

## Appendix 5. Data handling issues

As explained in section 2.3, a large number of data issues associated with data sources and qualifying species arose during the production of this review. These are explained in more detail in this Appendix.

### A5.1 Defining 'migratory'

This review assesses site-based conservation requirements for all migratory birds regularly occurring in the UK. The following definition of the term 'migratory', given in the Bonn Convention on the Conservation of Migratory Species of Wild Animals (1980), Article I, section 1(a) has been used:

*"Migratory species" means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries.*

The British Trust for Ornithology was asked to advise on the application of this definition to the UK avifauna. An analysis of ringing data (supplemented by other sources) was used to assess, at different times of the year, the proportion of species moving less than 20 km (*i.e.* a distance that can be regarded as being essentially sedentary) (Clark & Blair 1999). This information was interpreted in the light of an understanding of the likely effects of differences in reporting rates on the species. Thus, some ringed birds, such as those that are quarry species, are more likely to be recovered than those where rings are less likely to be found and reported (*e.g.* many of the smaller passerines). For those species which have a component of their breeding population which winters within 20 km of the breeding area, assessments have been made as to whether the population is truly sedentary, or whether at least a section of the population makes a regular season movement. Seabirds have generally been considered to cross national boundaries if they spend extensive periods at sea, even if they do not land in other countries (*e.g.* Manx Shearwater).

Rarities as defined by the British Birds Rarities Committee (BBRC) have not been included. [These species are labelled "R" in *The Birdwatcher's Yearbook 1998*, pp. 221-246, see Pemberton 1998].

### A5.2 Data sources

#### A5.2.1 Non-breeding waterbirds

Counts collated by the Wetland Bird Survey have been the primary data source for non-breeding waterbirds. Generally, site assessments have been made using five-year peak mean counts<sup>1</sup> for the period 1991/92 to 1995/96 (Cranswick *et al.* 1997). Since the commencement of the review, more recent WeBS data have become available (Waters *et al.* 1998; Cranswick *et al.* 1999; Pollitt *et al.* 2000). These have not been used, however because of the complexity of handling such a large amount of data and the desire to take a 'snap shot' in time. In order to make valid comparisons between sites, all the data used refer to the same period, and have not been selectively updated for individual sites.

Whilst 1991/92–1995/96 data have been used to evaluate the national context of sites for the purposes of this review, SPA classification has continued during its production. For these classifications, country agencies have used the most recent WeBS data. Citations for recently classified sites and totals presented here for the same sites may, thus, differ slightly. Such data discrepancies can also occur for species other than waterbirds (see section A5.6).

When assessing the relative numerical importance of individual sites, it is appropriate to use the five-year peak mean for any particular species on the site. It is *not* appropriate, however, to sum these individual site totals to assess total numbers on several sites, or the overall proportion of a population contained within a species' SPA suite. This is because the peak count of a species on any site may occur in any month of the non-breeding season (generally November to March). Therefore, individual birds that move between sites may be counted on one site in November, another in January and a third in March.

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<sup>1</sup> Calculated by averaging the peak count in each year for a particular species at an individual site, normally using the most recent five years' data.

It should be noted that the data presented in WeBS annual reports (Cranswick *et al.* 1999) relate to WeBS count units. These WeBS sites are usually made up of a number of count sectors, and are often larger in extent than SPAs with the same name. Consequently, although the data used in the review match SPA boundaries as closely as possible, they may differ from published data for apparently the same sites. WeBS is currently reviewing and revising data collection to ensure that boundaries of count units match classified SPAs as closely as possible.

#### **A5.2.2 Rare breeding birds**

Data on rare breeding birds have been taken from annual unpublished reports provided to JNCC by the Rare Breeding Birds Panel for the period 1990–1995. The Panel in turn receives data from a range of other specialist groups who undertake monitoring in particular areas or of particular species, for example the Welsh Kite Trust.

Summaries of the Panel's data are published annually (*e.g.* Ogilvie & the Rare Breeding Birds Panel 1998, 1999a). The detailed locational information in the unpublished reports supplied to JNCC has allowed review of SPA provision for Avocet, Marsh Harrier and several other rare bird species.

The review presents an assessment of the protection requirements for a number of species with small UK populations. The potential risks associated with publishing details of sites used by these species were considered when undertaking this review. It was concluded, however, that the risks were minimal in comparison with the very significant benefits generated.

#### **A5.2.3 Breeding seabirds**

Data from the JNCC/RSPB/Seabird Group's Seabird Colony Register have been used. These comprised the best-available, whole colony counts for the period 1993–1997 or earlier. These data have been supplemented with additional census data for some sites provided by country agencies (especially in Scotland) and/or as the result of more recent surveys of particular species.

Assessing important sites for terns is always problematic given that these birds can regularly move between a number of alternative breeding areas for little apparent reason. Birds can then later return to formerly used sites. Some sites that were known to have supported important numbers of terns in the past, held lesser numbers during the period of the review. Generally, these sites have been retained within the species' SPA suites on the expectation that such low numbers are merely a reflection of short-term shifts in site selection.

#### **A5.2.4 Other birds**

Data for moorland breeding waders have normally been taken from the varied national and site-specific surveys undertaken by the country agencies and RSPB (Brown 1991).

Site-related data on birds of prey have generally resulted from surveys undertaken by the Raptor Study Groups, as well as specific national surveys (*e.g.* Sim *et al.* 1999, in press).

In the last decade, a large number of surveys have been undertaken by country agencies to obtain site-related data for classified and possible SPAs. This has been a major source of information for many sites.

### **A5.3 1% population thresholds and their application**

The 1% criterion (Atkinson-Willes 1976; Scott 1980; Atkinson-Willes *et al.* 1982) has been used for many years to identify wetlands of international importance for their waterbird populations, especially those that should be brought within the list of sites designated under the Ramsar Convention. The criterion identifies sites as being of international importance if at least 1% of the waterbirds of a particular migratory flyway or population regularly make use of a wetland at any time during their annual cycle. This simple and globally applicable criterion, to which other criteria have since been added, has played a major role in the identification and listing of sites under the Ramsar Convention.

There is no fundamental biological reason to take 1% of a population as the threshold level for establishing international importance for a site. However, this percentage has been found by long experience and international evaluation to be useful in giving an appropriate degree of

protection to populations and in the definition of ecologically appropriate sites. The criterion has, therefore, gained worldwide acceptance and is widely used in the identification of sites of international importance for taxa other than waterbirds (European Commission 1991), and for site designations or site inventories other than those related to Ramsar (e.g. Grimmett & Jones 1989). In particular, it has been frequently used to identify sites for listing under the Birds Directive both in the UK (Stroud *et al.* 1990a; Pritchard *et al.* 1992) and in other European countries (van Vesseem & Kuijken 1986; Rasmussen 1999; van den Tempel & Osieck 1994; Way *et al.* 1993).

Populations of waterbirds, as with other species, are constantly changing. They are also imprecisely known (Rösner 1998). In applying the 1% criterion, it would clearly be impractical to attempt continuous tracking of exact population levels. For only a few species (mainly some goose populations) are there good annual assessments of the size of international or biogeographic populations. Accordingly, the approach adopted by the Ramsar Convention (formalised by Resolutions C.5.9 in 1993 and C.6.4 in 1996) has been to use specific 1% threshold values. These are nominal values to be used in applying the 1% criterion for a period (nine years — unless significant population change occurs within that period — Rose & Stroud 1994; Stroud 1996). In effect, the 1% threshold acts as a 'bench-mark' that is stable in the medium term and does not involve attempting to track the yearly changes in the numbers of individuals in the population. As such, 1% thresholds can be considered 'nominal' in the context of site selection rather than an exact proportion of a species' population.

Initial thresholds for wildfowl in the 1980s were suggested by Atkinson-Willes *et al.* (1982) — updated by Pirot *et al.* (1989), and for waders by Smit & Piersma (1989). More recently, reassessments of population sizes for European goose populations have been made by Madsen *et al.* (1999) and for other Anatidae populations by Scott & Rose (1996). The population sizes (and hence recommended 1% thresholds) of wader populations using the East Atlantic flyway are currently being re-assessed (Davidson 1998; Kirby *et al.* in prep.). Although this exercise is likely to lead to significant changes in international 1% thresholds for some wader populations, the final revised thresholds were not available in time for use in this SPA review.

Since 1994, Wetlands International has drawn together a regular global compilation of waterbird population estimates and recommended 1% thresholds. This is published every three years to coincide with the Conferences of the Parties to the Ramsar Convention. These Waterbird Population Estimates (Rose & Scott 1994, 1997 — also reprinted in the annual UK WeBS reports e.g. Cranswick *et al.* 1999) have been used as the source of 1% thresholds for UK wildfowl and wader populations assessed in this SPA review (unless otherwise stated in section 4.2.1).

#### **A5.4 Assessment of population coverage within SPA suites**

For the purposes of assessing coverage of breeding species in the SPA network, SPA suite totals have been added together.

For species in the non-breeding season, site assessment has been undertaken using peak mean counts. It is not appropriate to sum these peak mean counts, however, since this may result in double counting. This is because the peak count of a species on any site may occur in any month of the non-breeding season (generally November to March). Double counting is particularly problematic with species that regularly move between a number of sites in the course of one season. For example, Pink-footed Geese arrive in north-east Scotland in autumn and move progressively south through Scotland to England as winter progresses. Peak numbers occur in Norfolk in mid-winter, after which birds move north again, following the phenology of spring grass growth, before finally departing to Iceland from north-east Scotland in May (Fox *et al.* 1994a). The same birds can thus appear within counts made at Loch of Strathbeg in early autumn, at sites in south-west Lancashire in late autumn, in north Norfolk in mid-winter, and in the Cromarty Firth in spring. The simple addition of peak mean counts of each SPA holding Pink-footed Geese indicates that the network holds 162% of the total international (Icelandic/Greenlandic) population of Pink-footed Geese — *i.e.* many more birds than there are in the world!

In order to avoid double counting, totals have been assessed across the network in one particularly month — generally January. The use of January counts has several advantages. January is usually the month in which peak numbers of waders and wildfowl occur in the UK and is also the month in which greatest coverage of sites is achieved in the UK. It coincides with International Waterbird Census organised by Wetlands International (Delany *et al.* 1999),

and so permits direct comparison of UK populations with international population totals. Furthermore, January is normally the period of the winter in which there is least population movement.

There are a few cases where months other than January have been used to obtain suite totals:

- Canada/Greenland Light-bellied Brent Goose, where site totals have been used from October (the month of maximal occurrence on Northern Irish sites prior to dispersal in mid-winter to the Irish Republic — Ó Briain & Healy 1991);
- Bean Goose, Icelandic Greylag Goose and Iceland/Greenland Pink-footed Goose, where site totals have been used from November (the month of co-ordinated national grey goose surveys which provide most complete census coverage — Hearn 1988);
- Greenland Barnacle Goose, for which many remote, off-shore sites are not subject to annual monitoring. For this population the site totals from the co-ordinated aerial census of March 1994 have been used (Delany & Ogilvie 1994) complemented by unpublished data for Islay SPAs provided by SNH;
- Greenland White-fronted Goose for which the site suite includes both feeding sites and roost sites used by the same birds at different times of the day. For this population, a suite total has been derived from the most appropriate site totals collected by the Greenland White-fronted Goose Study's annual co-ordinated census (Fox & Francis 1998);
- For a number of species, the month of peak occurrence in Britain and Ireland occurs either earlier or later in the winter than January (Cranswick *et al.* 1997). Counts from other months have, therefore, been used for Coot, Oystercatcher and Knot (November); Gadwall, Teal and Mallard (December); and Goldeneye, Grey Plover and Curlew (February).

Finally, as a consequence of the large volume of migration through the UK, suite totals for three wader species — Ringed Plover, Sanderling and Redshank — are given for passage periods in addition to the January figures. Owing to turnover, these estimates of passage totals are likely to be minima, but serve to indicate the particular significance of the SPA network for these waders during these periods.

## **A5.5 Qualifying species**

### **A5.5.1 Resident qualifying species**

The assessment of populations of seasonal migrant species has been relatively straightforward because data have normally been available from specific surveys undertaken at important sites in the relevant season. For example, non-breeding waterbirds are counted by WeBS in winter, whilst summer migrants such as Stone Curlew or Osprey are monitored during the breeding season.

A small number of species — generally those listed in Annex I of the Birds Directive — are resident on sites year-round. For example, Fair Isle Wren, Dartford Warbler, Capercaillie and Scottish Crossbill. For these species, population monitoring usually occurs only in the breeding season. Accordingly, information for these species has been presented for the season in which best data exist. Lack of data (or absence of a seasonal species account in Appendix 6) in other seasons does not mean that the provisions of Article 4 do not apply for these species at other times of year. Clearly, these birds depend on the identified SPAs all year round, but in order to simplify data presentation separate summer and winter accounts have not been presented here.

Some species, such as the Chough, remain resident in winter on breeding areas whilst also using additional sites in the non-breeding season for feeding or roosting in a complex ecology (Bignal *et al.* 1989; Bignal *et al.* 1997). Different areas and habitats are used variably by different components of the population at different times of the year (Bignal & McCracken 1996). The additional needs have been highlighted through separate SPA suites for both summer (species account A6.102a) and winter (species account A6.102b), although many of the sites are the same. Another example is the Hen Harrier, with some birds remaining on upland breeding sites during the winter, whilst others move to coastal or lowland areas.

In all these and similar instances, the provisions of the Habitats Regulations apply throughout the year, with no implied seasonality.

#### **A5.5.2 Seasonal occurrence**

A number of species occur on SPAs in large numbers in one season (for instance during migration periods) but in lesser numbers at other times of year (e.g. mid-winter). This applies particularly to migrant waders, whose numbers are well monitored during the winter period (October – March), but are less well known during the spring and autumn passage periods (when perhaps even larger numbers may be present). The inclusion of a site within a species suite ensures consideration of the conservation needs and ecological requirements of the relevant species at all times of year.

#### **A5.5.3 Reassessment of qualifying species at a site**

Qualifying species are those for which an SPA qualifies for classification under Article 4 of the Birds Directive. Conservation management objectives for these species at each relevant SPA have been (or will be) prepared by the country agencies.

Previous national reviews (Stroud *et al.* 1990a; Way *et al.* 1993), and earlier lists of qualifying sites, highlighted the potential levels of population protection provided by the site network as a whole, rather than looking at the requirements of specific qualifying species. Accordingly, some citations for sites classified some years ago may list species that no longer meet the current qualification guidelines. This review has, therefore, modified these citations in accordance with the current guidelines to give a clear overview of the species for which each site is classified as being of European importance, as well as giving a clear view of the combined population protection provided by the overall SPA suites for those species.

Changes have been made to qualifying species on some classified SPAs for one or more of the following reasons:

1. Numbers of a regularly occurring species have increased in recent years above qualifying levels;
2. Numbers of individuals on a site have declined below qualifying levels owing to external factors other than those related to site management (e.g. long-term contraction of range);
3. Numbers of individuals on a site have remained stable, but the proportional importance of those numbers have declined (below 1%) owing to:
  - an increased size of the biogeographic reference population (either as a true increase or as a result of better (more comprehensive) survey information); or
  - a change in the geographic extent (and hence increase in numeric size) of the biogeographic reference population (*i.e.* re-definition of the reference population);
4. The size of a species' population on a site has remained unchanged, but the policy on listing of species under selection guidelines has changed (for example, species that are now considered sedentary and do not, therefore, require SPA classification — see Appendix 5.5);
5. Changes to the species listed on Annex I of the Directive. For example, Smew and Bar-tailed Godwit were added to Annex I following the accession of Finland, Sweden and Austria in 1995 (which has resulted in the lowering of the threshold for qualification for these species under the SPA guidelines from 1% of international populations to 1% of national populations); and
6. Clarification of unclear wording or terminology used on some early site citations.

Most of these changes are necessary because of the dynamic nature of bird populations and an ever-growing understanding of them. Not only are population sizes changing, but our knowledge of wider biogeographic population sizes is also improving. No review can, therefore, be 'the final word'. This review provides the best assessment of the protection needs of species, developed from data from the first half of the 1990s.

## **A5.6 Data used in recent SPA classifications**

During the period of this review, the UK has continued its active programme of SPA classification. In some instances, citations and Natura 2000 data sheets supplied to the European Commission contain site-based data that differ from those presented here. This is because the current review presents a 'snap-shot' assessment of the UK SPA network in the mid-1990s. In contrast, citations and data-sheets used to support classifications must necessarily reflect the most recent information, such as data from site surveys or other monitoring undertaken in the late 1990s (*i.e.* outwith the period of this review).

The list of qualifying species at recently classified SPAs will, however, be identical to the list of qualifying species presented for those same sites in this review. Ultimately, the list of qualifying species in the UK SPA network will be identical to that identified in this review.