

Appendix 4. Reference populations used in review

This Appendix summarises the standardised national (*i.e.* GB or all-Ireland) or biogeographic population figures used in this review. These data have been used to calculate proportions of Annex I or migratory species within SPAs. The proportion of such species' national or biogeographic population supported by the UK SPA network as a whole can therefore also be calculated. Usually only those species qualifying on at least one UK SPA are included.

Points regarding derivations:

1. Where figures have been taken directly from source, these are shown as originally cited.
2. Where population ranges have required the selection of a single population figure, the minimum has normally been taken.
3. Where such ranges are small, typically those in Stone *et al.* 1997, the minimum figure is shown exactly.
4. Where the range is large, typically in Rose & Scott 1997, the figure selected has additionally been rounded to produce a figure that can be more easily employed.
5. The rounding of large population figures follows the methodology given in Stone *et al.* 1997, *e.g.* 1,000-10,000 to the nearest 100, 10,000-100,000 to the nearest 1,000, 100,000-1,000,000 to the nearest 10,000, *etc.*
6. For a number non-Annex I migratory species, particularly ducks, breeding populations were derived by dividing the wintering figure by three, following Meininger *et al.* (1995) and Rose & Scott (1994,1997).
7. Breeding populations of Guillemot, Razorbill and Puffin have been converted from individual birds to breeding pairs, using the methodology used by Lloyd *et al.* (1991).
8. Biogeographical populations derived from data in Hagemeyer & Blair (1997) and defined here as 'European' exclude Turkey and European Russia.

F = individual females; M = calling males; P = pairs; I = individuals; A = individual adults

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Red-throated Diver	B	935	P	Gibbons <i>et al.</i> 1997	935-1,500 prs = minimum	<10	P	Gibbons <i>et al.</i> 1997		7,158 Europe	P	Hagemeyer & Blair 1997	7,158-10,502 = minimum
Red-throated Diver	W	4,850	I	Danielsen <i>et al.</i> 1993		1,000	I	Lack 1986		75,000 Europe/Greenland	I	Rose & Scott 1997	
Black-throated Diver	B	155	P	Stone <i>et al.</i> 1997	155-189 prs = minimum					19,196 Europe	P	Hagemeyer & Blair 1997	19,196-26,548 = minimum
Black-throated Diver	W	700	I	Danielsen <i>et al.</i> 1993						120,000 EuropeW Siberia	I	Rose & Scott 1997	
Great Northern Diver	W	3,000	I	Lack 1986		1,000	I	Lack 1986	1,000-1,500 = minimum	5,000 Europe (wintering)	I	Rose & Scott 1997	
Little Grebe	W	3,290	I	Kirby 1995		5,000	I	Sheppard 1993		550,000 W Palearctic	I	Rose & Scott 1997	100,000-1,000,000 Inds = midpoint
Great Crested Grebe	B	4,000	P	Gibbons <i>et al.</i> 1993	8,000 adults divided by two	2,074	P	Gibbons <i>et al.</i> 1993	4,150 adults divided by two	50,000 NW Europe	P	Rose & Scott 1997	Winter figure divided by three

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Great Crested Grebe	P					3,060	I	Cranswick <i>et al.</i> 1997; Delany 1996b 1997/8	Average of September all-Ireland counts 1995-1997	150,000 NW Europe	I	Rose & Scott 1997	As for winter population
Great Crested Grebe	W	9,800	I	Kirby 1995		3,500	I	Delany 1996b		150,000 NW Europe	I	Rose & Scott 1997	
Slavonian Grebe	B	70	P	Ogilvie <i>et al.</i> 1996	70-78 prs = minimum					6,058 Europe	P	Hagemeijer & Blair 1997	6,058-9,268 = minimum
Slavonian Grebe	P	400	I	Stone <i>et al.</i> 1997	same as winter					5,000 NW Europe	I	Rose & Scott 1997	Same as winter
Slavonian Grebe	W	400	I	Lack 1986		30	I	Lack 1986	30-40 = minimum	5,000 NW Europe	I	Rose & Scott 1997	
Black-necked Grebe	B	23	P	Ogilvie <i>et al.</i> 1996	23-48 prs = minimum					33,000 W Palearctic	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 10,000
Black-necked Grebe	W	120	I	Lack 1986						100,000 W Palearctic	I	Rose & Scott 1997	
Fulmar	B	539,000	P	Lloyd <i>et al.</i> 1991		31,300	P	Lloyd <i>et al.</i> 1991		7,540,000 N Atlantic	P	Lloyd <i>et al.</i> 1991	
Manx Shearwater	B	220,000	P	Lloyd <i>et al.</i> 1991	220,000-250,000 prs = minimum	30,000	P	Gibbons <i>et al.</i> 1993	30,000-50,000 = minimum	265,100 World	P	Lloyd <i>et al.</i> 1991	Excludes birds now regarded as <i>P. mauretanicus</i> and <i>P. yelkouan</i>
Storm Petrel	B	85,000	P	Lloyd <i>et al.</i> 1991	20,000-150,000 inds = midpoint on JNCC Seabirds Team advice					257,000 World	P	Lloyd <i>et al.</i> 1991	135,000-380,000 = midpoint
Leach's Petrel	B	55,000	P	Lloyd <i>et al.</i> 1991	10,000-100,000 inds = midpoint on JNCC Seabirds Team advice					955,000 North Atlantic	P	Lloyd <i>et al.</i> 1991	780,200-1,130,600 = midpoint
Gannet	B	201,000	N	Stone <i>et al.</i> 1997						263,000 World	P	Lloyd <i>et al.</i> 1991	
Cormorant	B	7,000	P	Lloyd <i>et al.</i> 1991		4,700	P	Gibbons <i>et al.</i> 1993		41,200 total <i>P. c. carbo</i>	P	Lloyd <i>et al.</i> 1991	Total population of <i>P. c. carbo</i>
Cormorant	W	13,200	I	Kirby 1995		5,000	I	Way <i>et al.</i> 1993		120,000 NW Europe	I	Rose & Scott 1997	
Shag	B	37,500	P	Lloyd <i>et al.</i> 1991		8,800	P	Gibbons <i>et al.</i> 1993		125,000 N Europe	P	Lloyd <i>et al.</i> 1991	
Bittern	B	20	M	Stone <i>et al.</i> 1997						10,044 Europe	M	Hagemeijer & Blair 1997	10,044-11,669 = minimum

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Bittern	W	100	I	Lack 1986	50-150 inds = midpoint on EN advice					25,000 Europe	I	Rose & Scott 1997	25,000-100,000 inds = minimum
Little Egret	P	800	I	BTO <i>in litt.</i> 1999						125,000 W Mediterranean	I	Rose & Scott 1997	100,000-150,000 = midpoint
Little Egret	W	500	I	BTO <i>in litt.</i> 1999						125,000 W Mediterranean	I	Rose & Scott 1997	100,000-150,000 = midpoint
Bewick's Swan	W	7,200	I	Kirby 1995		2,500	I	Way <i>et al.</i> 1993		17,000 W Siberia/ NW Europe	I	Rose & Scott 1997	
Whooper Swan	P	5,600	I	Kirby 1995		10,320	I	Way <i>et al.</i> 1993		16,000 Iceland/UK/Ireland	I	Rose & Scott 1997	
Whooper Swan	W	5,600	I	Kirby 1995		10,320	I	Way <i>et al.</i> 1993		16,000 Iceland/UK/Ireland	I	Rose & Scott 1997	
Bean Goose	W	450	I	Batten <i>et al.</i> 1990						80,000 NE & NW Europe	I	Rose & Scott 1997	
Pink-footed Goose	W	192,000	I	Kirby 1995						225,000 UK/Iceland/ Greenland	I	Rose & Scott 1997	
European White-fronted Goose	W	6,100	I	Kirby 1995						600,000 NW Siberia/NE & NW Europe	I	Rose & Scott 1997	
Greenland White-fronted Goose	W	13,700	I	Stroud 1992		14,000	I	Cranswick <i>et al.</i> 1999		30,000 total <i>A. a. flavirostris</i>	I	Rose & Scott 1997	Total population of <i>A. a. flavirostris</i>
Greylag Goose	W	100,000	I	Kirby 1995		3,800	I	Way <i>et al.</i> 1993		100,000 Iceland/UK/Ireland	I	Rose & Scott 1997	
Barnacle Goose (Greenland)	W	31,009	I	Fox <i>et al.</i> 1990		7,500	I	Cranswick <i>et al.</i> 1997		32,000 Greenland/ Ireland/UK	I	Rose & Scott 1997	
Barnacle Goose (Svalbard)	W	17,450	I	Cranswick <i>et al.</i> 1997						12,000 Svalbard/UK	I	Rose & Scott 1997	
Dark-bellied Brent Goose	W	103,300	I	Kirby 1995						300,000 total <i>B. b. bernicla</i>	I	Rose & Scott 1997	Total population of <i>B. b. bernicla</i>
Light-bellied Brent Goose (Canada)	W					20,000	I	Way <i>et al.</i> 1993		20,000 Canada/Ireland	I	Rose & Scott 1997	
Light-bellied Brent Goose (Svalbard)	W	2,430	I	Cranswick <i>et al.</i> 1992						5,000 Svalbard/UK/ Denmark	I	Rose & Scott 1997	
Shelduck	B	10,600	P	Gibbons <i>et al.</i> 1993		1,100	P	Gibbons <i>et al.</i> 1993		100,000 NW Europe	P	Rose & Scott 1997	Winter figure divided by three
Shelduck	W	73,500	I	Kirby 1995		7,000	I	Way <i>et al.</i> 1993		300,000 NW Europe	I	Rose & Scott 1997	

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Wigeon	B	300	P	Gibbons <i>et al.</i> 1993	300-500 prs = minimum					420,000 W Siberia/NW & NE Europe	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 10,000
Wigeon	W	277,800	I	Kirby 1995		125,000	I	Way <i>et al.</i> 1993		1,250,000 W Siberia/NW & NE Europe	I	Rose & Scott 1997	
Gadwall	B	770	P	Gibbons <i>et al.</i> 1993		30	P	Gibbons <i>et al.</i> 1993		10,000 NW Europe	P	Rose & Scott 1997	Winter figure divided by three
Gadwall	W	8,200	I	Kirby 1995		600	I	Way <i>et al.</i> 1993		30,000 NW Europe	I	Rose & Scott 1997	
Teal	B	1,500	P	Gibbons <i>et al.</i> 1993	1,500-2,600 prs = minimum	400	P	Gibbons <i>et al.</i> 1993	400-675 = minimum	130,000 NW Europe	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 10,000
Teal	W	135,800	I	Kirby 1995		65,000	I	Cranswick <i>et al.</i> 1999		400,000 NW Europe	I	Rose & Scott 1997	
Mallard	B	100,000	P	Owen <i>et al.</i> 1986	100,000-130,000 prs = minimum	23,000	P	Gibbons <i>et al.</i> 1993	By extrapolation from GB total	1,700,000 NW Europe	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 100,000
Mallard	W	500,000	I	Owen <i>et al.</i> 1986		20,000	I	Way <i>et al.</i> 1993		5,000,000 NW Europe	I	Rose & Scott 1997	
Pintail	B	8	P	Ogilvie <i>et al.</i> 1996	8-42 prs = minimum	1	P	Gibbons <i>et al.</i> 1993		20,000 NW Europe	P	Rose & Scott 1997	Winter figure divided by three
Pintail	W	27,800	I	Kirby 1995		6,000	I	Cranswick <i>et al.</i> 1999		60,000 NW Europe	I	Rose & Scott 1997	
Garganey	B	15	P	Ogilvie <i>et al.</i> 1996	15-125 prs = minimum	1	P	Gibbons <i>et al.</i> 1993		670,000 W Siberia/Europe/ W Africa	P	Rose & Scott 1997	Winter figure (2,000,000) divided by three & rounded to nearest 10,000
Shoveler	B	1,000	P	Gibbons <i>et al.</i> 1993	1,000-1,500 prs = minimum	100	P	Gibbons <i>et al.</i> 1993		13,300 NW & C Europe	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 100
Shoveler	W	10,000	I	Kirby 1995		6,500	I	Way <i>et al.</i> 1993		40,000 NW & C Europe	I	Rose & Scott 1997	
Pochard	B	251	P	Ogilvie <i>et al.</i> 1996	251-406 prs = minimum	30	P	Gibbons <i>et al.</i> 1993		120,000 NW & NE Europe	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 10,000
Pochard	W	43,700	I	Kirby 1995		40,000	I	Way <i>et al.</i> 1993		350,000 NW & NE Europe	I	Rose & Scott 1997	
Tufted Duck	W	60,600	I	Kirby 1995		40,000	I	Way <i>et al.</i> 1993		1,000,000 NW Europe	I	Rose & Scott 1997	
Scaup	W	11,000	I	Kirby <i>et al.</i> 1993		3,000	I	Delany 1996b		310,000 N & W Europe	I	Rose & Scott 1997	
Eider	B	31,000	P	Gibbons <i>et al.</i> 1993	31,000-32,000	600	P	Gibbons <i>et al.</i> 1993		500,000	P	Rose & Scott	Winter figure divided

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
					females = minimum pairs					Europe		1997	by three
Eider	W	77,500	I	Kirby <i>et al.</i> 1993		2,000	I	Cranswick <i>et al.</i> 1999		1,500,000 W European <i>S. m. mollissima</i>	I	Derived from Rose & Scott 1997	Combined totals of the Britain and Ireland, and Baltic, Denmark & Netherlands wintering groups 1,415,000-1,775,000
Long-tailed Duck	W	23,500	I	Kirby <i>et al.</i> 1993		Unknown	I	Delany 1996	Threshold of 50 adopted	150,000 Iceland/Greenland	I	Rose & Scott 1997	
Common Scoter	B	75	F	Underhill <i>et al.</i> 1998		95	F	Underhill <i>et al.</i> 1998		530,000 W Siberia/N & W Europe/NW Africa	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 10,000
Common Scoter	W	27,350	I	Kirby <i>et al.</i> 1993	Corrected from published paper to exclude Irish totals	4,000	I	Cranswick <i>et al.</i> 1999		1,600,000 W Siberia/N & W Europe/NW Africa	I	Rose & Scott 1997	
Velvet Scoter	W	3,000	I	Kirby <i>et al.</i> 1993						1,000,000 W Siberia/N Europe	I	Rose & Scott 1997	
Goldeneye	B	83	P	Ogilvie <i>et al.</i> 1996	83-109 prs = minimum					100,000 NW & C Europe	P	Rose & Scott 1997	Winter figure divided by three
Goldeneye	W	17,000	I	Kirby 1995		11,000	I	Way <i>et al.</i> 1993		300,000 NW & C Europe	I	Rose & Scott 1997	
Smew	W	250	I	Lack 1986		<10	I	Delany 1996a, 1996b		25,000 NW & C Europe	I	Rose & Scott 1997	25,000-30,000 inds = minimum
Red-breasted Merganser	W	10,000	I	Kirby <i>et al.</i> 1993		2,000	I	Cranswick <i>et al.</i> 1999		125,000 NW & C Europe	I	Rose & Scott 1997	
Goosander	W	8,900	I	Kirby 1995						200,000 NW & C Europe	I	Rose & Scott 1997	
Honey Buzzard	B	16	P	DETR/JNCC Raptor Working Group 1998						41,200 Europe	P	Hagemeijer & Blair 1997	41,200-48,677 = minimum
Red Kite	B	161	P	DETR/JNCC Raptor Working Group 1998						17,394 Europe	P	Hagemeijer & Blair 1997	17,394-28,185 = minimum
Red Kite	W	1,320	I	CCW unpublished	1998					52,182 Europe	I	Hagemeijer & Blair 1997	Breeding population x 3
Marsh Harrier	B	157	F	Stone <i>et al.</i> 1997	157-160 prs = minimum					25,955 Europe	P	Hagemeijer & Blair 1997	25,955-34,675 = minimum
Hen Harrier	B	483	P	RSPB unpublished 1998		180	P	Gibbons <i>et al.</i> 1993		8,332 Europe	P	Hagemeijer & Blair 1997	8,332-10,840 = minimum
Hen Harrier	W	750	I	Lack 1986		540	I	Gibbons <i>et al.</i> 1993	Breeding	24,996	I	Hagemeijer &	Breeding population x

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
									population x 3	Europe		Blair 1997	3
Montagu's Harrier	B	11	P	DETR/JNCC Raptor Working Group 1998	11 - 21 = minimum					6,976 Europe	P	Hagemeijer & Blair 1997	6,976-9,610 = minimum
Golden Eagle	B	400	P	DETR/JNCC Raptor Working Group 1998	400 - 450 = minimum					5,239 Europe	P	Hagemeijer & Blair 1997	5,239-5,616 = minimum
Osprey	B	99	P	Stone <i>et al.</i> 1997						4,732 Europe	P	Hagemeijer & Blair 1997	4,732-5,249 = minimum
Merlin	B	1,300	P	Rebecca & Bainbridge 1998		110	P	Gibbons <i>et al.</i> 1993	110-130 = minimum	10,200 Europe	P	Hagemeijer & Blair 1997	10,166-16,612 = minimum
Merlin	W	1,300	I	Stroud <i>et al.</i> 1990	1,500-2,500 = minimum	416	I	Derived from data in Lack 1986 (2-3 birds/occupied square)	416-624 = minimum	30,600 Europe	I	From Hagemeijer & Blair 1997	Breeding estimate x 3
Hobby	B	500	P	Gibbons <i>et al.</i> 1993	500-900 prs = minimum					20,000 Europe	P	Hagemeijer & Blair 1997	19,720-22,799 = rounded minimum
Peregrine	B	1,167	P	DETR/JNCC Raptor Working Group 2000		365	P	Gibbons <i>et al.</i> 1993		5,633 Europe	P	Hagemeijer & Blair 1997	5,633-6,075 = minimum
Capercaillie	B	2,200	IA	Catt <i>et al.</i> 1994						209,500 Europe	P	Hagemeijer & Blair 1997	209,405-296,085 = rounded minimum
Quail	B	515	M	Ogilvie <i>et al.</i> 1998	Total of probable & possible pairs	<20	M	Gibbons <i>et al.</i> 1993	In years without invasions	640,000 Europe	P	Hagemeijer & Blair 1997	641,525-876,497 = rounded minimum
Water Rail	B	450	P	Gibbons <i>et al.</i> 1993	450-900 = minimum	850	P	Gibbons <i>et al.</i> 1993	850-1,700 = minimum	129,994 Europe	P	Hagemeijer & Blair 1997	129,994-239,718 = minimum
Water Rail	W	Unknown	I			Unknown	I			550,000 Europe	I	Rose & Scott 1997	100,000-1,000,000 = midpoint
Spotted Crake	B	50	M	JNCC unpublished						48,800 Europe	P	Hagemeijer & Blair 1997	48,786-67,083 = rounded minimum
Comcrake	B	480	M	Green 1995		174	M	Green <i>et al.</i> 1997a	1993 data	87,500 Europe	M	Hagemeijer & Blair 1997	87,470-96,920 = rounded minimum
Coot	W	114,100	I	Kirby 1995		25,000	I	Cranswick <i>et al.</i> 1999		1,500,000 NW Europe	I	Rose & Scott 1997	
Oystercatcher	B	33,000	P	Piersma 1986	33,000 prs = minimum	3,000	P	Piersma 1986	3,000-4,000 = minimum	290,000 Europe/W Africa	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 10,000
Oystercatcher	W	359,000	I	Cayford & Waters 1996		50,000	I	Cranswick <i>et al.</i> 1999		874,000 Europe/W Africa (East Atlantic Flyway)	I	Rose & Scott 1997	
Black-winged Stilt	B	1	P	Batten <i>et al.</i> 1990						15,400 Europe	P	Hagemeijer & Blair 1997	15,382-16,750 = rounded minimum

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Avocet	B	592	P	Ogilvie <i>et al.</i> 1996	592-654 = minimum					26,800 Europe	P	Hagemeijer & Blair 1997	26,762-29,436 = minimum
Avocet	P	1,700	I	Stone <i>et al.</i> 1997						67,000 Europe/NW Africa	I	Rose & Scott 1997	
Avocet	W	1,270	I	Cayford & Waters 1996						67,000 Europe/NW Africa	I	Rose & Scott 1997	
Stone Curlew	B	188	P	English Nature unpublished	1998 count					32,690 Europe	P	Hagemeijer & Blair 1997	32,690-45,704 = minimum
Ringed Plover	B	8,500	P	Prater 1989		1,250	P	Gibbons <i>et al.</i> 1993		16,000 Europe/NW Africa	I	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 1,000
Ringed Plover	P	30,000	I	Stone <i>et al.</i> 1997		Unknown				47,500 Europe/NW Africa	I	Rose & Scott 1997	As from winter figure
Ringed Plover	W	28,600	I	Cayford & Waters 1996		12,500	I	Way <i>et al.</i> 1993		47,500 Europe/NW Africa	I	Rose & Scott 1997	
Dotterel	B	840	P	Galbraith <i>et al.</i> 1993	840-950 = minimum					17,922 Europe	P	Hagemeijer & Blair 1997	17,922-39,136 = minimum
Golden Plover	B	22,600	P	Gibbons <i>et al.</i> 1993		400	P	Gibbons <i>et al.</i> 1993		474,900 Europe	P	Hagemeijer & Blair 1997	474,920-621,757 = minimum
Golden Plover	W	250,000	I	Cayford & Waters 1996		200,000	I	Way <i>et al.</i> 1993	>200,000 inds = minimum	1,800,000 NW Europe	I	Rose & Scott 1997	
Grey Plover	W	43,200	I	Cayford & Waters 1996		4,000	I	Cranswick <i>et al.</i> 1999		168,000 East Atlantic	I	Rose & Scott 1997	
Lapwing	B	190,000	P	Shrubb & Lack 1991; Thom 1986	190,000-240,000 = minimum	21,500	P	Gibbons <i>et al.</i> 1993		2,300,000 Europe/West Africa	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 100,000
Lapwing	W	1,500,000	I	Cayford & Waters 1996	1,500,000-2,000,000 = minimum	250,000	I	Cranswick <i>et al.</i> 1999		7,000,000 Europe/West Africa	I	Rose & Scott 1997	
Knot	W	291,000	I	Cayford & Waters 1996	= <i>C. c. islandica</i>	37,500	I	Way <i>et al.</i> 1993	= <i>C. c. islandica</i>	345,000 W Europe/Canada	I	Rose & Scott 1997	Total population of <i>C. c. islandica</i>
Sanderling	P	30,000	P	Cranswick <i>et al.</i> 1997		Unknown				123,000 East Atlantic	I	Rose & Scott 1997	
Sanderling	W	23,200	I	Cayford & Waters 1996		3,500	I	Cranswick <i>et al.</i> 1999		123,000 East Atlantic	I	Rose & Scott 1997	
Purple Sandpiper	B	2	P	Ogilvie <i>et al.</i> 1996						17,000 East Atlantic	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 1,000
Purple Sandpiper	W	21,300	I	Cayford & Waters 1996		1,000	I	Cranswick <i>et al.</i> 1999		50,500 East Atlantic	I	Rose & Scott 1997	
Dunlin	B	9,150	P	Reed 1985; Stroud <i>et al.</i> 1987	9,150-9,900 prs = minimum	175	P	Hutchinson 1989	= <i>C. a. schinzii</i>	11,000 temperate	P	Stroud <i>et al.</i> 1990	Temperate European figure (11,158 prs)

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
					= <i>C. a. schinzii</i>					European <i>C. a. schinzii</i>			extrapolated from British breeding popn figures & rounded to nearest 1,000
Dunlin	W	532,000	I	Cayford & Waters 1996		125,000	I	Cranswick <i>et al.</i> 1999		1,373,000 Northern Siberia/ Europe/ Western Africa	I	Rose & Scott 1997	
Ruff	B	11	N	Ogilvie <i>et al.</i> 1996	2-24 = midpoint on JNCC advice					105,700 Europe	P	Hagemeijer & Blair 1997	105,655-139,209 = rounded minimum
Ruff	P	1,100	I	Stone <i>et al.</i> 1997						1,000,000 West Africa	I	Rose & Scott 1997	>1,000,000 = minimum
Ruff	W	700	I	Cayford & Waters 1996		<20	I	Delany 1996		1,000,000 West Africa	I	Rose & Scott 1997	>1,000,000 = minimum
Snipe (<i>G. g. gallinago</i>)	B	55,000	P	Gibbons <i>et al.</i> 1993		10,000	P	Piersma 1986	minimum estimate	862,000 Europe	P	Hagemeijer & Blair 1997	861,593-990,503 = rounded minimum
Snipe (<i>G. g. faeroeensis</i>)	B	6,900	P	BTO <i>in litt.</i> 2001						250,000 total <i>G. g. faeroeensis</i>	P	Rose & Scott 1997	750,000 divided by three Total population of <i>G. g. faeroeensis</i>
Snipe	W	100,000	I	Cayford & Waters 1996	>100,000 = minimum	Unknown				2,000,000 Europe/ West Africa	I	Rose & Scott 1997	>2,000,000 = minimum
Black-tailed Godwit (<i>L. l. limosa</i>)	B	34	P	Ogilvie <i>et al.</i> 1996	34-41 pairs = minimum					120,000 W Africa/ W Europe	P	Rose & Scott 1997	350,000 divided by three & rounded to nearest 10,000
Black-tailed Godwit (<i>L. l. islandica</i>)	B	?	P			2	P	Gibbons <i>et al.</i> 1993		5,000 Iceland	P	Hagemeijer & Blair 1997	5,000-15,000 = minimum
Black-tailed Godwit (<i>L. l. islandica</i>)	W	7,410	I	Cayford & Waters 1996		9,000	I	Cranswick <i>et al.</i> 1999		65,000 Iceland/UK/Ireland	I	Rose & Scott 1997	
Bar-tailed Godwit	W	52,500	I	Cayford & Waters 1996		16,000	I	Way <i>et al.</i> 1993	16,000-20,000 = minimum	115,000 W Palearctic	I	Rose & Scott 1997	
Whimbrel	B	530	P	Dore & Ellis 1994						220,000 Europe/W Africa	P	Rose & Scott 1997	Winter figure divided by three & rounded to nearest 10,000
Whimbrel	P	5,000	I	Cranswick <i>et al.</i> 1997		Unknown				650,000 Europe/W Africa	I	Rose & Scott 1997	600,000-700,000 = midpoint
Whimbrel	W	<15	I	Lack 1986		<15	I	Lack 1986		650,000 Europe/W Africa	I	Rose & Scott 1997	600,000-700,000 = midpoint
Curlew	B	33,000	P	Piersma 1986	33,000-38,000 prs = minimum	12,000	P	Reed 1985		120,000 Europe	P	Rose & Scott 1997	Winter figure divided by three & rounded
Curlew	W	115,000	I	Cayford & Waters 1996		87,500	I	Cranswick <i>et al.</i> 1999		348,000 Europe	I	Rose & Scott 1997	

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Spotted Redshank	W	120	I	Cayford & Waters 1996						75,000 Europe/W Africa	I	Rose & Scott 1997	75,000-150,000 inds = minimum
Redshank	B	30,600	P	Piersma 1986	30,600-33,600 prs = minimum	4,400	P	Gibbons <i>et al.</i> 1993	4,400-5,000 = minimum	Total <i>T. t. totanus</i>	P	Rose & Scott 1997	Winter figure divided by three Total population of <i>T. t. totanus</i>
Redshank	P	120,000	I	Cranswick <i>et al.</i> 1997		Unknown				177,000 total <i>T. t. totanus</i>	I	Rose & Scott 1997	Wintering figure used Total population of <i>T. t. totanus</i>
Redshank	W	114,000	I	Cayford & Waters 1996		24,500	I	Way <i>et al.</i> 1993		177,000 total <i>T. t. totanus</i>	I	Rose & Scott 1997	Total population of <i>T. t. totanus</i>
Greenshank	B	1,440	P	Hancock <i>et al.</i> 1997						57,600 Europe	P	Hagemeijer & Blair 1997	57,612-83,189 = rounded minimum
Greenshank	W	380	I	Cayford & Waters 1996		900	I	Cranswick <i>et al.</i> 1999		550,000 Europe/W Africa	I	Rose & Scott 1997	100,000-1,000,000 = midpoint
Wood Sandpiper	B	10	P	SNH unpublished						298,800 Europe	P	Hagemeijer & Blair 1997	298,842-412,474 = rounded minimum
Turnstone	W	64,400	I	Cayford & Waters 1996		22,500	I	Cranswick <i>et al.</i> 1999		67,000 Europe (wintering)	I	Rose & Scott 1997	
Red-necked Phalarope	B	36	M	Stone <i>et al.</i> 1997						65,500 Europe	P	Hagemeijer & Blair 1997	65,536-94,391 = rounded minimum
Arctic Skua	B	3,200	P	Walsh <i>et al.</i> 1995	Territories equated to pairs					30,000 NE Atlantic	P	Lloyd <i>et al.</i> 1991	20,000-40,000 = midpoint
Great Skua	B	8,500	P	Walsh <i>et al.</i> 1995	Territories equated to pairs					13,600 World	P	Lloyd <i>et al.</i> 1991	
Mediterranean Gull	B	31	P	Ogilvie <i>et al.</i> 1996	31-45 pairs = minimum					184,000 Europe	P	Hagemeijer & Blair 1997	183,925-339,963 = rounded minimum
Black-headed Gull	B	167,000	P	Lloyd <i>et al.</i> 1991		53,800	P	Gibbons <i>et al.</i> 1993		1,650,000 World	P	Lloyd <i>et al.</i> 1991	
Black-headed Gull	W	1,900,000	I	Stone <i>et al.</i> 1997		1,100,000	I	Lack 1986	Difference between estimates for Britain/Ireland and GB	5,000,000 NW Europe	I	Rose & Scott 1997	Minimum
Common Gull	B	68,000	P	Lloyd <i>et al.</i> 1991		3,600	P	Gibbons <i>et al.</i> 1993		124,000 NW & C Europe/ Atlantic/ Mediterranean	P	Lloyd <i>et al.</i> 1991	
Common Gull	W	900,000	I	Stone <i>et al.</i> 1997		67,500	I	Lack 1986		1,600,000 NW & C Europe/Atlantic/Med.	I	Rose & Scott 1997	
Lesser Black-backed Gull	B	83,000	P	Lloyd <i>et al.</i> 1991		5,200	P	Gibbons <i>et al.</i> 1993		124,000 total <i>L. f. graellsii</i>	P	Lloyd <i>et al.</i> 1991	Total population of <i>L. f. graellsii</i>

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Lesser Black-backed Gull	W	500,000	I	Stone <i>et al.</i> 1997		70,000	I	Lack 1986		400,000	I	Rose & Scott 1997	400,000-500,000 = minimum; total population of <i>L. f. graellsii</i>
Herring Gull	B	160,000	P	Lloyd <i>et al.</i> 1991		44,700	P	Gibbons <i>et al.</i> 1993		940,000 NW European & Iceland/W Europe	P	Lloyd <i>et al.</i> 1991	Includes both <i>L. a. argentatus</i> and <i>L. a. argentus</i>
Great Black-backed Gull	B	19,000	P	Lloyd <i>et al.</i> 1991		4,500	P	Gibbons <i>et al.</i> 1993		95,546 Europe	P	Hagemeijer & Blair 1997	95,546-121,233 = minimum
Kittiwake	B	490,000	P	Lloyd <i>et al.</i> 1991		50,200	P	Gibbons <i>et al.</i> 1993		3,170,000 North Atlantic = total <i>R. t. tridactyla</i>	P	Lloyd <i>et al.</i> 1991	Calculated using mid-points of ranges presented Total population of <i>R. t. tridactyla</i>
Sandwich Tern	B	14,000	P	Lloyd <i>et al.</i> 1991		4,400	P	Gibbons <i>et al.</i> 1993		132,000 Europe	P	Hagemeijer & Blair 1997	
Sandwich Tern	P	42,000	I	JNCC unpublished	extrapolated from breeding population	13,200	I	Gibbons <i>et al.</i> 1993		396,000 Europe	I	Derived from Hagemeijer & Blair 1997	Breeding population x 3
Roseate Tern	B	64	P	Stone <i>et al.</i> 1997		400	P	Gibbons <i>et al.</i> 1993	>400 = minimum estimate	1,770 Europe	P	Lloyd <i>et al.</i> 1991	
Common Tern	B	12,300	P	Gibbons <i>et al.</i> 1993		3,100	P	Gibbons <i>et al.</i> 1993		195,105 Europe	P	Hagemeijer & Blair 1997	195,105-227,250 = minimum
Arctic Tern	B	44,000	P	Gibbons <i>et al.</i> 1993		2,500	P	Gibbons <i>et al.</i> 1993		900,000 Europe/ North Atlantic	P	Lloyd <i>et al.</i> 1991	
Little Tern	B	2,400	P	Lloyd <i>et al.</i> 1991		390	P	Gibbons <i>et al.</i> 1993		20,643 Europe	P	Hagemeijer & Blair 1997	20,643-22,799 = minimum
Guillemot	B	703,500	P	Lloyd <i>et al.</i> 1991	67% of popn as individuals	102,510	P	Gibbons <i>et al.</i> 1993		2,250,000 North Atlantic	P	Lloyd <i>et al.</i> 1991	Conversion of 0.67 used between Apparently Occupied Sites and individual birds
Razorbill	B	99,160	P	Lloyd <i>et al.</i> 1991	67% of popn as individuals	22,780	P	Gibbons <i>et al.</i> 1993		575,000 total <i>Alca torda islandica</i>	P	Lloyd <i>et al.</i> 1991	Total population of <i>Alca torda islandica</i> Conversion of 0.67 used between Apparently Occupied Sites and individual birds Midpoints of national ranges used

Species/population	Season	GB population	GB population unit	GB population source	GB population derivation	All-Ireland population	All-Ireland population unit	All-Ireland population source	All-Ireland population derivation	Bio-geographic population and name	Bio-geographic population unit	Bio-geographic population source	Bio-geographic population derivation
Puffin	B	449,000	P	Lloyd <i>et al.</i> 1991	50% of popn as individuals	20,500	P	Gibbons <i>et al.</i> 1993		901,000 total <i>Fratercula arctica grabae</i>	P	Lloyd <i>et al.</i> 1991	Total population of <i>Fratercula arctica grabae</i> Conversion of 0.5 used between Apparently Occupied Sites and individual birds
Short-eared Owl	B	1,000	P	Gibbons <i>et al.</i> 1993	1,000-3,500 = minimum					13,400 Europe	P	Hagemeijer & Blair 1997	13,376-26,265 = rounded minimum
Nightjar	B	3,400	M	Morris <i>et al.</i> 1994						224,000 Europe	M	Hagemeijer & Blair 1997	223,921-264,419 = rounded minimum
Kingfisher	B	3,300	P	Gibbons <i>et al.</i> 1993	3,300-5,500 = minimum	1,300	P	Gibbons <i>et al.</i> 1993	1,300-2,100 = minimum	47,302 Europe	P	Hagemeijer & Blair 1997	47,302-66,752 = minimum
Woodlark	B	1,500	P	Wotton & Gillings 2000						1,050,000 Europe	P	Hagemeijer & Blair 1997	1,050,376-2,239,048 = rounded minimum
Aquatic Warbler	P	67	I	EN unpublished	Count 1997					11,220 World population	I	Tucker & Heath 1994	Breeding range minimum (3,740) x 3 = 11,220 inds
Dartford Warbler	B	1,600	P	Gibbons & Wotton 1996	1,600-1,890 = minimum					2,026,000 Europe	P	Hagemeijer & Blair 1997	2,025,456-3,635,791 = rounded minimum
Chough	B	340	P	Bignal <i>et al.</i> 1997		906	P	Berrow <i>et al.</i> 1993		12,265 Europe	P	Hagemeijer & Blair 1997	12,265-17,370 = minimum
Chough	W	689	I	Bignal <i>et al.</i> 1997		2,633	I	Berrow <i>et al.</i> 1993		36,800 Europe	I	Derived from Hagemeijer & Blair 1997	Breeding range minimum (12,265) x 3 = 36,795 inds then rounded
Snow Bunting	B	70	P	Stone <i>et al.</i> 1997	70-100 = minimum					220,000 Europe	P	Hagemeijer & Blair 1997	223,986-634,300 prs = rounded minimum
Fair Isle Wren	B	37	M	SNH unpublished	Count 1997					37 World	M	SNH unpublished	Count 1997
Scottish Crossbill	B	300	P	Stone <i>et al.</i> 1997	300-1,250 = minimum					300 World	P	Stone <i>et al.</i> 1997	300-1250 prs = minimum