23/5/7	SW3828 1 10/5/10	SW3828 1 24/4/11	SW4234 1 24/4/12
	SW4136 2 26/5/7	SW4236 1 6/5/6	SW4135 6 29/6/7	SW4136 3 13/6/7	SW4234 12 19/4/9	SW3828 1 14/8/10	SW3933 1 25/5/11	SW4637 1 13/4/12
	SW4435 1 23/6/5	SW4236 1 8/5/6	SW4136 2 8/6/7	SW4234 3 26/4/8	SW4234 2 30/4/9	SW3828 1 19/4/10	SW4234 3 9/5/11	SW4939 1 24/4/12
		SW425345 3 24/4/6	SW416368 1 19/5/7	SW4236 2 28/5/8	SW4234 1 14/4/9	SW4234 3 21/4/10	SW4234 2 10/4/11	
		SW4337 1 21/4/6	SW4234 4 26/4/7	SW4437 1 21/4/8	SW4235 6 2/5/9	SW4234 2 19/4/10	SW4236 1 2/6/11	
			SW4234 3 13/5/7	SW4437 1 3/6/8	SW4636 1 6/7/9	SW4234 4 23/4/10	SW4236 1 2/5/11	
			SW4235 1 20/5/7			SW4236 1 3/6/10	SW4538 1 1/6/11	
			SW4235 5 28/4/7			SW4236 2 14/6/10	SW4538 1 10/4/11	
			SW4235 3 20/4/7			SW4236 5 4/6/10	SW4738 3 17/4/11	
			SW4337 1 15/6/7			SW4437 1 26/4/10	Sw4738 3 29/6/11	
			SW4337 1 20/4/7			SW4437 1 15/5/10		
			SW4337 1 16/4/7					
			SW4435 1 6/7/7					
			SW4437 1 20/4/7					
			SW4538 1 18/4/7					

Dartford warbler		SW4637 2 11/7/6	SW4234 1 14/10/7	SW3829 1 1/12/8	SW3829 3 5/4/9	SW3829 1 21/3/10	SW3829 2 (ad & juv) 1/7/11	SW4235 1 28/1/12
			SW4235 1 20/5/7	SW4234 1 16/3/8	SW3929 1 4/4/9	SW4737 2 17/10/10	SW3832 1 ad 19/5/11	SW4638 2 15/4/12
			SW4235 1 20/4/7	SW4235 1 26/2/8	SW3929 4 3/4/9	SW4738 2 17/10/10	SW4234 1 22/1/11	SW4738 2 19/2/12
			SW4235 1 23/10/7	SW4538 1 23/7/8 carrying food	SW3929 7m, 1f 5/4/9	SW4738 1 24/1/10	SW4236 1 28/3/11	
				SW4636 1 19/11/8	SW3929 2 2/4/9	SW4738 1 21/11/10	SW4535 2 27/7/11 Carrying food	
				SW4637 1 fledgling 13/7/8	SW4234 1 15/3/9		SW4638 2 26/3/11 Displaying	
					SW4738 1 24/5/9		SW4638 1 23/6/11	
					SW4738 1 18/10/9		SW4737 1 20/3/11	
					SW4837 1 7/2/9		SW4737 1 26/3/11	
							SW4738 2 2/4/11	
							SW4738 2 17/4/11	
							SW4738 1 20/3/11	
							SW4738 2 16/10/11	
							SW4738 1 18/12/11	
							SW4738 3 29/6/11	
							SW4738 2 25/5/11	
Linnet	SW4129 30 15/1/5	SW3828 1 7/6/6	SW4033 1 6/7/7	SW3628 30 9/10/8	SW3828 1 23/3/9	SW3828 120 5/8/9	SW3933 6 25/5/11	SW4839 pair feeding young 13/5/12
	SW4129 50 23/1/5	SW4129 30 27/3/6	SW446354 30 14/1/7	SW4033 1 2/5/8	SW3829 4 5/4/9	SW3928 4 17/4/10	SW4538 5 15/9/11	

	SW4129 35 30/1/5	SW4129 1 4/6/6	SW5136 1 11/4/7	SW4437 5 21/4/8	SW4738 1 23/3/9	SW4129 20 7/9/10	SW4738 3 13/3/11	
	SW4129 35 13/2/5		SW5136 1 21/5/7 SW5136 9/6/7		SW5136 1 17/4/9 SW5136 1 5/10/9	SW4835 2 25/4/10	SW4839 5 13/4/11	
Whitethroat	SW4129 10 15/5/5	SW3828 1 7/6/6	SW3828 1 12/9/7	SW3933 2 4/5/8	SW4029 5 18/7/7 feeding young	SW3828 1 19/4/10	SW3933 4 25/5/11	SW4839 8 7/5/12
	SW4129 3 7/5/5	SW4129 4 4/6/6	SW4033 1 6/7/7	SW4129 8 5/5/8	SW4136 2 23/5/9	SW3828 5 22/8/10	SW4129 20 8/5/11	SW4839 1 13/5/12
			SW4135 1 29/6/7	SW4136 3 13/6/8	SW 4234 1 14/4/9	SW3828 5 14/8/10	SW4134 1 12/4/11	
			SW4136 2 8/6/7	SW4437 1 27/4/8		SW4234 1 21/4/10	SW4234 4 17/4/11	
			SW44356 2 3/7/7	SW4538 1 4/5/8		SW4437 1 26/4/10	SW4236 3 2/6/11	
			SW4538 3 27/4/7			SW4538 3 27/4/10	SW4738 1 29/6/11	
			SW5136 2 25/4/7 SW5136 1 9/6/7 SW5136 1 21/5/7			SW4735 5 4/6/10	SW4738 1 26/6/11	
Blackcap	SW4129 4 7/5/5	SW4129	SW3935 1 6/10/7	SW4129 1 14/4/8	SW3728 1 23/3/9	SW3828 1 5/8/10		SW4777383 25 28/4/12
	Sw4129 2 10/8/5		SW4337 1 24/3/7 SW4337 1 11/4/7 SW4337 1 24/3/7 SW5136 1 21/5/7 SW5136 1 9/6/7 SW5136 1 11/4/7	SW4437 1 5/5/8 SW4437 1 21/4/8	SW4029 1 18/7/9 SW4129 1 21/3/9 SW4129 1 13/3/9 SW5136 1 17/4/9	SW3828 2 30/8/10 SW3828 1 10/5/10 SW3828 6 22/8/10 SW4129 2 18/4/10		SW4839 8 13/5/12
Garden warbler		SW4129 1 14/5/6				SW3828 1 22/8/10	SW3828 1 5/5/11 SW4129 1 9/5/11	

Appendix 5

Informal Records from Notable Observers

West Penwith Moors 2013 data Informal Records from D. Parker – County Recorder for CBWPS

1 Nightjar at Rosewall Hill 2/6/13. I Webster

M & F Nightjars at Bosigran on 3/6/13. DKP

1 pair of Dartford Warbler 60M past Men-an-Tol stone near the footpath 6/6/13. J St Ledger

Men an Tol between 20.00and22.30 hrs 7/6/13: 3 Short-eared Owl, 1 Barn Owl, 2 Cuckoo, 1 Nightjar, 5 Grasshopper Warbler and 1.Dartford Warbler. I Webster

Men an Tol: 4 Whitethroat, 3 Willow Warblers, 9 Linnets, 3 Wren, 3 Blackbird, 2 Dunnock, 1 Robin, 2 Pheasant, 1 Cuckoo, 4 Swallow and 2 Dartford Warblers on 8/6/13. T Mills

4 Nightjar (3f/1m) tonight at Carn Galver, also 2 Cuckoo, 4+ Grasshopper Warbler on 9/5/13. P Taylor

On Rosewall Hill, Buttermilk Hill and Trevalgan Hill we have now three pairs of Nightjars, they all came in on the 7th June and have remained with the males displaying to the females.
10/6/13 V Stratton

2nd June at Zennor Hill four pairs of Dartford Warblers were feeding young in the nest, they were going in with beaks full of insects, so I am hoping for a good year for them, as they may still have a second brood although they are late breeding this year. V Stratton

Coastal Footpath from St. Ives to Zennor including Trewey Downs and Lady Downs and counted 11 Cuckoo territories which also included breeding females, this is the highest number of breeding Cuckoos in this area for several years. 2/6/13 V Stratton

On Tuesday evening 9,40-9.45 pm 18/6/13 at Bosigran 1 male and 1 female nightjar seen flying and third one heard. Driving home past Bosullow Common another Nightjar heard. F Hull

Dartford Warblers were first found breeding at Eagles Nest/Zennor Hill in June 2002 and have bred there annually since. J Thomas

Dartford Warbler *Silvia undata*:
Bartinney Down 2008 - 2013 and Botallack Common 2012 – 2013

P Clarke Observations

2008 Bartinney

10th Feb: Single male bird seen briefly, south side of down.
08th Apr: Male seen again in same area.
15th Apr: Pair seen, again in same area, continuously giving contact calls.
02nd May: A male in songflight (twice) on west side of down, c400m from original site.
05th May: Male in songflight again on west side. Male perched on original site and giving continual alarm calls.

11th May: A male at each site.
13th May: A male on west site. Male on original site giving very agitated bursts of alarm calls at 2 Cuckoos *Cuculus canorus* passing slowly through the area.

23rd May: Male briefly on west site. Pair at original site, flying towards suspected nest area.

03rd Jun: Male on original site giving alarm call.
07th Jun: Male briefly on west site. Male in songflight over original site.
12th Jul: Male briefly on west site.
24th Jul: Male singing from perch on west site. Female and 3 juveniles on original site.

29th Aug: Single female/immature on original site.
12th Oct: Single male in songflight.

Summary: Pair on original site seemed to be feeding a first brood but fledging success not known, 24th July sighting would seem to show a second brood of at least three fledged juveniles. Although a male seemed to be continuously holding territory on the west site, there was no proof that breeding occurred.

2009 Bartinney

02nd Mar: Male southwest of down.
16th Mar: Pair (+ possible 2nd singing male) south side of down near last years breeding site. A second pair were present to the northwest of Bartinney near Leswidden.

22nd Mar: Pair again near Leswidden.
23rd Mar: Male again south west of down with pos 2nd bird in area. Male again south side of down.

10th Apr: Pair at site southwest of down. A brief view of unsexed bird, also song heard at site on south side of down.

20th Apr: Pair again at site southwest of down.
10th May: Male at site southwest of down.
16th Jun: Song heard from site southwest of down.

Summary: Although no evidence of proven breeding it would seem that there were probably three pairs in the area. The song heard at the southwest site in June could indicate second nesting attempt.

2010 Bartinney

13th Mar: Pair seen southeast side of down.
11th Apr: Pair again in same area.
10th May: Male in same area.
22nd June: Male again on southeast site
15th Nov: 1 probably 1st winter female near top of down. Pair showing well southeast of down.

06th Dec: Adult female at southeast site. Brief view of second bird south of down.
Summary: Only one pair seen, 1st winter female probably suggests some breeding success.

2011 Bartinney

21st Jan: 1 or 2 birds seen briefly southeast side of down.
13th Mar: Pair seen on south side near top of down songflight seen briefly.
23rd Mar: Male seen briefly, again on south side near top of down.
28th Mar: Male on southeast side of down (last year's presumed territory) also, possible second bird.

08th Apr: Single bird seen briefly, again on southeast side of down.
01st July: Singing male and juvenile at site on southeast side of down. 2 further juveniles seen feeding c800m to the west of there, with a second singing male c200m further west.

09th Aug: Single(?) bird heard calling from cover on southeast side of down.

Summary: From the July sighting, it would seem likely that two pairs successfully fledged young.

2012 Bartinney

02nd Apr: Male seen on south side of down in same area as 2008 territory.

2012 Botallack Common

22nd Aug: Pair continuously taking, apparently, single food items into gorse patch.

Summary: Less visits than usual to Bartinney due mainly to poor weather. Although only a single male seen, if a pair were present the female would be likely to be sitting at the time of sighting.
The behaviour of the pair seen at Botallack Common would seem to be carrying food to young, possibly single items would be to tempt young from nest.

2013 Botallack Common

02nd June: Male seen in area near to last years presumed nest site.

2013 Bartinney

03rd June; Male singing and seen briefly in same area as last years sighting.

Summary: Obviously unable to say if birds are breeding but both sites holding at least a male.

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