



European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features

**Porton Down Special Protection Area (SPA)
Site Code: UK9011101**



Stone curlew©RSPB/Ian Grier

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About this document

This document provides Natural England's supplementary advice for the European Site Conservation Objectives relating to **Porton Down SPA**. This advice should therefore be read together with the SPA Conservation Objectives available [here](#).

Where this site overlaps with other European Site(s), you should also refer to the separate European Site Conservation Objectives and Supplementary Advice (where available) provided for those sites.

This advice updates and replaces a previous version dated 20 February 2017.

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England, when developing, proposing or assessing an activity, plan or project that may affect this site. Any proposals or operations which may affect the site or its qualifying features should be designed so they do not adversely affect any of the attributes listed in the objectives and supplementary advice.

This Supplementary Advice to the Conservation Objectives presents attributes which are ecological characteristics of the designated species and habitats within a site. The listed attributes are considered to be those that best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the Conservation Objectives. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The tables provided below bring together the findings of the best available scientific evidence relating to the site's qualifying features, which may be updated or supplemented in further publications from Natural England and other sources. The local evidence used in preparing this supplementary advice has been cited. The references to the national evidence used are available on request. Where evidence and references have not been indicated, Natural England has applied ecological knowledge and expert judgement. You may decide to use other additional sources of information.

In many cases, the attribute targets shown in the tables indicate whether the current objective is to 'maintain' or 'restore' the attribute. This is based on the best available information, including that gathered during monitoring of the feature's current condition. As new information on feature condition becomes available, this will be added so that the advice remains up to date.

The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulations Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Some, but not all, of these attributes can also be used for regular monitoring of the actual condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

These tables do not give advice about SSSI features or other legally protected species which may also be present within the European Site.

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email HDIRConservationObjectivesNE@naturalengland.org.uk

About this site

European Site information

Name of European Site	Porton Down Special Protection Area (SPA)
Location	Wiltshire
Site Maps	The designated boundary of this site can be viewed here on the MAGIC website
Designation Date	03.07.1992
Qualifying Features	See section below
Designation Area	1,562.32 ha
Designation Changes	Extension in December 2007
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Porton Down SSSI
Relationship with other European or International Site designations	Porton Down SPA coincides with part of Salisbury Plain SAC
Other information	Natura 2000 Standard Data Form for Porton Down SPA

Site background and geography

Porton Down is located north-east of Salisbury, in Wiltshire. It lies within the [Salisbury Plain and West Wiltshire Downs National Character Area](#) (NCA), on a gently undulating plateau of Upper Chalk with shallow dry valleys.

The soils are mostly Rendzinas with chalk grassland, and acid Brown Earths and intergrades between the two, with localised acidophilous scrub and grassland communities on Roche Court Down, Easton Down and Battery Hill.

The designated site is important for chalk grassland and heath, with scrub, ancient and plantation woodland, a large juniper population, lichens, rare flowering plants, butterflies and other invertebrates, and breeding birds, including stone-curlew.

Porton Down is home to the Defence Science and Technology Laboratory (DSTL), part of the Ministry of Defence, employing more than 3,000 scientists. It was created 100 years ago in response to gas attacks in World War One. The site is not generally accessible to the general public.

About the qualifying features of the SPA

The following section gives you additional, site-specific information about this SPA's qualifying features. These are the individual species of wild birds listed on Annex I of the European Wild Birds Directive, and/or the individual regularly-occurring migratory species, and/or the assemblages (groups of different species occurring together) of wild birds for which the SPA was classified for.

Qualifying individual species listed in Annex I of the Wild Birds Directive (Article 4.1)

During the breeding season the SPA regularly supports:

- **Stone-curlew *Burhinus oedicnemus*.**

When classified, the SPA supported 11 breeding pairs which comprised 10.6% of the GB breeding population (the 5 year mean count during the period 1995–1999).

Stone-curlews are migratory, and return from their wintering quarters in winter in southern Spain, south-western France and north-western Africa to their breeding grounds in England in late March. They nest on open, bare ground or areas with short or sparse vegetation height below 2 cm. The birds are monogamous, with pair-bonds thought to be either life-long or annually renewed. They are able to breed at one year of age, but most do not do so until three years old. Most young return to within 15 km of the natal site.

A stone curlew nest is typically a scrape on bare stony ground, lined with stones, shells, rabbit droppings or pieces of vegetation. Two pale eggs are laid from April at two day intervals. Both sexes incubate, starting with the second egg for 24-26 days. Chicks normally leave the nest soon after hatching, though can stand and walk properly only on second day. The chicks are able to feed themselves a few days later, and fledge at 36-42 days. They become independent only after fledging.

The breeding season is well spread out, and egg laying can continue as late as August.

Breeding bird data from [RSPB's Wessex Stone-curlew Project](#):

Porton Down SSSI/SPA	
Year	No. of breeding pairs
1995	9
1996	12
1997	12
1998	11
1999	11
2011	12
2012	12
2013	4
2014	4
2015	7

The broad habitat types present within and close to the SPA are lowland calcareous grassland, improved grassland and arable.

Within the SPA, stone-curlews breed on the chalk grassland. Porton Down is the last remaining area where this happens. Historically, nest sites have been distributed across the SPA but since 2013 have reduced and concentrated towards the southern and northern ends.

Outside of the designated area, but still within the DSTL boundary, stone-curlews breed on tilled plots within improved grassland and arable, managed by DSTL and the tenant farmers under agri-environment schemes. Nesting locations are concentrated on the southern and eastern perimeter.

Outside of the Dstl boundary, stone-curlews also breed on tilled plots, to the east ('Porton Fringe') and north-west (RSPB Winterbourne Downs, Cholderton Estate).

Roosting locations, in autumn, are on Battery Hill/Winterslow Firs (within the SPA), the Townend Plots (outside of the SPA, within Dstl) and in recent years, outside the Dstl boundary at Suddern Farm.

A new watering hole was constructed in 2015 to provide drinking and bathing opportunities, in Townend Field. RSPB classify breeding sites as either on 'semi-natural habitat' (downland, disturbed ground within semi-natural habitat, and specially created habitat with at least 50% of its perimeter adjacent to semi-natural grassland) or 'farmland' (specially created habitat within arable farmland or within a crop).

References:

GREEN, R.E. & GRIFFITHS, G.H. (1994). Use of preferred nesting habitat by stone curlews *Burhinus oedichnemus* in relation to vegetation structure. *J. Zool.*, 233, 457-471

GREEN, R.E. & TAYLOR, C.R. (1995) Changes in stone curlew *Burhinus oedichnemus* distribution and abundance and vegetation height on chalk grassland at Porton Down, Wiltshire. *Bird Study*, 42, 177-181

GREEN, R.E., TYLER, G.A. & BOWDEN, C.G.R (2000) Habitat selection, ranging behaviour and diet of the stone curlew (*Burhinus oedichnemus*) in southern England. *J. Zool.*, 250, 161-183

GREEN, R.E., HODSON, D.P. & HOLNESS, P.R. (1997) Survival and movements of Stone-curlews *Burhinus oedichnemus* ringed in England. *Ringing & Migration*, 18, 102-112

BEALEY, C.E., GREEN, R.E., ROBSON, R., TAYLOR, C.R. & WINSPEAR, R. (1999) Factors affecting the numbers and breeding success of stone curlews *Burhinus oedichnemus* at Porton Down, Wiltshire. *Bird Study*, 46, 145-156

Site-specific seasonality of SPA features

The table below highlights in grey those months in which significant numbers of each mobile qualifying feature are most likely to be present at the SPA during a typical calendar year. This table is provided as a general guide only.

Unless otherwise indicated, the months shown below are primarily based on information relating to the general months of occurrence of the feature in the UK. Where site-based evidence is available and has been used to indicate below that significant numbers of the feature are typically present at this SPA outside of the general period, the site-specific references have been added to indicate this.

Applicants considering projects and plans scheduled in the periods highlighted in grey would benefit from early consultation with Natural England given the greater scope for there to be likely significant effects that require consideration of mitigation to minimise impacts to qualifying bird features during the principal periods of site usage by those features. The months which are *not* highlighted in grey are not ones in which the features are necessarily absent, rather that features may be present in less significant numbers in typical years. Furthermore, in any given year, features may occur in significant numbers in months in which typically they do not. Thus, applicants should not conclude that projects or plans scheduled in months not highlighted in grey cannot have a significant effect on the features. There may be a lower likelihood of significant effects in those months which nonetheless will also require prior consideration.

Any assessment of potential impacts on the features must be based on up-to-date count data and take account of population trends evident from these data and any other available information. Additional site-based surveys may be required.

Feature	Season	Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Site-specific references where available
Stone-curlew	Breeding	Summer													<i>RSPB Wessex Stone-curlew Project reports, from 1995 and on-going.</i>

Guide to terms:

Breeding – present on a site during the normal breeding period for that species

Non-breeding - present on a site outside of the normal breeding period for that species (includes passage and winter periods).

Summer – the period generally from April to July inclusive

Passage - the periods during the autumn and spring when migratory birds are moving between breeding areas and wintering areas. These periods are not strictly defined but generally include the months of July – October inclusive (autumn passage) and March – April inclusive (spring passage).

Winter - the period generally from November to February inclusive.

Table 1: Supplementary Advice for Qualifying Features: A133 Stone-curlew *Burhinus oedicnemus*

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Breeding population	Population abundance	Maintain the size of the breeding Stone Curlew population at or above a mean of 11 pairs whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>This will sustain the site's population and ensures it contributes to a viable local, national and bio-geographic population.</p> <p>Due to the mobility of birds and the dynamic nature of population change, the target-value given for the abundance of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period.</p> <p>The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current abundance of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is classified, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account.</p> <p>Maintaining or restoring bird abundance depends on the suitability of the site. However, factors affecting suitability can also determine other demographic rates of birds using the site including survival (dependent on factors such as body condition which influences the ability to breed or make foraging and / or migration movements) and breeding productivity.</p>	RSPB Wessex Stone-curlew Project reports, from 1995 and on-going.

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>Adverse anthropogenic impacts on either of these rates may precede changes in population abundance (e.g. by changing proportions of birds of different ages) but eventually may negatively affect abundance. These rates can be measured or estimated to inform judgements of likely impacts on abundance targets.</p> <p>Unless otherwise stated, the population size will be that measured using standard methods such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise on whether the figures stated are the best available.</p>	
Supporting habitat (both within and outside the SPA): extent and distribution	Extent and distribution of supporting breeding habitat	<p>Maintain the extent, distribution and availability of suitable breeding habitat which supports breeding Stone Curlew for all necessary stages of its breeding cycle (courtship, nesting, feeding):</p> <p>The total SPA area is 1,562.32 ha. Within the SPA, the main habitat used by stone-curlews is chalk grassland, which covers:</p> <p>1991: 755 ha 2007: 855 ha</p> <p>Other habitat patches that are used within the SPA include bare chalk and ponds.</p>	<p>Conserving or restoring the extent of supporting habitats and their range will be key to maintaining the site's ability and capacity to support the SPA population.</p> <p>The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending to the nature, age and accuracy of data collection.</p> <p>Hectarages calculated from the two NVC surveys as recorded on ArcGIS. These figures do not include scrub and woodland.</p> <p>This target will apply to any supporting habitat which is known to occur outside the site boundary.</p> <p>The SPA breeding birds are part of a wider population including the surrounding farmland within the DSTL boundary (and beyond). Dstl are committed to maintaining seven x 1 ha managed plots adjacent to the SPA.</p>	<p>WILSON PJ AND ME REED (2007) <i>NVC Survey of Porton Down SSSI</i>. Natural England.</p> <p>WILSON P.J. AND M.E. REED (1991) <i>A botanical survey and assessment of the calcareous grassland of the Porton Ranges, Wiltshire and Hampshire</i>. Report to English Nature, South Region.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): function/supporting process	Conservation measures	Maintain management or other measures (whether within and/or outside the site boundary as appropriate) necessary to maintain the structure, function and/or the supporting processes associated with breeding Stone curlew and its supporting habitats.	<p>Active and ongoing conservation management is often needed to protect, maintain or restore this feature at this site. Other measures may also be required, and in some cases, these measures may apply to areas outside of the designated site boundary in order to achieve this target.</p> <p>Further details about the necessary conservation measures for this site can be provided by Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.</p> <p>At this SPA, management measures currently include;</p> <p>Porton Down stone-curlew conservation project programme: Maintain and manage seven stone-curlew plots. Implement specific management measures on different parts of the site to create and enhance stone-curlew habitat e.g. scrub control and, on Easton Down, allowing some scrub re-growth.</p>	<p>NATURAL ENGLAND, 2014. Site Improvement Plan for Salisbury Plain (SIP209). http://publications.naturalengland.org.uk/publication/5384236060114944</p> <p>DEFENCE SCIENCE & TECHNOLOGY LABORATORY (DSTL), 2016.. <i>Dstl Porton Down Site Ecological Plan</i>, Dstl, 2016 (and annually).</p> <p>DSTL, 2013. unpublished, <i>Dstl Porton Down stone-curlew conservation project – strategy document</i>, Dstl, 2013</p> <p>DSTL, 2014. unpublished, <i>Porton Down</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				<i>stone-curlew conservation project programme 2014-19, Dstl, 2014</i>
Supporting habitat (both within and outside the SPA): predation	Predation	Reduce the predation and disturbance of breeding Stone Curlew caused by native and non-native predators.	<p>This will ensure that breeding productivity (number of chicks per pair) and survival are sustained at rates that maintain or restore the abundance of the feature. As ground-nesting birds, stone curlews are particularly vulnerable to predation.</p> <p>Impacts to breeding productivity can result directly from predation of eggs, chicks, juveniles and adults, and also from significant disturbance. The presence of predators can influence bird behaviours, such as abandonment of nest sites or reduction of effective feeding.</p> <p>Where evidence suggests predator management is required, measures can include their exclusion through fencing and scaring or by direct control. Any such measures must consider the legal protection of some predators, as well as the likely effects of such control on other qualifying features.</p> <p>On Porton Down, the stone-curlew conservation project plan lists the following actions:</p> <p>On-going management of foxes across the site. Survey and map all badger setts across the site and update this every five years. Use nest cameras to monitor nests to establish the causes of predation and nest abandonment. Use permanent or temporary fencing around the managed plots to protect nests from predation. Trial other methods for deterring predators from nest plots.</p>	<p>HENDERSON I.G. Unpublished <i>Potential disturbance effects, nesting success and territory placement in stone curlews at Porton Down 2010-2012</i> BTO Research Report no. 633, January 2013.</p> <p>DSTI, unpublished, <i>An assessment of predator deterrents, in the form of electric fencing on Dstl Porton Down, 2014</i>. Dstl, February, 2015</p> <p>DSTL, unpublished, <i>Porton Down stone-curlew conservation project</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				<i>programme 2014-19, Dstl, 2014</i>
Supporting habitat (both within and outside the SPA): function/ supporting process	Air quality	Maintain concentrations and deposition of air pollutants at or below the site-relevant Critical Load or Level values given for this feature of the site and its supporting habitats on the Air Pollution Information System (www.apis.ac.uk).	<p>The structure and function of the habitats which support this SPA feature may be sensitive to changes in air quality.</p> <p>Exceeding critical values for air pollutants may result in changes to the chemical status of its habitat substrate, accelerating or damaging plant growth, altering vegetation structure and composition and thereby affecting the quality and availability of nesting, feeding or roosting habitats.</p> <p>For Porton Down SPA and stone-curlew, the acidity and nitrogen critical loads are not currently exceeded.</p> <p>Critical Loads and Levels are thresholds below which such harmful effects on sensitive UK habitats will not occur to a noteworthy level, according to current levels of scientific understanding. There are critical levels for ammonia (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development.</p> <p>It is recognised that achieving this target may be subject to the ongoing development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p>	Air Pollution Information System (www.apis.ac.uk).

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): structure	Vegetation characteristics	Maintain the proportion of short (<5 to 10 cm) vegetation and bare ground within stone curlew nesting areas (<30% bare or sparsely vegetated).	<p>The height, cover, variation and composition of vegetation are often important characteristics of habitats supporting this feature which enable successful nesting, rearing, concealment and roosting.</p> <p>Many bird species will have specific requirements that conservation measures will aim to maintain, for others such requirements will be less clear. Activities that may directly or indirectly affect the vegetation of supporting habitats and modify these characteristics may adversely affect the feature.</p> <p>Stone-curlew nesting locations are generally on open, stony ground with sparse or short vegetation; on Porton Down, either on the chalk grassland on the SPA or tilled plots outside the SPA.</p>	See the list of references on p. 4
Supporting habitat (both within and outside the SPA): function/ supporting process	Food availability within supporting habitat	Maintain the distribution, abundance and availability of key prey items (e.g. beetles, grasshoppers, flies, earthworm, snails, slugs) at prey sizes preferred by stone curlew.	<p>The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population. As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.</p> <p>The stone-curlew's preferred feeding habitats are short grassland, both semi-natural and improved, spring tillage, pig fields and manure heaps. Past research has demonstrated the importance of vegetation structure for foraging. On Porton Down SPA and surrounds, all these habitats are available.</p> <p>The chalk grassland structure and its invertebrate life, is directly influenced by the rabbit population, as grazers and disturbers. In some locations, the grazing pressure is not adequate for the chalk grassland or stone-curlew interests, due to successional processes and rabbit population fluctuations. Livestock grazing is not generally practised on the site, although might be practically less difficult in some locations at the edges.</p> <p>The tilled plots are cultivated each year by Dstl and the tenant</p>	<p>See the list of references on p. 4</p> <p>DEFENCE SCIENCE & TECHNOLOGY LABORATORY. <i>Dstl Porton Down Site Ecological Plan</i>, Dstl, 2016 (and annually).</p> <p>DSTL, unpublished, <i>Dstl Porton Down stone-curlew conservation project – strategy document</i>, Dstl, 2013</p> <p>DSTL,</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>farmers (and electric fencing used to exclude predators). Areas of short grass around the plots are needed for feeding, although some longer areas are also useful for concealing fledglings.</p> <p>Dstl have suggested that small islands of scrub help to preserve soil moisture and invertebrate food sources on the thin soils, although there is the problem of large or dense scrub harbouring predators.</p>	<p>unpublished, <i>Porton Down stone-curlew conservation project programme 2014-19</i>, Dstl, 2014</p>
Supporting habitat (both within and outside the SPA): structure	Landscape	Maintain the area of open and unobstructed terrain within and around nesting, roosting and feeding sites.	<p>This feature is known to favour large areas of open terrain, largely free of obstructions, in and around its nesting, roosting and feeding areas.</p> <p>Often there is a need to maintain an unobstructed line of sight within nesting, feeding or roosting habitat to detect approaching predators, or to ensure visibility of displaying behaviour. An open landscape may also be required to facilitate movement of birds between the SPA and any off-site supporting habitat.</p> <p>On Porton Down, the scrub management programme is prioritising avoidance of encroachment onto chalk grassland and maintaining the open landscape.</p> <p>At the same time, Dstl have suggested, also reported in Henderson (2013), that islands of scrub help to preserve soil moisture and invertebrate food sources on the thin soils; and that scrub removal on Easton Down has resulted in declining stone curlew presence here.</p>	<p>See the list of references on p. 4</p> <p>HENDERSON I.G. Unpublished <i>Potential disturbance effects, nesting success and territory placement in stone curlews at Porton Down 2010-2012</i> BTO Research Report no. 633, January 2013.</p>
Supporting habitat (both within and outside the SPA): function/supporting process	Connectivity with supporting habitats	Maintain the safe passage of stone curlews moving between nesting, roosting and feeding areas during their breeding season.	<p>The ability of the feature to safely and successfully move between nesting, feeding and roosting areas is critical to their breeding success and to adult fitness and survival.</p> <p>This target will apply within the site boundary and where birds regularly move to and from off-site habitat where this is relevant.</p> <p>Outside of the designated area, but still within the DSTL boundary, stone-curlews breed on tilled plots within improved grassland and arable, managed by DSTL and the tenant farmers</p>	<p>LARGE R. & S. HALES (2015). <i>Mapping connectivity of species-rich grassland habitat in the Wiltshire Chalk landscape</i>. Natural England.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>under agri-environment schemes. Nesting locations are concentrated on the southern and eastern perimeter.</p> <p>Outside of the Dstl boundary, stone-curlews also breed on tilled plots, to the east ('Porton Fringe') and north-west (RSPB Winterbourne Downs, Cholderton Estate).</p> <p>Roosting locations, in autumn, are on Battery Hill/Winterslow Firs (within the SPA), the Townend Plots (outside of the SPA, within Dstl) and in recent years, outside the Dstl boundary at Suddern Farm.</p> <p>Large & Hales (2015), in their modelled scenarios, predicted that the northern edge of Porton Down has scope for connecting to the nearby RSPB reserve, Winterbourne Downs, where extensive chalk grassland creation is already underway, with nesting stone-curlew.</p>	
Supporting habitat (both within and outside the SPA): disturbance	Minimising disturbance caused by human activity	Restrict the frequency, duration and/or intensity of disturbance affecting nesting, roosting, foraging, feeding, moulting and/or loafing birds so that the stone curlew feature is not significantly disturbed	<p>The nature, scale, timing and duration of some human activities can result in the disturbance of birds at a level that may substantially affect their behaviour, and consequently affect the long-term viability of the population. As ground-nesting birds, stone curlews are particularly vulnerable to human disturbance.</p> <p>Such disturbing effects can for example result in changes to feeding or roosting behaviour, increases in energy expenditure due to increased flight, abandonment of nest sites and desertion of supporting habitat (both within or outside the designated site boundary where appropriate). This may undermine successful nesting, rearing, feeding and/or roosting, and/or may reduce the availability of suitable habitat as birds are displaced and their distribution within the site contracts.</p> <p>Disturbance associated with human activity may take a variety of forms including noise, light, sound, vibration, trampling, presence of people, animals and structures.</p> <p>Porton Down is not subject to military exercises (with military</p>	<p>TAYLOR E.C., R.E. GREEN AND J. PERRINS (2007) <i>Stone-curlews Burhinus oedichnemus and recreational disturbance: developing a management tool for access</i>. Ibis, 149 (Suppl. 1), 37-44</p> <p>TAYLOR E.C. 2006 <i>Stone curlews Burhinus oedichnemus and human disturbance:</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>vehicles, troops on the ground or low-flying helicopters), rather, it is subject to research trials, entailing vehicle movements along regular routeways, human activity at the built locations around the site and occasional loud explosions. Conservation staff monitor the stone-curlews and ring the chicks, under licence. A shoot operates during the autumn and winter season. The general public (and their dogs) do not have access. Overall, the Dstl site appears relatively undisturbed and there has been no reason, so far, to suggest that disturbance is having an impact.</p> <p>On Porton Down, Henderson (2013) investigated potential disturbance effects on stone-curlew and found that 'time off the nest' and 'total alarm rate' behaviours were negatively correlated with nest proximity to internal access roads; however, this did not affect the distribution or success of breeding attempts.</p>	<p><i>effects on behaviour, distribution and breeding success.</i> PhD thesis, Cambridge University.</p> <p>DAY T. 2004. <i>The effects of disturbance from roads on stone curlews in southern England.</i> PhD thesis, Cambridge University.</p> <p>HENDERSON I.G., 2013. <i>Potential disturbance effects, nesting success and territory placement in stone curlews at Porton Down 2010-2012</i> BTO Research Report no. 633.</p>

Version Control

Advice last updated: not applicable

Variations from national feature-framework of integrity-guidance: Removed attribute for medium-height vegetation patches within roosting areas.

