Definition of Favourable Conservation Status for the Peregrine Falcon, *Falco peregrinus*

Defining Favourable Conservation Status Project

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About the DFCS project

Natural England's Defining Favourable Conservation Status (DFCS) project is defining the minimum threshold at which habitats and species in England can be considered to be thriving. Our FCS definitions are based on ecological evidence and the expertise of specialists.

We are doing this so we can say what good looks like and to set our aspiration for species and habitats in England, which will inform decision making and actions to achieve and sustain thriving wildlife.

We are publishing FCS definitions so that you, our partners and decision-makers can do your bit for nature, better.

As we publish more of our work, the format of our definitions may evolve, however the content will remain largely the same.

This definition has been prepared using current data and evidence. It represents Natural England's view of FCS based on the best available information at the time of production.

Introduction

This document sets out Natural England's view on the contribution England needs to make to achieve Favourable Conservation Status (FCS) for the **Peregrine Falcon, Falco peregrinus** (hereafter simply 'peregrine'). The England contribution is defined in terms of three parameters: the natural range and distribution of the species; population of the species; extent of habitat necessary for long-term maintenance of populations.

Section 2 provides the summary definition of the England contribution to FCS. Sections 3 – 6 describe the evidence considered when defining FCS for each of the three parameters. Annex 1 lists the references and Annex 2 sets out the UK and England position in the 3rd Habitats Directive report.

This document does not include any action planning, or describe actions, to achieve or maintain FCS. These will be presented separately, for example within restoration strategies.

Defining the England contribution to Favourable Conservation Status describes the Natural England approach to defining the England contribution and lists the key information sources used to produce this definition.

2. England contribution to FCS

England Breeding Peregrines are now present across much of England and the species' current range and numbers are greater than at any time since detailed recording began in the 1930s. The pattern of increase has not been the same in all parts of the species range, with much smaller increases and even some loss of range and population decline in parts of the northern uplands. FCS should be achieved when all 10-km squares with suitable nesting territories are occupied and the species' range is around 620 10-km squares, including increases in the northern uplands. An overall annual productivity of at least 1.5 fledged chicks per pair and an increased number of territories in the parts of the northern uplands should result in a breeding population of around 920 pairs in England. FCS requires that peregrines breed in all parts of England, with a minimum regional apportionment of:

Southeast	Southwest	North	Midlands	England
220 pairs	270 pairs	320 pairs	110 pairs	920 pairs

Definitions and ecosystem context

3. Species definition

Peregrine Falcon *Falco peregrinus*
Subspecies: *Falco peregrinus peregrinus*
Only birds of the nominate race have been recorded nesting in England; claimed sight records of North American *anatum* are of doubtful validity.
Source: Del Hoyo et al. 1994; Wernham et al. 2002 Confidence: Moderate

3.2 Threat status

Red list status

- **Global**: **Source: IUCN Red List** Least Concern http://www.iucnredlist.org/details/45354964/0
- **European: Source: European Red List, IUCN** Least Concern, stable
- **GB: Birds of Conservation Concern 4***:* Green List https://www.bto.org/sites/default/files/shared_documents/publications/birds-conservation-concern/birds-of-conservation-concern-4-leaflet.pdf

- **GB: IUCN: Least Concern**

3.3 Habitat for the species definition

Peregrines need open areas with a good supply of avian prey and nest sites secure from disturbance and predation. They particularly favour upland and coastal areas as each provides open habitats and cliffs or crags for nesting. Numbers are increasing in lowland and urban areas where birds have taken to nesting on buildings and other man-made structures and where prey in the form of feral pigeons may be super-abundant.

Source: *Hardey et al.2006 Confidence: Moderate*

3.4 Ecosystem context

The peregrine has a worldwide breeding range, being absent only from New Zealand, Antarctica, the high Arctic, lowland South America and the desert regions of Africa, Asia and Australia. The global breeding population was conservatively estimated at 12,000 to 18,000 pairs in the 1980s, with the main concentrations in Australia, islands of the North Pacific and Bering Sea, Spain and the British Isles. In general birds towards the north of their global range are more migratory than those towards the south. The species is polytypic with 19 recognised subspecies.

About one fifth of the European total occurs in Britain. In England birds are most abundant in the north and west and least abundant in the east. Although not restricted to the uplands, the peregrine is considered an important component of Britain's internationally important assemblage of upland breeding birds (i.e. over 1% of the biogeographic population of some key upland species occur in GB, with many on the south-western edge of their range in Europe).

Source: *Del Hoyo et al. 1994, Brown & Grice; 2006 Confidence: Moderate*

Natural range and distribution

4.1 Metric

The number and distribution of 10 km squares with evidence of probable or confirmed breeding across all suitable habitats.

4.2 Historical range

During the early 20th Century the peregrine was most numerous in northern England and on coastal cliffs in the southwest and southeast, with some scattered inland breeding pairs in Cumbria and a small number of essentially lowland counties (e.g. Wiltshire, Norfolk and Suffolk). Numbers and range decreased, following targeted and intense wartime persecution and the widespread use of organochlorines, to a low point in the 1960s. The 1968-72 Atlas indicates that probable or confirmed breeding birds were restricted to Northumberland, Cumbria, the uplands of North Yorkshire and Derbyshire and the northern coastal cliffs of the south-west peninsula.

By the time of the 1988-91 Atlas the species' range had increased moderately, with widespread breeding along the Pennines, in Lancashire and on the Cumbrian coast and scattered breeding in the West Midlands and inland Cornwall, Devon and Somerset. Breeding birds remained largely absent from central and eastern England at this time.

Source: *Holloway 1996, Balmer et al. 2012 Confidence: Moderate*

4.3 Current range

The 2007-11 Atlas and the 2014 national survey show a similar range, with around 600 10km squares supporting probable or confirmed breeding, including northwest and northeast England, the West Midlands and many inland squares in southern and southwestern counties. There are fewer occupied squares in the southeast, East Midlands and East of England, largely reflecting a lack of natural cliff and steeply-sloping nest sites. In a broad sense, the current range is now greater than at any time since records began, although many 10km squares remain unoccupied in the northern uplands.

Source: *Balmer et al. 2012; Wilson et al. 2018; Melling et al. 2018 Confidence: Moderate*

4.4 Range required for future maintenance of populations and diversity

Breeding peregrines are probably only significantly limited in range by food availability and suitable, undisturbed nest sites. Although birds can nest on the ground, and probably did so widely in historic times, increases in predators and disturbance mean that open ground is unlikely ever to host significant numbers in the future. On that basis it seems likely that their natural range could cover much of England, although nest sites will always be restricted to inaccessible or undisturbed cliffs and to tall buildings and quarries.

The current range in the lowlands is probably sufficient for the future maintenance of populations and diversity, although further increases should be anticipated as birds come to nest more often on buildings and undisturbed natural sites. In the uplands there are significant gaps, particularly in the

north and south Pennines. As many of these gaps are in areas with abundant food and suitable nest sites and have held territorial pairs in the past, FCS requires their re-occupation such that there is an increase in the species' range in these areas so that all 10km squares with suitable nesting habitat are occupied. This will require probable/confirmed breeding in up to 20 additional 10km squares.

Source: *Balmer et al. 2012; Wilson et al. 2018; Melling et al. 2018 Confidence: Moderate*

4.5 Potential for restoration of the natural range

Restoration of the natural range in the northern uplands requires a significant increase in annual breeding productivity, which is currently insufficient to allow population growth. See section 5.5. Further colonisation of natural sites in the lowlands is desirable and should be feasible, particularly if disturbance by people is managed effectively during the breeding season.

Source: *Amar et al 2012; Wilson et al. 2018 Confidence: Moderate*

4.6 Favourable range

Based on the 2007-2011 atlas, the 2014 national survey, and required increases in the northern uplands, a natural range of around 620 occupied 10-km squares is to be taken as Favourable Conservation Status (see Annex 1).

4.7 Comparison with situation in 1981

The Favourable Range is significantly greater than that when the Directive came into force.

Population

5.1 Population metric

Breeding pairs as described in Musgrove et al. 2013. Breeding productivity described as fledged chicks/pair per year. Current and historical data are available nationally for these metrics and they are employed in monitoring population and productivity trends.

5.2 Historical populations

The peregrine breeding population declined significantly during the 1939-45 war and the 1950s, reaching an all-time low of fewer than 250 pairs in Britain in 1963 and probably no more than 50 pairs annually in England in the following decade. The reasons for this dramatic decline are targeted persecution during the war to reduce predation of homing pigeons, followed by secondary poisoning by organochlorine pesticides, which increased adult mortality and reduced productivity. The illegal taking of nestlings by falconers and eggs by egg-collectors may also have contributed to this decline.

The population recovered significantly after the banning of organochlorine pesticides, with a GB population of 1,167 pairs by 1991 and 1,400 pairs by 2002 (278 and 469 pairs respectively in England).

The table below, updated from that in Brown & Grice (2005), provides a regional breakdown of the numbers of breeding pairs in England at approximately decadal intervals since the 1930s clearly showing how numbers have changed over this period.

	1930-39	1961	1962	1971	1981	1991	2002	2014
Southeast	**23**	**7**	**1**	**0**	**0**	**6**	**46.5**	**210**
Southwest	**91**	**20**	**10**	**15**	**49**	**110**	**190.5**	**264**
North	**45**	**31**	**23**	**32**	**79**	**147**	**189.5**	**248**
Midlands	**0**	**0**	**0**	**0**	**0**	**15**	**42.5**	**104**
England	**159**	**58**	**34**	**47**	**128**	**278**	**469**	**826**

Source: *Wilson et al. 2018; Brown & Grice 2005 Confidence: High*

5.3 Current population

The latest GB population estimate of 1,628 pairs is derived from the national survey in 2014. The England estimate at this time is 826 pairs, amounting to a 76% increase in the 12 years since the previous survey. However, the pattern of increase has not been the same in all parts of England, with the greatest increases in predominantly lowland areas (114%) and much smaller increases in the uplands of northern England (14%), where there have also been some local and even regional-scale declines. Examples of locations where numbers are now lower than in the late 1990s and 2000s include northwest England (from 72 pairs in 2002 to 61 in 2014),the Dark Peak area of the south Pennines (13 pairs in 1995 down to 4 pairs in 2015) and the Bowland Fells (16 pairs in 2008 down to 4 pairs in 2014). Similarly, the North Pennine Moors SPA held fewer than 7 pairs in 2014 compared to 15 pairs in 1991. There is strong evidence that poor population growth and declines

in the northern uplands result from the illegal killing and disturbance of nesting birds. In several upland areas (Durham, Northwest, Northumbria, Yorkshire Dales) productivity levels of pairs on grouse moors are 50% that of breeding pairs on non-grouse moor habitat. Current reproductive success on grouse moors is considered to be similar to that during the 1960s when the national population declined.

Source: *Amar et al. 2012; Wilson et al.2018; Melling et al. 2018 Confidence: Moderate*

5.4 Population required for future maintenance of populations and diversity

Further growth, particularly in northern upland areas, is necessary to secure the distribution and abundance of the species across its natural range in England and to ensure the breeding population thrives at all geographical scales into the future. This is particularly relevant to the uplands where breeding peregrines are important apex predators in the upland ecosystem and an iconic component of the upland breeding bird assemblage and where they are now missing from nesting territories occupied in recent decades.

At present there is evidence that numbers in some upland areas are maintained by immigration, and they are thus acting as a sink for neighbouring populations, with possible consequences for the rate of recovery and expansion away from upland areas.

The achievement of FCS will require significant population growth in the northern uplands, in particular on land managed for grouse-shooting. Between 1992 and 2006 the number of nest sites on moors not managed for red grouse production increased from 19 to 53 while the numbers on moors managed for grouse production declined slightly from 23 to 21. If grouse moors had experienced a rate of growth similar to that on non-grouse moors during this period then a grouse moor population of around 60 pairs might have been achieved by 2006. Assuming a further moderate increase of around 50% up to the present (based on the 76% national increase from 2002-2014), a grouse-moor population of at least 90 pairs might be expected and is thus the figure required to enable us to conclude the species is at FCS in England. Growth in numbers of around 180% for peregrines breeding on grouse-moors would be consistent with the level of growth achieved on upland non-grouse moor habitat between 1992 and 2006, so it is technically feasible.

Source: *Amar et al. 2012; Wilson et al. 2018 Confidence: Moderate*

5.5 Potential for restoration of populations

The number of peregrines has increased substantially over the last 50 years, as it recovers from the effects of systematic killing and the widespread use of organochlorine pesticides. Further increase seems likely in many areas as apparently suitable sites in in the lowlands, on cliffs and quarries and on buildings, become occupied. A straightforward cessation of illegal killing in the northern uplands is likely to be sufficient to boost breeding productivity and so enable populations to recover and for FCS to be attained in these areas. There is no evidence that breeding densities on grouse moors cannot reach a similar level to those on non-grouse moors. Many peregrine prey species occur at similar or higher densities on grouse moors compared to non-grouse moors and there are fewer predators on grouse moors (Amar *et al.* 2012). The declines described in section 5.3 provide clear evidence that higher densities occurred on grouse moors in the recent past.

A resulting increase in productivity and peregrine numbers will not affect the expansion of other habitats and species, although it might reduce overall densities of some prey species.

Source: *Amar et al 2012; Wilson et al. 2018 Confidence: Moderate*

5.6 Favourable population

FCS requires that peregrines breed in all parts of England, with a minimum regional apportionment of:

Southeast	Southwest	North	Midlands	England
220 pairs	270 pairs	320 pairs	110 pairs	920 pairs

This anticipates some further modest population increase in lowland areas and a significant increase on grouse moors in some parts of the northern uplands resulting from greater breeding productivity. Productivity and population levels should be monitored using a similar methodology and timing to previous monitoring work, i.e. regional recording of site occupancy and breeding productivity by Raptor Study Groups and coordinated national population surveys employing volunteers at roughly 12 year intervals.

5.7 Comparison with situation in 1980

The Favourable Population is considerably greater than that at the time the Directive came into force.

Habitat for the species

6.1 Metric

Hectares or km squares

Hectares or km squares are likely to be most useful although territory size is likely to vary depending on habitat quality.

6.2 Historical area

The overall extent of suitable breeding habitat was probably broadly similar in historical times to the present situation, with some loss of nesting territories in open moorland areas to afforestation and more widely as a result of increased disturbance by people, but with new locations becoming available in lowland areas as a result of quarrying and the erection of tall artificial structures.

Source: *Brown & Grice 2005 Confidence: Low*

6.3 Current area

The current area of suitable habitat is unknown but it is certainly very extensive and widespread, given that birds require only open land with suitable nesting locations and abundant avian prey. Lack of nest sites is probably the most important natural limiting factor.

Source: *Brown & Grice 2005 Confidence: Low*

6.4 Area required for future maintenance of populations and diversity

Given that the current population is far greater than any known historical population, and that the only parts of the country where numbers have not increased significantly (or have decreased) are on northern grouse-moors, it is reasonable to conclude that increased occupancy of suitable nesting territories on grouse moors is necessary for the maintenance of populations and diversity. Nesting habitat is not considered to be limiting in upland areas as many previously occupied territories are now vacant.

Numbers are likely to increase still further to occupy available habitat in the lowlands although, in reality, they might not increase that much further because many otherwise suitable areas are probably too disturbed (for example by rock-climbing and other recreational activities, activities generally regulated or controlled by codes of practice or primary legislation in and around occupied territories).

Source: *Wilson et al. 2018; Melling et al. 2018; Amar et al. 2012 Confidence: Moderate*

6.5 Potential for habitat restoration

Habitat restoration is not required. The recent proliferation of man-made structures (tall buildings, pylons, telecommunication masts) and quarried rock-faces has increased nesting habitat in lowland areas. Although suitable nesting habitat is available in the northern uplands much is unoccupied, largely if not entirely because of illegal persecution.

Source: *Wilson et al. 2018; Melling et al. 2018; Amar et al. 2012 Confidence: Moderate*

6.6 Favourable supporting habitat

Area at current levels. Effective habitat loss in the uplands results from illegal disturbance.

Annex 1: References

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Annex 2: 10th UK Birds Directive Reporting

UK context from the 10th UK Birds Directive report

UK conservation status:

- **Range:** 152,600 km2
- **Population:** 1,500 pairs
- **Habitat for the species:**
- **Overall:**

UK favourable reference values:

- **Range:**
- **Population:**

Proportion of UK species within England:

Proportion of England species within protected sites:

- **N2K:**

Source: 3rd UK Habitats Directive Reporting 2013, England Submission

- **Protected areas outwith N2K:**

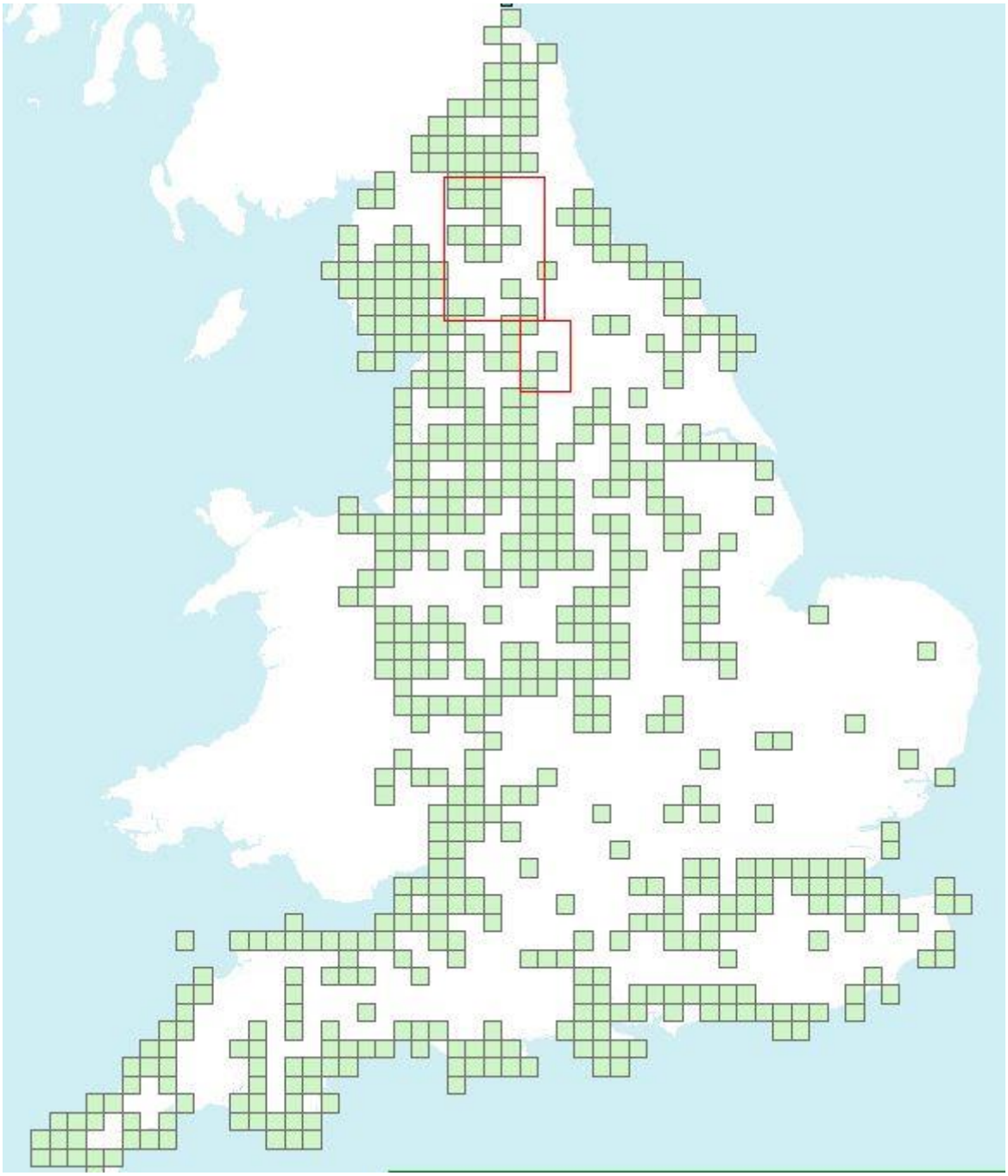
Source: *Designated sites view*

European context from the 3rd Habitats Directive reports

Proportion of Atlantic biogeographic region within UK:

Source: *European Topic Centre on Biological Diversity Article 17 species assessment for Atlantic biogeographic region.*

ANNEX 3: FCS range for breeding peregrine in England (red boxes indicate locations where further population increase and range expansion is required)



Further information

Natural England evidence can be downloaded from our **Access to Evidence Catalogue**. For more information about Natural England and our work see **Gov.UK**. For any queries contact the Natural England Enquiry Service on 0300 060 3900 or e-mail **enquiries@naturalengland.org.uk** .

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