



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

**Thames Basin Heaths Special Protection Area (SPA)
Site Code: UK9012141**



Photo: Graham Steven, Natural England

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About this document

This document provides Natural England's supplementary advice for the European Site Conservation Objectives relating to Thames Basin Heaths 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 previous draft advice dated 29 February 2016 following the receipt of comments from the site's stakeholders.

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.

This supplementary advice to the Conservation Objectives describes in more detail the range of ecological attributes on which the qualifying features will depend and which are most likely to contribute to a site's overall integrity. It sets out minimum targets for each qualifying feature to achieve in order to meet the site's objectives.

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	Thames Basin Heaths Special Protection Area
Location	Bracknell Forest, Hampshire, Surrey
Site maps	The designated boundary of this site can be viewed on the MAGIC website
Designation Date	March 2005
Qualifying Features	See section below
Designation Area	8274.72 hectares
Designation Changes	None
Feature Condition Status	Condition assessment information relating to this site can be found using Natural England's Designated Sites search tool .
Names of component Sites of Special Scientific Interest (SSSIs)	Ash to Brookwood Heaths Bourley and Long Valley Bramshill Broadmoor to Bagshot Woods and Heaths Castle Bottom to Yateley and Hawley Commons Chobham Common Colony Bog and Bagshot Heaths Eelmoor Marsh Hazeley Heath Horsell Common Ockham and Wisley Commons Sandhurst to Owlsmoor Bogs and Heaths Whitmoor Common
Relationship with other European or International Site designations	Overlaps with Thursley, Ash, Pirbright & Chobham SAC (UK0012793)
Further information	Natura 2000 Standard Data Form for Thames Basin Heaths SPA

Site background and geography

Covering approximately 8,274 hectares and spanning 11 local authority areas, Thames Basin Heaths SPA forms part of an extensive complex of lowland heathlands in southern England that support important breeding bird populations. It is located across the counties of Surrey, Hampshire and Berkshire and within the Thames Basin Heaths National Character Area (NCA) which stretches westwards from Weybridge in Surrey to the countryside around Newbury in Berkshire.

The SPA consists of areas of agriculturally-unimproved heathland, scrub and woodland which were once almost continuous but are now fragmented by roads, urban development and farmland. It supports important breeding populations of a number of birds which are strongly associated with heathland habitat, especially the ground nesting birds Nightjar and Woodlark, and also the Dartford Warbler which often nests close to the ground amongst dense heather and gorse.

The geology of the area consists of sand and gravel sediments which give rise to sandy or peaty acidic soils. These support dry heath vegetation in well-draining areas and wet heath vegetation in low-lying shallow slopes and bogs.

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.

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

During the breeding season the SPA regularly supports 1% or more of the Great Britain (GB) populations of the following species listed in Annex I:

- A302 Dartford Warbler (*Sylvia undata*) – 27.8% of the GB population
- A224 Nightjar (*Caprimulgus europaeus*) – 7.8% of the GB population
- A246 Woodlark (*Lullula arborea*) – 9.9% of the GB population

Within this SPA the principal habitats supporting these qualifying species are lowland heathland and rotationally managed coniferous plantation woodland.

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. For example, at this SPA woodlark and Dartford warbler are likely to be present in those months outside of their core breeding season indicated below. 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	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Site-specific references where available
Dartford Warbler	Breeding													
Nightjar	Breeding													
Woodlark	Breeding													

Table 1: Supplementary Advice for Qualifying Features: A224 *Camprimulgus europaeus* European Nightjar

Attributes		Targets	Supporting and/or 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 or restore the structure, function and/or the supporting processes associated with Nightjar and its supporting habitats.	<p>Active and ongoing habitat management is usually required to protect, maintain or restore populations of breeding nightjar. 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>This information will typically be found within, where applicable, supporting documents such as the Natura 2000 Site Improvement Plan, any Site Management Strategies or Plans, the notified Views about Management Statement for the underpinning SSSI and/or management agreements. Further details about the necessary conservation measures for this site can be provided by Natural England.</p> <p>Habitat management should retain the open, mosaic structure of lowland wet and dry heath, ensuring that all life cycle stages of heather are present. It may, in certain areas, be appropriate to maintain scrubby vegetation and occasional taller trees should be available for the nightjar to 'churr' from.</p> <p>Where habitat conditions are currently unsuitable, management should seek to increase the availability and continuity of lowland heath or other suitable open habitat. Plantations should continue to be managed by providing permanent open space and by rotational clear-fell and re-stocking, which can temporarily create suitable breeding habitat for up to 10 years.</p>	NATURAL ENGLAND, 2014.
	Air quality	Restore as necessary the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	<p>The structure and function of habitats which support the SPA population are 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. Some of the effects that might be attributable to aerial pollution could include accelerated and more vigorous growth of bramble, birch and coarse grasses and consequent loss of bare ground and/or heather.</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</p>	<p>More information about site-relevant Critical Loads and Levels for this SPA is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk).</p> <p>LATIMER, W, GLENCROSS, S. & JACKSON, G.</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>nutrient nitrogen deposition and acid deposition.</p> <p>There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. Excessive dust deposition can significantly change the nature of the supporting habitat. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but 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 development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p>	2003
Breeding population	Population abundance	Maintain the size of the breeding nightjar population at or above 264 'churring' males, 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. 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</p>	<p>The latest UK survey information can be found on the BTO website: http://blx1.bto.org/birdfacts/results/bob7780.htm</p> <p>CONWAY, G., WOTTON, S., HENDERSON, I., LANGSTON, R., DREWITT, A. & CURRIE, F. (2007)</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>body condition which influences the ability to breed or make foraging and / or migration movements) and breeding productivity. 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/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> <p>The data originally used in support of the SPA classification was derived from records submitted by volunteer bird recorders for the period 1998-99. The figure given for the total SPA of nightjar was 264 pairs which was an estimated 8% of the total GB population at the time. This represents the minimum acceptable number of breeding pairs which should be present expressed as a 5-year mean for the feature to be considered to be in favourable condition.</p> <p>However, annual monitoring has demonstrated that numbers show a general trend of increasing population size since SPA classification. It is likely that this is a result of a combination of a range of factors including improved habitat management, recovery of parts of the complex after heath fires, changes in access management and implementation of measures to reduce recreational disturbance. The objective of this target is therefore both to ensure that the overall population is maintained above the minimum population size and to seek to ensure that new activities do not affect the general population trend, measured through the on-going monitoring programme.</p>	
Supporting habitat (both within and outside the SPA): extent and	Extent and distribution of supporting habitat for the breeding season	Maintain the extent, distribution and availability of suitable breeding habitat which supports nightjar for all necessary stages of its breeding cycle (courtship, nesting, feeding and roosting).	<p>Conserving or restoring the extent of supporting habitats and their range is key to maintaining the ability and capacity of the SPA to support internationally important numbers of nightjar.</p> <p>The extent and distribution of supporting habitat used by nightjar will vary over time in relation to habitat management, succession and ad hoc events such</p>	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
distribution			<p>as heath fires. The objective is to seek to ensure that there is no over reduction in habitat availability whilst taking this variability into account.</p> <p>Nightjars are known to forage several kilometres away from their nesting territory. This target may also apply to any supporting foraging habitat which is known to occur outside the site boundary.</p>	
Supporting habitat (within the SPA): structure	Vegetation characteristics	Maintain or restore the mix of vegetation (optimal conditions normally with vegetation mostly of 20-60 cm with frequent bare patches of >2 m ² , 10-20% bare ground and <50% tree/scrub cover overall; trees <2 m in height) throughout nesting areas.	<p>The height, cover, variation and composition of vegetation are important characteristics of habitats which support breeding nightjar and enable successful nesting/rearing/concealment/roosting.</p> <p>Nightjar show a preference for bare patches or areas of very short vegetation with widely scattered trees where they are able to see predators approaching. These patches may be on open heathland and within open areas of plantation woodland. Activities that may directly or indirectly affect the vegetation of supporting habitats and modify these characteristics may result in loss of extent of suitable breeding habitat.</p>	This attribute will be periodically monitored as part of Natural England's site condition assessments.
Supporting habitat (both within and outside the SPA): disturbance	Disturbance caused by human activity	Restrict and reduce the frequency, duration and/or intensity of disturbance affecting nesting, roosting and/or foraging birds so that the nightjar 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. 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, increased predation of eggs and chicks and desertion of supporting habitat (both within or outside the designated site boundary).</p> <p>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 contracts. Disturbance associated with human activity may take a variety of forms including noise, light, sound, vibration, trampling and presence of people, animals (including dogs) and structures.</p> <p>Nightjar is a bird known to be sensitive to disturbance. Disturbance caused by human activity is particularly significant for this SPA because many parts are in close proximity to urban areas. There is also high pressure from new residential development. In 2012 a visitor survey was conducted to provide a baseline for monitoring trends in visitor use and numbers.</p> <p>Strategic avoidance and mitigation measures designed to minimise further disturbance associated with new housing are in place for this SPA as set out</p>	<p>FEARNLEY, H. AND LILEY, D. 2013.</p> <p>DURWYN, L., DIGGER, J. AND UNDERHILL-DAY, J. 2005.</p> <p>THAMES BASIN HEATHS JOINT STRATEGIC PARTNERSHIP BOARD, 2009.</p> <p>GOVERNMENT OFFICE FOR THE SOUTH-EAST, 2009.</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			in policy NRM6 of the South East Regional Plan which has been adopted in the relevant development plans in the TBH area. This sets out the agreed approach through the provision of Suitable Accessible Natural Greenspace (SANG) and Strategic Access Monitoring and Management (SAMM)	
Supporting habitat (both within and outside the SPA): structure	Landscape	Maintain or restore the amount and continuity of open and unobstructed patches within nesting and foraging areas, including areas of clear-fell, windfall, wide tracks, open spaces within forests and heath.	<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. Often there is a need to maintain an unobstructed line of sight within nesting, feeding or roosting habitat to detect approaching predators, increase accessibility to prey or to ensure visibility of displaying behaviour.</p> <p>Nightjar will also utilise areas of permanent open space and temporary clear-fell within rotationally-managed plantation woodland and sparsely vegetated areas such as former quarry workings.</p> <p>An open landscape will also be required to facilitate movement of birds between the SPA and any off-site supporting habitat.</p>	
Supporting habitat (both within and outside the SPA): predation	Predation	Reduce or restrict predation and disturbance 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 can maintain or restore the abundance of the feature.</p> <p>Impacts to breeding productivity can result directly from predation of eggs, chicks, juveniles and adults, and also indirectly as a result of significant disturbance. The presence of predators can influence bird behaviours, such as abandonment of nest sites or reduction of effective feeding. Where evidence suggests predator management is required, measures can include their exclusion through fencing and scaring or by direct control.</p> <p>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>	
Supporting habitat (both within and outside the SPA): function/supporting process	Food availability	Maintain or restore the distribution, abundance and availability of key prey items (e.g. moths, beetles) at prey sizes preferred by Nightjar	<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 nightjar is insectivorous, feeding primarily on moths and beetles. Aspects which might affect prey availability will include lighting, pest control, changes in land use and habitat management.</p>	
	Connectivity	Maintain or restore the safe	The ability of the feature to safely and successfully move between feeding	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
	with supporting habitats	passage of birds moving between nesting and feeding areas	<p>and nesting areas using flight-lines and movement routes is critical to their breeding success and to adult fitness and survival.</p> <p>The nightjar is insectivorous, feeding primarily on moths and beetles. The location of feeding areas which support the SPA's nightjar population is often not well understood and may require specific studies and or research. More generally, nightjars are known to forage in habitats such as open forest and heathland.</p> <p>This target will apply within the site boundary and also where birds regularly move to and from off-site habitat where this is relevant. The foraging range of nightjar is known to extend up to several kilometres from their nest sites. Detailed information about the range of nightjar using this SPA is not currently available.</p>	
<p>Version Control Advice last updated: 9 May 2016 Minor amendments made to attributes (conservation measures, vegetation characteristics, disturbance, landscape) in the draft Advice dated 29 February 2016 following receipt of comments from local stakeholders</p>				
<p>Variations from national framework of integrity-guidance: Simplification of some "Supporting Notes" wording; generic advice updated to include site specific measures and information taken from the sources as referenced in the text; generic target wording amended to ensure site/species relevance is maintained.</p> <p>The targets for some attributes listed above include both 'maintain' or 'restore' objectives. This is because this SPA is an extensive complex of geographically-separate component sites. Overall, both objectives will be applicable to the SPA but these will differ between each component site depending on its particular circumstances. Natural England will be able to provide further advice on request.</p>				

Table 2: Supplementary Advice for Qualifying Features: A246 *Lullula aborea* Woodlark

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): function/supporting process	Conservation measures	Maintain or restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to maintain or restore the structure, function and/or the supporting processes associated with woodlark and its supporting habitats.	<p>Active and ongoing conservation management is essential to protect, maintain or restore the breeding woodlark population 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 in 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 site management should retain the open, mosaic structure of lowland wet and dry heath, ensuring that all life cycle stages of heather are present. Occasional taller trees should be present to provide song posts. Areas of bare or sparsely-vegetated ground created as a result of rotational forestry management can also be valuable.</p> <p>Habitat management should seek to ensure that the overall extent and continuity of supporting habitat is at least maintained. Areas of plantation forestry should continue to be managed by providing permanent open space and rotational clear-fell and restocking, which can temporarily create suitable breeding habitat for up to 10 years.</p>	NATURAL ENGLAND, 2014.
	Air quality	Maintain or restore as necessary concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	See explanatory notes for this attribute in Table 1 above.	More information about site-relevant Critical Loads and Levels for this SPA is available by using the 'search by site' tool on the Air Pollution Information System
Breeding population	Population abundance	Maintain the size of the breeding woodlark population at a level	See explanatory notes for this attribute above in table 1.	Survey information for

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		which is at or above 149 breeding pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>The data originally used in support of the SPA classification was derived from records submitted by volunteer bird recorders for 1997. The figure given for the total SPA of woodlark was 149 pairs which was an estimated 10% of the total GB population at the time. This represents the minimum acceptable number of breeding pairs which should be present expressed as a 5-year mean for the feature.</p> <p>However, annual monitoring has demonstrated that numbers show a general trend of increasing population size since SPA classification. It is likely that this is a result of a combination of a range of factors including improved habitat management, changes in access management and implementation of measures to reduce recreational disturbance. The objective of this target is therefore both to ensure that the overall population is maintained above the minimum population size and to seek to ensure that new activities do not affect the general population trend, measured through the on-going monitoring programme.</p>	this species can be obtained from the BTO; http://blx1.bto.org/birdfacts/results/bob9740.htm
Supporting habitat (both within and outside the SPA): extent and distribution	Extent and distribution of supporting habitat for the breeding season	Maintain or restore the extent, distribution and availability of suitable breeding habitat which supports woodlark for all necessary stages of its breeding cycle (courtship, nesting, feeding).	<p>Conserving or restoring the extent of supporting habitats and their range is a critical factor in maintaining the ability and capacity of the SPA to support the breeding woodlark population.</p> <p>The extent and distribution of supporting habitat used by woodlark will vary over time as a result of habitat management, succession, and ad hoc events such as heath fires. The objective is to seek to ensure that there is no overall reduction in habitat availability whilst taking this variability into account.</p> <p>There should at all times be a sufficient extent of the habitat in order to support the population despite the variations in habitat cover over the year. Bare ground should be adjacent to structurally diverse vegetation, favouring very short heather areas.</p> <p>This target may also apply to any supporting foraging habitat which is known to occur outside the SPA boundary.</p>	
Supporting habitat (both within and outside the SPA):	Disturbance caused by human activity	Restrict and reduce the frequency, duration and/or intensity of disturbance affecting nesting, foraging or feeding birds so that the Woodlark feature is	<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.</p> <p>Such disturbing effects can for example result in changes to feeding or roosting</p>	FEARNLEY, H. AND LILEY, D. 2013. MALLORD, J.W 2003.

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
disturbance		not significantly disturbed	<p>behaviour, increases in energy expenditure due to increased flight, abandonment of nest sites, increased predation of eggs and chicks 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. Disturbance associated with human activity may take a variety of forms including noise, light, sound, vibration, trampling, and presence of people, animals (including dogs) and structures.</p> <p>Woodlark are known to be sensitive to disturbance. Disturbance caused by human activity is particularly significant for this SPA because many parts are in close proximity to urban areas. There is also high pressure from new residential development. In 2012 a visitor survey was conducted to provide a baseline for monitoring trends in visitor use and numbers.</p> <p>A framework of strategic avoidance and mitigation measures designed to minimise further disturbance associated with new housing is in place for this SPA as set out in policy NRM6 of the South East Regional Plan which has been adopted in the relevant development plans in the TBH area. This sets out the agreed approach through the provision of Suitable Accessible Natural Greenspace (SANG) and Strategic Access Monitoring and Management (SAMM)</p>	THAMES BASIN HEATHS JOINT PROJECT BOARD, 2009. GOVERNMENT OFFICE FOR THE SOUTH-EAST, 2009.
Supporting habitat (both within and outside the SPA): predation	Predation	Reduce or restrict predation and disturbance 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 can maintain or restore the abundance of the feature.</p> <p>Impacts to breeding productivity can result directly from predation of eggs, chicks, juveniles and adults, and also indirectly as a result of 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>	
Supporting habitat (both	Landscape	Maintain or restore open and unobstructed terrain, typically	Woodlark favour large areas of open terrain, largely free of obstructions, in and around its nesting, roosting and feeding areas. They show a preference for	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
within and outside the SPA): structure		within at least 0.2 km of nesting areas, with no increases in tall (>0.2 m) vegetation cover to >50% of the site overall.	<p>areas with an unobstructed line of sight in nesting, feeding or roosting habitat to detect approaching predators and to ensure visibility of displaying behaviour.</p> <p>The maintenance of a predominantly open landscape may also be required to facilitate movement of birds between the SPA and any off-site supporting habitat. Woodlark often utilise land adjacent to heathland which is outside the SPA boundary for feeding, including areas of grassland, arable fields and golf courses. Woodlark will also utilise open areas, wide rides and fire breaks in plantations as well as bare areas in quarry sites.</p>	
Supporting habitat (both within and outside the SPA): function/supporting process	Food availability	Maintain or restore the distribution, abundance and availability of key prey items (e.g. spiders, weevils, caterpillars) at prey sizes preferred by Woodlark.	The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the woodlark population. Inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey in foraging areas may adversely affect the population.	
Supporting habitat (both within and outside the SPA): structure	Vegetation characteristics	Within nesting and feeding areas, maintain or restore ground vegetation which is predominantly short (<5 cm) or medium (10-20cm) in height, with frequent patches of bare or sparsely-vegetated ground and scattered clumps of shrubs and trees	<p>The height, cover, variation and composition of vegetation are often important characteristics of habitats supporting this feature and which enable successful nesting/rearing/concealment/roosting and/or displaying.</p> <p>Many bird species will have specific requirements that conservation measures will aim to maintain, for others such requirements will be less clear. Woodlarks need areas of short, sparse, naturally developed turf with a high abundance of invertebrate prey on bare ground. This needs to be interspersed with tussocky vegetation for nesting. Activities that may directly or indirectly affect the vegetation of supporting habitats and modify these characteristics may therefore adversely affect the feature.</p>	

Version Control

Advice last updated: 9 May 2016 - minor amendments made to attributes (conservation measures, vegetation characteristics, disturbance, landscape) in the draft Advice dated 29 February 2016 following receipt of comments from local stakeholders

Variations from national framework of integrity-guidance:

Simplification of some "Supporting Notes" wording; Generic advice updated to include site specific measures and information taken from the sources as referenced in the text; Generic Target wording amended to ensure site/species relevance is maintained.

The targets for some attributes listed above include both 'maintain' or 'restore' objectives. This is because this SPA is an extensive complex of geographically-separate component sites. Overall, both objectives will be applicable to the SPA but these will differ between each component site depending on its particular circumstances. Natural England will be able to provide further advice on request.

Attributes	Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)

Table 3: Supplementary Advice for Qualifying Features: A302 *Sylvia undata* Dartford Warbler

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): function/supporting process	Conservation measures	Maintain or restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to maintain or restore the structure, function and/or the supporting processes associated with the Dartford warbler population and its supporting habitats.	<p>Active and ongoing conservation management is required to protect, maintain or restore the breeding Dartford warbler population. 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 in supporting documents such as the 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>The site should have areas of structurally diverse heather and gorse. Dartford Warbler particularly favour areas of tall, dense gorse and tall, mature heather for nesting. The availability of areas of shorter but structurally diverse vegetation nearby are important in providing invertebrate prey such as spiders and weevils.</p>	NATURAL ENGLAND, 2014.
	Air quality	Maintain or restore as necessary concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	See explanatory notes for this attribute above in Table 1.	More information about site-relevant Critical Loads and Levels for this SPA is available by using the 'search by site' tool on the Air Pollution Information System

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Breeding population	Population abundance	Maintain or restore the size of the breeding Dartford Warbler population at or to a level which is at or above 445 breeding pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>See explanatory Notes for this attribute above in table 1.</p> <p>The data originally used in support of the SPA classification was derived from records submitted by volunteer bird recorders for 1999. The figure given for the total SPA of Dartford warbler was 445 pairs which was an estimated 28% of the total GB population at the time. This represents the minimum acceptable number of breeding pairs which should be present expressed as a 5-year mean for the feature to be considered to be in favourable condition.</p> <p>However, annual monitoring has demonstrated that numbers vary considerably from year to year. It is likely that this is a result of a combination of a range of factors including cold winters, damp spring weather, improved habitat management, recovery of parts of the complex after heath fires, changes in access management and implementation of measures to reduce recreational disturbance. The objective is therefore both to ensure that the overall population is maintained above the minimum population size (subject to natural population variation in response to climatic factors) and to seek to ensure that new activities do not adversely affect the general population trend, measured through the on-going monitoring programme.</p> <p>Dartford warblers are particularly susceptible to climatic factors such as prolonged periods of snow cover in winter and cold, damp spring weather. Survival and productivity appears to be enhanced when patches of dense gorse are available which provide protection from bad weather.</p>	<p>Survey information for this species can be obtained from the BTO; http://blx1.bto.org/birdfacts/results/bob12620.htm</p>
Supporting habitat (both within and outside the SPA): predation	Predation	Reduce or restrict predation and disturbance 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. Impacts to breeding productivity can result directly from predation of eggs, chicks, juveniles and adults, and also from significant disturbance.</p> <p>The presence of predators can influence bird behaviours, such as abandonment of nest sites or reduction of effective feeding. 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>	
Supporting	Extent and	Maintain or restore the extent,	Conserving or restoring the extent of supporting habitats and their range will be	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
habitat (both within and outside the SPA): extent and distribution	distribution of supporting habitat for the breeding season	distribution and availability of suitable habitat which supports Dartford warbler for all necessary stages of its breeding cycle (courtship, nesting, feeding).	<p>key to maintaining the ability and capacity of the SPA to support internationally important numbers of Dartford warbler.</p> <p>The extent and distribution of supporting habitat used by Dartford warbler will vary over time as a result of habitat management, succession, and ad hoc events such as heath fires. The objective is to seek to ensure that there is no overall reduction in habitat availability whilst taking this variability into account.</p> <p>This target may also apply to any supporting foraging habitat which is known to occur outside the SPA boundary.</p>	
Supporting habitat (within the SPA): structure	Vegetation characteristics	Maintain or restore an optimal mix of vegetation (>50% cover of heather and/or gorse, <25 trees/ha and of 0.5-3 m height) in nesting areas with areas of structurally diverse vegetation	<p>The height, cover, variation and composition of vegetation are important characteristics of habitats supporting Dartford warbler which enable successful nesting/rearing/concealment/roosting.</p> <p>Dartford warbler have specific requirements that conservation measures should seek to maintain. Stands of gorse are closely associated with Dartford warblers due to its high invertebrate biomass which may be related to its year-round flowering and evergreen nature. Its dense and spikey structure may also provide protection from both the weather and predators.</p> <p>Activities that may directly or indirectly affect the vegetation of supporting habitats and modify these characteristics may adversely affect breeding success and population size.</p>	This attribute will be periodically monitored as part of Natural England's site condition assessments.
Supporting habitat (both within and outside the SPA): disturbance	Disturbance caused by human activity	Restrict or reduce the frequency, duration and/or intensity of disturbance affecting nesting, foraging or feeding birds so that the Dartford Warbler 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.</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, the presence of people, animals (including dogs) and structures.</p>	FEARNLEY, H. AND LILEY, D. 2013. MURISON, G <i>et al.</i> 2007 THAMES BASIN HEATHS JOINT STRATEGIC PARTNERSHIP BOARD, 2009. GOVERNMENT OFFICE FOR THE SOUTH-EAST, 2009.

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>Dartford warbler are known to be sensitive to disturbance. Disturbance caused by human activity is particularly significant for this SPA because many parts are in close proximity to urban areas. There is also high pressure from new residential development. In 2012 a visitor survey was conducted to provide a baseline for monitoring trends in visitor use and numbers.</p> <p>Strategic avoidance and mitigation measures designed to minimise further disturbance associated with new housing is in place for this SPA as set out in policy NRM6 of the South East Regional Plan which has been adopted in the relevant development plans in the TBH area. This sets out the agreed approach through the provision of Suitable Accessible Natural Greenspace (SANG) and Strategic Access Monitoring and Management (SAMM)</p>	
Supporting habitat (both within and outside the SPA): structure	Landscape	Maintain or restore the connectivity of structurally-diverse heath and patches of dense gorse across the network of sites which comprise the SPA	Local populations of Dartford warbler are subject to large variation in numbers in response to changing weather patterns and habitat structure. It is important that birds are able to move across the landscape and between patches of suitable habitat so they can re-colonise readily from strongholds. Habitat connectivity is particularly important for this species. This may be relevant within large sites as well as between component parts of the SPA.	
Supporting habitat (both within and outside the SPA): function/ supporting process	Food availability	Maintain or restore the distribution, abundance and availability of key prey items (e.g. beetles, spiders, caterpillars, bugs) at prey sizes preferred by Dartford Warbler.	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. In general, structurally-diverse vegetation will provide larger availability of prey.	
Version Control				
Advice last updated: N/A				
Variations from national framework of integrity-guidance:				
Simplification of some "Supporting Notes" wording; Generic advice updated to include site specific measures and information taken from the sources as referenced in the text; Generic Target wording amended to ensure site/species relevance is maintained. The targets for some attributes listed above include both 'maintain' or 'restore' objectives. This is because this SPA is an extensive complex of geographically-separate component sites. Overall, both objectives will be applicable to the SPA but these will differ between each component site depending on its particular circumstances. Natural England will be able to provide further advice on request.				

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