

5. The content of the SPA network

Suites of SPAs have been selected for Annex I and migratory species where this is an appropriate response to conservation needs. The degree to which these suites contain proportions of national populations within the network is assessed below.

Conservation science theory (e.g. Shafer 1990; Ramsar Resolution VII.11) and practice suggests that those species where highest proportions of species' populations should be located within a protected area network are those which:

- occur locally in high densities (congregatory species);
- occur, to a large extent, on natural or semi-natural habitats;
- show predictable occurrence at particular sites regularly between years (*i.e.* species that are not irregular or dispersive);
- have restricted national or international ranges; or
- have small national or international population sizes.

A series of analyses have been undertaken to test these presumptions against the results of this review of the UK SPA network.

5.1 Proportions of breeding populations within the UK's SPA network

Proportions of Great Britain populations in the SPA network have been related to the dispersion of these species indicated by the most recent BTO breeding bird atlas (Gibbons *et al.* 1993). Two analyses have been undertaken (Figures 5.1 and 5.2) because different selection thresholds have been adopted for Annex I species compared to other migratory species. The measure of range used was the number of 10 km grid squares in Britain with breeding evidence found in the period 1988-1991. It was not possible to undertake this analysis separately for Northern Ireland since the selection area (all-Ireland) is larger than the area within which SPAs have been selected in this exercise.

The results of this analysis show that there is a strong statistical relationship between both Annex I and breeding migratory species' ranges and the proportion of their British populations within SPA suites. Geographically more restricted birds (those occupying fewest 10 km squares) have increasingly higher proportions of their British breeding populations within SPAs. Indeed, for a number of rare species (e.g. Leach's Petrel, Wood Sandpiper, Fair Isle Wren) the whole UK population is contained within SPAs. Many of the colonially breeding seabirds have high percentages of their populations within SPAs, such as Manx Shearwater, Puffin and Lesser Black-backed Gull (all with about 100% population inclusion), Guillemot (92%), Roseate Tern (88%), Kittiwake (78%), Razorbill (76%), Great Skua (74%) and Sandwich Tern (72%). For most of these species breeding occurs at just a few locations (e.g. within just 18 10 km squares for Gannet and 22 for Manx Shearwater).

Conversely, populations that are widely dispersed in the breeding season (e.g. Golden Plover, Ringed Plover, Redshank, Merlin and Peregrine) have lower proportional coverage within SPAs.

There are some rare species with low population coverage within SPAs which do not exhibit the parameters indicated above. For these species, site-based protection is not the most appropriate means of conserving viable populations. For example, Montagu's Harrier does not occur within the SPA network even though it has a very low population size. This is because the species occurs at low density, usually on managed farmland, and often in different locations in different years. The identification and classification of SPAs is not, therefore, the most appropriate means of conserving the population, and other measures have been put in place.

Another species that has low proportional occurrence is Red Kite. In the breeding season, this is a non-congregatory species that occurs at low densities. Thus, the identification and classification of sites for a significant proportion of the population is especially problematic. Again, other measures have been put in place to ensure the conservation of the population (see species account A.6.45).

5.2 Proportions of wintering totals within the UK's SPA network

A similar analysis has been undertaken to assess the proportions of total numbers of wintering waterbirds in the SPA network. An index of dispersal in winter was taken as the total number of occupied 10 km grid-squares (or 'hectads') from the 1981/82–1983/84 BTO winter atlas (Lack 1986)⁶.

The broad pattern of occurrence within SPAs was similar for both Annex I species (Figure 5.3) and non-Annex I migratory species (Figure 5.4). Those birds with the most restricted distributions (*e.g.* Avocet, Bar-tailed Godwit, Grey Plover, Pintail and Shelduck) have higher proportions of British populations contained within the SPA network. In contrast, widely dispersed species, such as Mallard, Tufted Duck, Coot and Lapwing, are contained within SPAs to a lesser extent.

5.3 Proportions of international populations within the UK's SPA network

One basic tenet of international conservation is that countries have particular responsibility for those species or habitats that occur uniquely or in high proportions within their borders (*e.g.* Dunn *et al.* 1999). Thus, Article 3(2) of the Habitats Directive requires that, for any habitat or species, the national selection of Special Areas of Conservation (SACs) should be proportional to the degree to which that species or habitat is represented within the country concerned. Although the Birds Directive does not have a similar requirement, the degree to which this relationship exists within this review has been assessed (Figure 5.5).

The proportion of the international population of any species/sub-species that occurs within the UK (using data from Annex 4) has been related to the proportion of the UK population occurring within the SPA network (Annex 2). For both Annex I and for non-Annex I migratory species, there is a strong relationship. Those species (or sub-species) for which a large proportion of the international population occurs in the UK also have a high proportion of that population within the SPA network. Examples include Svalbard Barnacle Goose (100% within the UK, 100% within SPAs), Canadian Light-bellied Brent Goose (73% UK, 70% SPAs), Greenland Barnacle Goose (79% UK, 50% SPAs), Pintail (46% UK, 32% SPAs) and Dark-bellied Brent Goose (34% UK, 31% SPAs). Those species whose main population centres in winter lie away from the UK are represented within the network to a lesser extent.

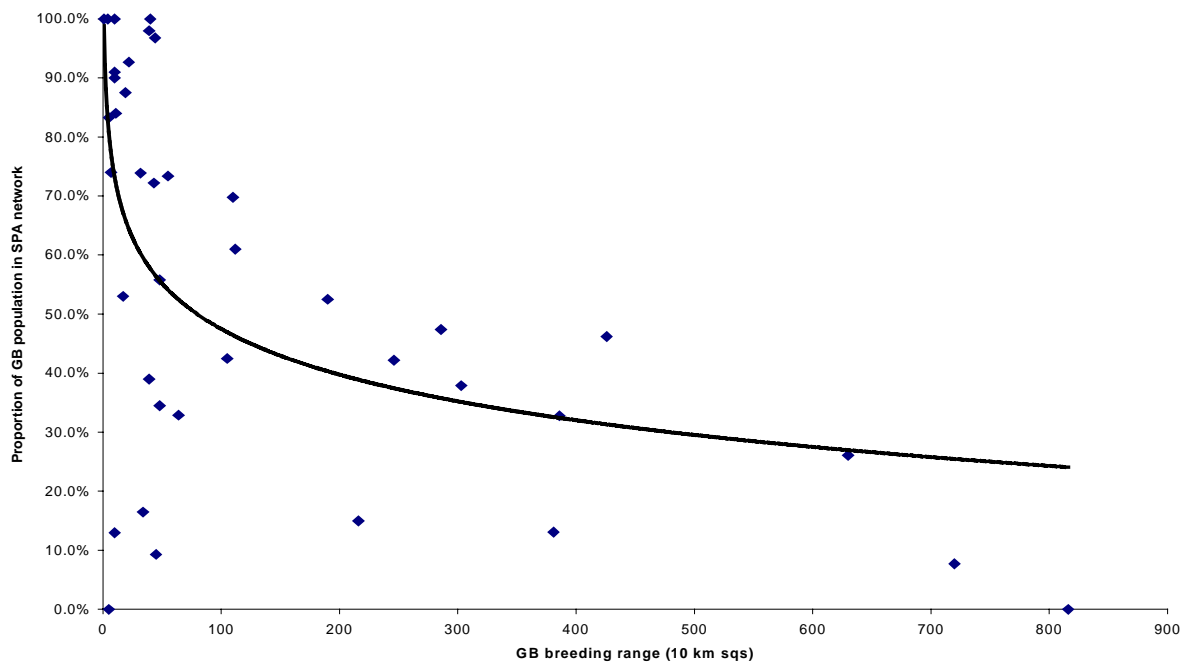
There are two notable exceptions to this relationship. In winter, the UK holds 96% of the international population of Turnstone and 60% of the population of Ringed Plovers, but only 14% and 14% of these populations are contained within UK SPAs respectively. This is because both are birds of the open, non-estuarine shoreline, occurring widely around the coasts of Britain, often at low densities. Where notable concentrations occur, these have been selected as SPAs (see species accounts A6.77 and A6.59b), but elsewhere their wide occurrence in low densities has prevented the identification of key sites.

It is also notable in Figure 5.5 that the slope of the relationship is steeper for Annex I species than for non-Annex I migratory species. This implies that, on average, for any international population present in the UK, a higher proportion of that population will be contained within the SPA network if the species (or sub-species) is listed on Annex I.

The selection of SPAs by the UK does thus reflect the concept of proportionate international responsibility.

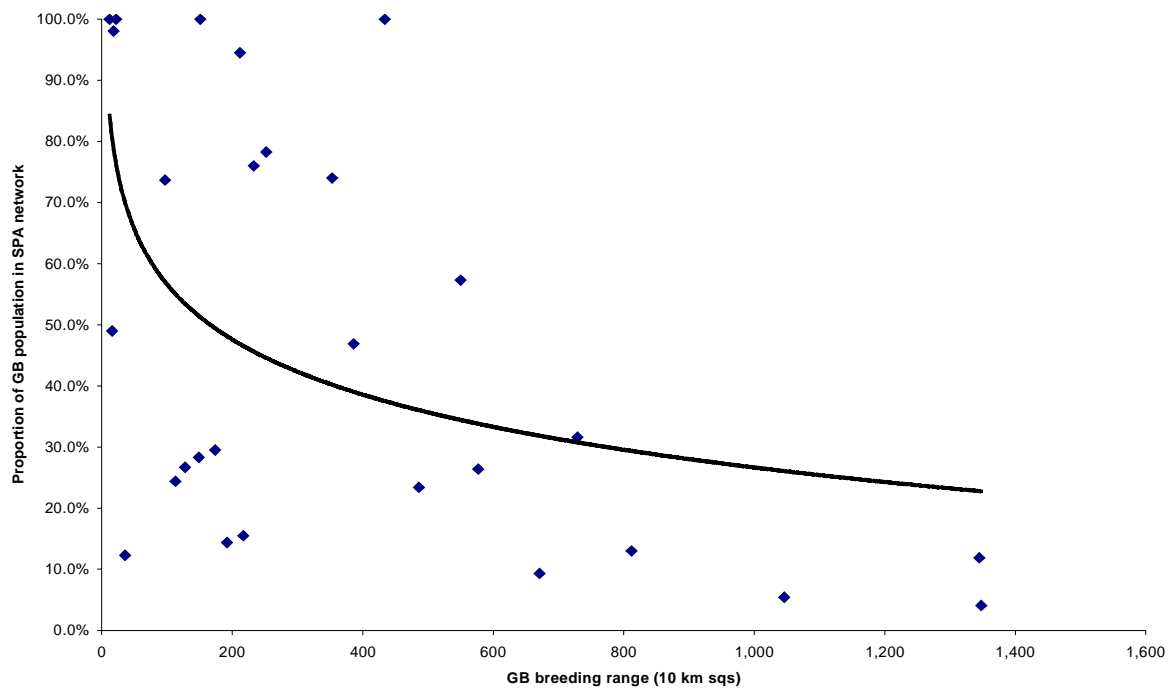
⁶ Although the data from the winter atlas predates the data from the review by about a decade, there have been few significant changes in gross range by wintering waterbirds in the UK in this period. There have been some changes in population sizes, but overall distribution in the mid-1990s was similar to that in the mid-1980s.

Figure 5.1. Relationship between range and SPA coverage: Annex I breeding species



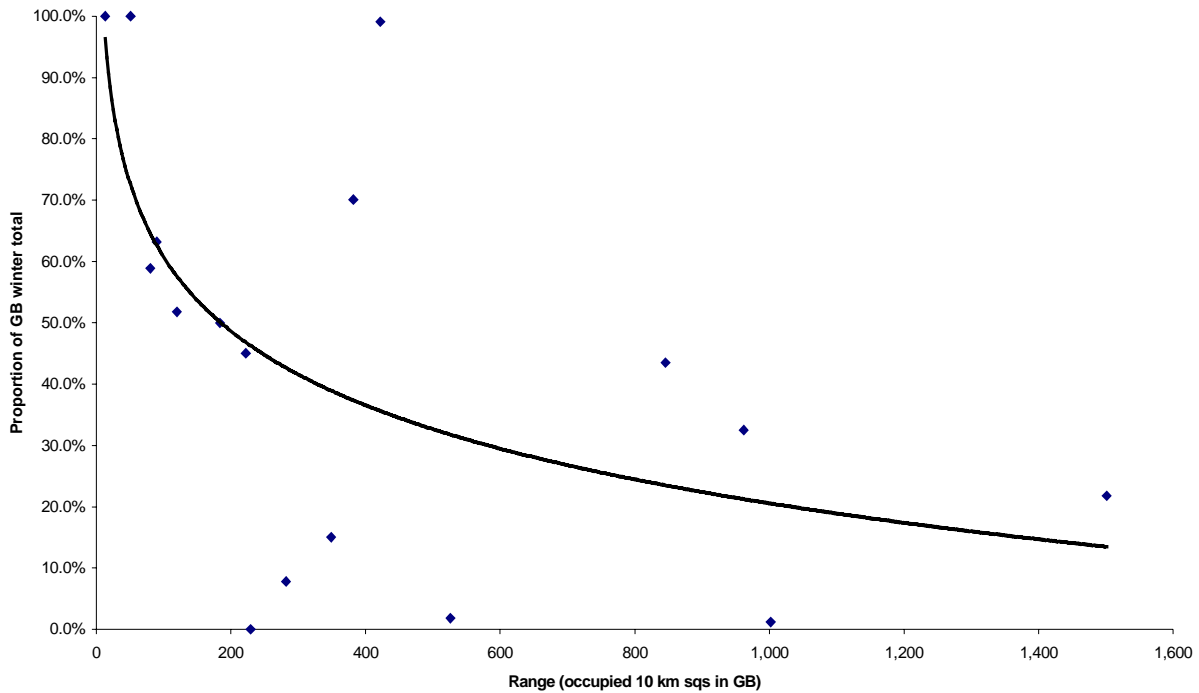
Relationship between geographic range within Britain (occupancy of 10 km squares in 1988-1991 – from Gibbons *et al.* 1993) and proportion of British breeding populations contained within SPA suite within Britain for Annex I breeding species. [Logarithmic relationship: $y = -0.1115\ln(x) + 0.9884$; $R^2 = 0.3126$]

Figure 5.2. Relationship between range and SPA coverage: non-Annex I breeding species



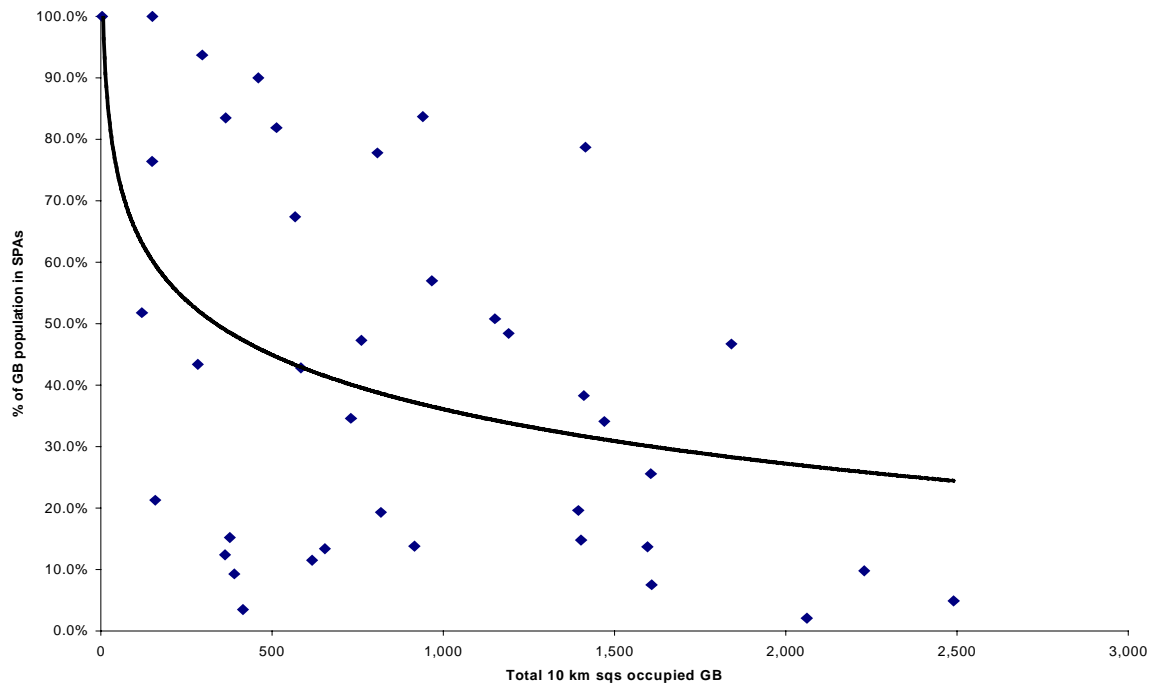
Relationship between geographic range within Britain (occupancy of 10 km squares in 1988-1991 – from Gibbons *et al.* 1993) and proportion of British breeding populations contained within SPA suite within Britain for migratory, non-Annex I breeding species. (Migratory species with very large populations and for which no SPAs have been selected (section 6.106) are not plotted.) [Logarithmic relationship: $y = -0.1302\ln(x) + 1.1658$; $R^2 = 0.2503$]

Figure 5.3. Proportion of winter populations of Annex I waterbirds in GB network



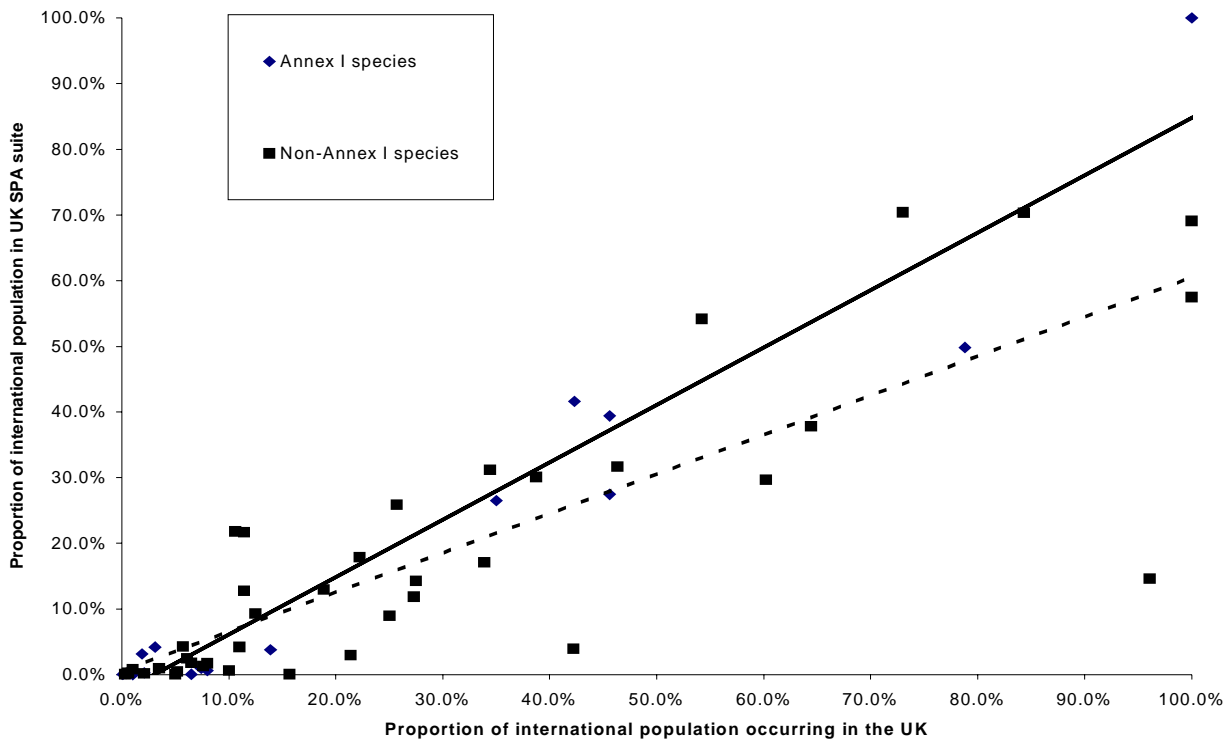
Relationship between geographic range within Britain (occupancy of 10 km squares in 1981/82 – 1983/84 – from Lack 1986) and the proportion of winter total in Britain contained within SPA suite within Britain for Annex I wintering waterbirds. [Logarithmic relationship: $y = -0.1744\ln(x) + 1.4104$; $R^2 = 0.3818$]

Figure 5.4. Proportions of wintering totals of non-Annex I waterbirds



Relationship between geographic range within Britain (occupancy of 10 km squares in 1981/82 – 1983/84 – from Lack 1986) and the proportion of winter total in Britain contained within SPA suite within Britain for non-Annex I wintering waterbirds. [Logarithmic relationship: $y = -0.1277\ln(x) + 1.2433$; $R^2 = 0.2222$]

Figure 5.5. Proportionate inclusion of international populations in winter within the UK SPA network



Proportionate inclusion of international populations of wintering waterbirds within the UK SPA network related to the proportion of those populations that winter in the UK.

[Linear relationship from Annex I species: $y = 0.8743x - 0.0261$; $R^2 = 0.9353$. Linear relationship from migratory non-Annex I species: $y = 0.6018x + 0.0044$; $R^2 = 0.7029$]