# The 2014 Peregrine Survey

# Guidelines for Contributors

This is the Sixth survey of breeding Peregrines across the UK. The main aim is to establish how many territories are occupied in 2014 for comparison with previous surveys. A secondary aim is to assess breeding success across the UK.

The 2014 survey will use two complementary (and sometimes overlapping) approaches:

- surveys of randomly selected 5km by 5km squares ('random square surveys'); and
- surveys of known nest sites ('site-based surveys').

Previous Peregrine Surveys relied mainly on site-based survey work, with the aim of visiting all sites where Peregrines had been known to nest since their recovery in the second half of the 20th Century. This will still be the aim in many areas in 2014. However, in addition, randomly selected squares will be also be surveyed, in which all suitable Peregrine breeding habitat/potential nest sites will be checked (including areas where Peregrines have not previously been known to breed). An explanation of these enhanced methods is given in Appendix 1 at the end of this document.

You can contribute useful information to the Peregrine Survey in several ways:

- Take on one or more random 5km by 5km squares to survey (ESSENTIAL; THE CORE SURVEY);
- Carry out your usual annual monitoring coverage of known sites within a defined study area *and also check all other suitable habitat/breeding sites within that area* (ESSENTIAL; THE CORE SURVEY);
- Carry out your usual annual monitoring coverage of known sites within a defined study area *without* checking all other suitable habitat/sites within that area (IMPORTANT TO MAINTAIN ANNUAL MONITORING COVERAGE AND USEFUL FOR SURVEY VALIDATION PURPOSES);
- Submit casual records of Peregrines and other raptors via BirdTrack (USEFUL SUPPLEMENTARY INFORMATION TO SUPPORT THE SURVEY).

**All survey participants should read the sections on 'Safety & Licensing', 'Survey Organisation', 'General Methods' and 'Survey Sheets and What to Record' below.**

**If you have agreed to survey one or more random squares please also read Section (A) on the Random Squares method.**

**If you are surveying known Peregrine sites but not taking part in random square surveys, then please read Section (B) below.**

## Safety and Licensing

- Volunteers are asked not to put themselves in a position which could place them, or others, in danger. Please make sure you have read BTO's guidance for volunteers (available at http://www.bto.org/volunteer-surveys/taking-part/health-safety) or request a hard copy from Anne Cotton at BTO Scotland (anne.cotton@bto.org, 01786 466560).

- The Peregrine is a Schedule 1 species listed under the 1981 Wildlife and Countryside Act. Many pairs are annually monitored by local Raptor Study Groups and individual enthusiasts across the UK, who have Schedule 1 permits to visit nests for the purposes of nest recording and/or ringing. This detailed work will continue alongside the 2014 UK survey. For the purposes of 2014 survey work it will usually be sufficient to observe a nest from a distance which avoids disturbance, and so doesn't require a permit. However, if observations at any nest require approaching to within a distance that could result in disturbance, then a Schedule 1 permit should be sought.

- If accidental disturbance occurs during survey work at a site where you were unaware of breeding Peregrines, you should immediately move away to a distance that allows the birds to return to normal behaviour. Further observations at this site should either be undertaken from a sufficient distance to avoid disturbance, or should be carried out in conjunction with a licensed fieldworker (with Schedule 1 permit). Please contact your regional coordinator if you need to make contact with an appropriate permit holder.

- If you need to approach a nest or adults with dependent young to nest record or ring nestlings you need a Schedule 1 permit. See www.bto.org/schedule1 for an application form or contact Jez Blackburn, BTO Licensing Officer (jez.blackburn@bto.org, 01842 750050).

## Survey Organisation

- Your Peregrine Survey area coordinator may be a member of the regional Raptor Study Group, Ringing Group or a BTO Regional Representative (see list at: http://www.bto.org/volunteer-surveys/peregrine-survey). Each regional coordinator will allocate random squares, send out recording forms to participants, and collate survey returns for submission to BTO in the autumn.

- A complete account of the information you collect from every nest site you record should be entered and submitted via a *Nest Information Sheet*, or in a Raptor Study Group monitoring spreadsheet. For each random square that you survey, a summary of nest sites found and visits made should be entered on a separate *Random Square Summary Sheet*. For detailed guidance on filling in these sheets, see below.

- COMPLETED FORMS SHOULD BE SENT TO YOUR LOCAL COORDINATOR by the end of the August 2014. Please help your local coordinator by returning forms promptly.

- All submitted records will be compiled and stored securely by BTO, recognising the sensitive nature of some breeding locations. WIthout the exact locations of nest sites (6-figure OS grid references) we will not be able to produce comprehensive and precise estimates of population size from the mixture of survey methods that will be used. Site-location information will be kept under lock and key or in password-protected electronic form.

## General survey methods

*This section applies to ALL participants in the 2014 Peregrine survey.*

- As well as more traditional nest sites on crags, Peregrines also use unusual sites on low rocks, moorland hills and man-made sites such as quarries, pylons and buildings. Please check all potentially suitable habitat/breeding locations even when these are not known as breeding sites. This is particularly important when surveying random squares (see below) but will make any monitoring in 2014 more valuable.

- Please try to make a first visit to your allocated area (whether annual study area or allocated random square) during the period between early March and mid-April, to record signs of occupation and how many (if any) birds are present.

- If no birds are present on the first visit to survey areas, please try to return a second time, 2-6 weeks later, to see if any birds (which may have failed elsewhere, or may simply be late breeders) have taken up residence.

- Try to make a third and final visit to all suitable areas in June (or up until mid-July). In the case of previously unoccupied sites/areas, this visit acts as a final check that breeding Peregrines weren't missed during earlier visits. In occupied sites, this final visit should be used to record breeding success if possible. This is confirmed by the presence of fledged young (or large young in the nest). Where licensed visits to nests are made, the additional information on nest contents collected during each visit will be very useful to us, so please also submit this information (via your usual annual submission route).

- Approximate timings of the three visits are summarised, for quick reference, in Table 1. However, the timing of Peregrine breeding can vary substantially and is affected by latitude and altitude (breeding of UK Peregrines starts weeks later in high altitude northern sites than in southern lowland areas), as well as less predictably by weather and by variation among breeding birds. Experienced Peregrine surveyors will have a good idea about how best to time visits in their areas, and should be consulted by less experienced surveyors where possible.

- Other useful background information on surveying Peregrines can be found in the Peregrine species account in *Hardey et al. (2013) Raptors: a Field Guide for Surveys and Monitoring. The Stationery Office, Edinburgh* (available online at: http://www.eurapmon.net/sites/default/files/raptors_2nd_ed_017_peregrine.pdf).

**Table 1. Approximate timing of main survey visits. See text for more details.**

| Visit | Main period | Main purpose |
|---|---|---|
| 1 | early March to mid-April | Identify newly occupied sites |
| 2 | late-April to end of May | Identify newly occupied sites, confirm occupancy or absence at previously checked sites |
| 3 | early June to mid-July | Record likely breeding success or failure, confirm absence at previously checked sites |

## Survey method (A): Random Square Survey

*This section applies only to those surveying random squares.*

- This element of the survey is new in 2014. For an overview of the rationale behind the random square survey, see Appendix 1.

- 5km by 5km random squares have been selected in all parts of the UK and to represent all types of landscape. Regional coordinators will allocate these squares among survey participants.

- Some random squares may turn out to have no suitable breeding sites within them. Identifying these will nevertheless be an important part of the survey. Areas unlikely to have suitable breeding sites can often be identified on maps, but even these areas may harbour features such as small crags and quarries, tall buildings and pylons that could allow Peregrines to nest. Therefore, unless the area within the boundaries of the square is known intimately by a surveyor, squares should be visited at least once in order to identify whether or not such features are present. If no potential habitat or sites for breeding are found, no further visits to the square need be made. In such cases, please confirm the absence of breeding habitat by submitting a form for each appropriate random square. Peregrines have been known to nest in trees and on the ground, but such sites are probably rare, and such habitats cannot be covered comprehensively in all random squares during this survey. However, if local knowledge suggests that such breeding sites exist, please let your regional survey coordinator know.

- Where some potentially suitable breeding sites are present, squares should ideally be visited three times, and AT LEAST TWICE, during the survey period. Data from squares that do not receive two visits may be less useful in deriving population estimates (except where an initial visit confirmed that no potentially suitable nesting sites were present). Visits should be timed to conform to the pattern described in Table 1.

- All areas of suitable habitat within a square should be checked. It is very important that visits are made both to known sites and also to sites where Peregrines are not known to have bred previously. Where natural habitat is absent or limited it is especially important to survey all alternative man-made nest sites, such as quarries, buildings and pylons.

- Once an active nest site has been identified, additional active nest sites are unlikely to be found within 1km of this nest (though birds may move a short distance after early failure).

- As an approximate guideline, an effective check of any discrete area of suitable habitat should comprise around three hours of observation. It is likely that an adult (if present) would be seen flying to or from the nest during this time.

- We anticipate that an average 5km by 5km random square, with substantial suitable breeding habitat/sites, might take one day to survey effectively. Locating nesting Peregrines can be straightforward but confirming their absence from an area of suitable habitat is more problematic. If an area is occupied, it is expected that they will (typically) be seen at least once within a three hour period of observation. Some squares with restricted potential habitat/sites might only take 3 hours (or less, if birds are seen quickly) per surveying visit, while some squares with extensive habitat and/or difficult terrain (rugged uplands, urban areas with many tall buildings) might require more than one day per surveying visit, particularly if breeding sites are not known previously or are not located quickly.

- Where nesting habitat is limited to a small number of discrete potential nesting sites, watches from appropriate vantage points might prove most productive. If potential breeding habitat is more extensive, a slow 'walk and scan' approach through the habitat might be more suitable. In such areas, we are not recommending that each discrete crag is watched individually for a period of three hours. Rather, this is the period of time we recommend is spent overlooking or walking through a collective area of crags or buildings, to look out for birds flying into or out of the area. However, we recognise that areas will differ from one another in how difficult they are to observe, and in the most effective approach to surveying them.

- For each active breeding site that is located, please record the evidence for occupancy/breeding at each visit, using a *Nest Information Sheet* and one or more of the standard codes provided (see below for how to do this). Alternatively, if you already routinely submit Peregrine nest information annually (e.g. via the Scottish Raptor Monitoring Scheme or other group submission process), you can submit via these routes but please ensure that all the standard information on the *Nest Information Sheet* is included in your submission.

- Please also record any incidental observations of other raptor species observed during the survey, along with evidence of territory occupancy or breeding, on the Random Squares Sheet. These data will be used to supplement our knowledge of these species, and to relate occurrence of other raptors to occupancy and success of Peregrines. However, this is not a core aim of the survey, so please do not dedicate Peregrine survey time exclusively to improving coverage of other raptor species.

- For each random square surveyed, please complete a *Random Square Summary Sheet* (see below for how to do this).

## Survey Method (B): Surveys of known Peregrine sites

*This section applies to those surveying known Peregrine nest sites but not routinely covering the 2014 random squares.*

- If you routinely cover all known breeding sites within a study area every year (annual monitoring) please try to at least maintain this coverage in 2014.

- Please check all known nesting sites (including 'alternates') within a territory.

- It is important to record all empty sites as well as occupied sites, in order to assess occupancy rates and give an accurate account of survey effort.

- If your annual survey work to check known sites falls within a random square, it will be extremely valuable if you can check the remaining suitable habitat within the square, thus effectively covering the random square (please read Section A above). If you are unable to commit to covering a random square, at the very least we would appreciate it if you would document any parts of your survey area in which you *have* covered all potential breeding habitat comprehensively and pass this information to us along with the site-based records (preferably on an annotated map).

- Where known sites in a random square are surveyed, the same survey effort can contribute to data needed for site-based and random-square based surveys. There is no need to make separate visits for each survey type.

- For each active breeding site that is located, please record the evidence for occupancy/breeding at each visit, using a *Nest Information Sheet* and one or more of the standard codes provided (see below for how to do this). Alternatively, if you already routinely submit Peregrine nest information annually (e.g. via the Scottish Raptor Monitoring Scheme spreadsheet or other similar group submission process), you can submit via these routes. Please ensure that all the standard information on the *Nest Information Sheet* is included within your submission. Please also ensure that you submit: (a) details of sites that have been checked but have been shown to be unoccupied in 2014 (including full visit dates); and (b) details of any areas in which you can be sure you have checked all suitable breeding habitat/sites (preferably on an annotated map).

## Survey sheets and what to record

### *This section applies to ALL participants in the 2014 Peregrine survey.*

There are two types of survey sheet for the 2014 Peregrine Survey, both described in detail below. Paper and electronic forms of both survey sheets are available – use of either is perfectly acceptable.

Please fill in a *Random Square Summary Sheet* for each random square surveyed.

A *Nest Information Sheet* should be filled in for each confirmed nest site (whether occupied or not) visited in 2014 and its breeding outcome, including both active sites in 2014 and sites known previously that are found to be unoccupied in 2014. Alternatively, if you are an existing member of a Raptor Study Group, you can submit these details in the usual way on your existing monitoring spreadsheet (e.g. members of the Scottish Raptor Monitoring Scheme). When completing the survey sheets, please ensure you enter your contact details, as this will enable survey organisers to get in touch with you if they have any questions.

#### RANDOM SQUARE SUMMARY SHEET

- One of these sheets should be filled in for each random square surveyed.

- Wherever possible, include an accurate six-figure grid reference for each nest found in each random square, as this will enable effective cross-checking with records from other surveyors.

- If more than one surveyor has collected information from an individual random square, it is preferable for the effort and data collected by both to be summarised on one sheet. However, where this is not possible, please avoid duplicated recording of information collected jointly by fieldworkers during a single surveying visit.

- In the first table on the sheet, the code entered into the column 'Unique Nest Code' should be the same as the code entered under 'Unique Nest Code' in the relevant *Nest Information Sheet* (see below).

- Maximum breeding evidence can be recorded using the Occupancy/Breeding Codes given below.

- In the second table on the sheet, please enter the date of each visit made to the square, along with the approximate duration of the visit, and details of observations of other raptors made in the square during the visit. For each raptor, please record the grid reference (of possible and confirmed nest sites or, for other records, the position where first detected), and appropriate breeding evidence code(s) (described below). If several raptors are observed during a single visit, details of these can be entered in separate lines (e.g. Table 2).

## Table 2. Example entry of survey visit details

| Date | Duration | Other raptor species seen, including grid reference, number of adults, breeding evidence code(s) etc. |
|---|---|---|
| 16/03/14 | 5 hours | 1 Buzzard (NS858976), P, D |
| | | 1 Merlin (NS858976), H |
| 10/05/14 | 4.5 hours | NONE |
| 02/06/14 | 4 hours | 2 Buzzard (NS863973), NY |

**NEST INFORMATION SHEET**

- Note that each 5x5km square is identified by the 10x10km grid reference (e.g. 'NS89') followed by the suffix NE, NW, SE or SW to distinguish the four 5x5km squares making up the north-east (NE, top right), north-west (NW, top left), south-east (SE, bottom right) or south-west (SW, bottom left) portions of the 10x10km square.

- If you are aware of an established code for the site (e.g. routinely used each year by your Raptor Study Group), this can be entered under 'Unique Nest Code'. If not, all nest sites within a survey square should be given a code based on the name of the survey square (as described above), with a number to distinguish multiple nests found within that square. For example, assuming that two nests were found in square NS89_NE, the first would be labelled NS89_NE_1 and the second NS89_NE_2.

- If the nest in question was found in a random square then please ensure that the same nest code used on the *Nest Information Sheet* is used to refer to the nest on the *Random Square Summary Sheet* (see above). Please also provide the six-figure grid reference, which will enable the record to be cross-checked against other nests found in the area, and also allow analysis of changes in occupancy at particular sites between surveys.

- The *Nest Information Sheet* includes a 'Record of Visits' table. Please use this table to document your observations at the nest site, using as many occupancy/breeding codes as necessary (see below). In the last column, entitled 'Additional detail', please describe any other signs of occupancy (e.g. whitewash on cliffs, prey remains) as well as any more details about the breeding attempt that can be safely collected (e.g. clutch size, number of young, evidence for suspected causes of failure) that are not coded for explicitly by the standard codes. See the

Safety and Licencing section, above, for more detail on possible licencing requirements of Peregrine survey fieldwork.

- Please submit all completed survey sheets (and electronic forms) to your regional coordinator by the end of August 2014.

## RAPTOR OCCUPANCY/BREEDING CODES FOR USE IN THE 2014 SURVEY

| **PRESENCE/OCCUPANCY CODES (give age and sex of birds if possible, please)** | **CODES SUGGESTING ACTIVE BREEDING OR TERRITORIALITY** | **CONFIRMED BREEDING CODES** |
|---|---|---|
| **F** Flying over only, with no obvious link to local area | **D** Courtship **D**isplay (incl. vocal and flight displays) | **UN** **U**sed **N**est or eggshells from the current season |
| **H** Individual raptor observed in suitable nesting **H**abitat | **B** Nest **B**uilding, nest lining or excavating scrape | **NE** **N**est/scrape containing **E**ggs |
| **P** **P**air in suitable nesting habitat | **A** **A**gitated behaviour or **A**ggression towards other individuals/species | **NY** **N**est/scrape with **Y**oung (exact or minimum number if known) |
| **N** At probable **N**est site (e.g. if actual nest cannot be seen) | **ON** Adults entering or leaving visible nest-site indicating **O**ccupied **N**est | **FL** Recently **Fl**edged young (give minimum/exact number if possible) |
| **OS** **O**ther **S**igns of possible occupancy (e.g. active plucking post, whitewash, fresh prey remains, moulted feathers. Please give details) | **I** Apparent **I**ncubating bird | |
| | **FM** Adult passing or delivering **F**ood to **M**ate | |
| | **FF** Adult carrying **F**ood (for mate or young) | |

### CASUAL RECORDING VIA BIRDTRACK

If you do not feel you have the time or experience to commit to formal Peregrine surveying, we would be very grateful if you would submit details of any Peregrines or other raptors seen during 2014 to the BirdTrack on-line recording system (see www.birdtrack.net). These data will be used to supplement and validate the conclusions drawn from the random squares survey. Data on sensitive species (including Peregrine) submitted to BirdTrack will only be made available to the public at an appropriate spatial resolution, see http://www.bto.org/volunteer-surveys/birdtrack/bird-recording/scarce-birds-birdtrack for details.

## APPENDIX 1: RATIONALE FOR THE RANDOM SQUARES SURVEY METHOD

Previous national Peregrine surveys have all been primarily 'site-based', relying heavily on the existing knowledge of experienced fieldworkers. In many areas, such surveys achieved locally complete (or near-complete coverage) of Peregrine populations. However, not all parts of the UK are covered so completely, particularly since the species has expanded its range considerably since the last UK survey in 2002. If the 2014 survey adopted the same approach as was used in previous surveys it would limit the possibility for meaningful comparisons of Peregrine numbers between different areas. Comparisons between years (e.g. between 2002 and 2014) would be even more prone to being confounded by variation in survey effort.

In order to improve the comparability of national survey results between different areas and years, the 2014 Peregrine has adopted a complementary sampling approach. A representative set of 5km by 5km squares has been selected for surveying. These squares are distributed to achieve broad coverage across different geographic regions and landscapes. Over 2000 survey squares, comprising approximately 20% of the UK's land area, have been selected for surveying. Calculations based on the 2002 survey results indicate that this level of coverage will produce population size estimates that are reasonably precise (i.e. have satisfactory confidence limits at UK and country scale).

More traditional, site-based surveys will continue in 2014. These are likely to provide the best possible estimate of local populations, and will ensure that methods are similar to those of surveys undertaken in previous years. Continuity of annual monitoring coverage, particularly where such coverage is comprehensive (taking in all potentially suitable breeding sites), will constitute an essential contribution to the 2014 survey. However, the sampling approach will allow comparisons between different areas to be made with greater levels of confidence, and will be especially valuable when comparing the results of the 2014 survey with those of surveys (and annual monitoring) undertaken in the future.

This dual approach means that population numbers and changes derived from survey results will be more robust, and can be viewed with greater confidence by key audiences such as politicians, upland stakeholders, scientists and other members of the public, as well as by the local experts and raptor groups themselves. Importantly, the statistical sampling approach will help to make the broader-scale results defensible, augmenting the comprehensive coverage we expect in many areas. However, even using both approaches there will be limitations on how well survey results can be used to estimate numbers in small areas where coverage is not comprehensive.

**It is important to understand that the random squares approach that has been added to the 2014 survey does NOT require substantial changes to the majority of survey work that many long-time raptor monitoring volunteers will carry out as part of the national survey. It also does NOT mean that site-based information collected outside of selected survey squares will no longer be useful (the latter will be complementary, incorporated into population estimates, and of great value for a range of conservation and policy purposes).**