

# UK SPA SCIENTIFIC WORKING GROUP

## 24 September 2002

### Cropped Habitats Information Project (CHIP)

#### Background on the process

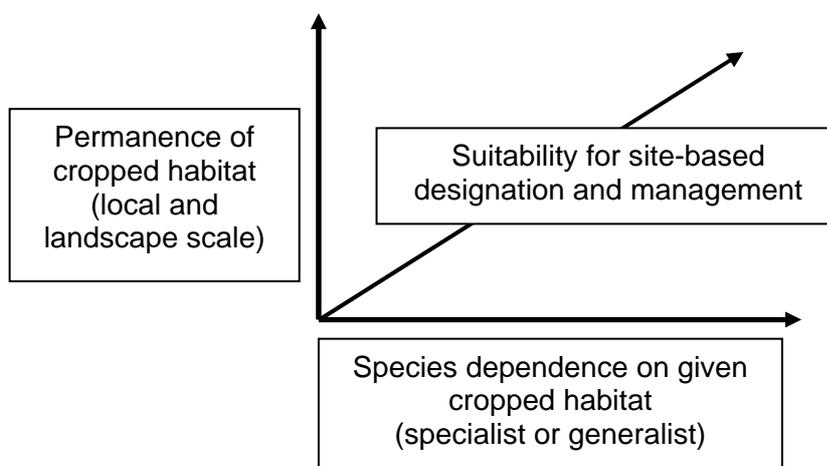
**A cropped habitat is one used for harvesting seeds, roots, leaves, or other plant parts that are of commercial value to humans, *inter alia* formed by the planting of plants in cultivated (prepared) ground, by the regular application of fertilisers, manures or through other management. Such habitats include semi-improved and reseeded grasslands, cereals, brassicas, potatoes, other root crops, fruit and forestry (deciduous and conifer), as well as set-aside.**

Few areas of cropped habitat have been included in SPAs to date, largely as a result of the UK Government's policy to underpin SPAs with SSSI/ASSI. SSSIs aim to protect natural and semi-natural habitats and species through a site-based mechanism in order to prevent further modification and loss. This clearly does not apply to the majority of cropped habitats as they are highly modified and may even be comprised of non-native plant species.

However, the SWG has recognised that although these habitats are in themselves of limited conservation value for plants, there is a need to recognise their value as habitats for birds. While some consider that such habitats may be inappropriate for SSSI/ASSI designation, this should not preclude them from consideration for inclusion within a SPA designation. Indeed, the Birds Directive makes no requirement that land to be classified as SPA should be other than "most suitable" for the species concerned – *i.e.* no distinctions are drawn by the Directive between the vegetational characteristics of natural, semi-natural and artificial habitats.

However, cropped habitats may be transitory in their locations. This quality dictates special consideration in judging their suitability for designation and in choosing appropriate mechanisms for managing them for their conservation value. A simplistic way of regarding suitability for designation may be like that illustrated in Figure 1. At some point in this model the benefits of wider countryside measures may outweigh the benefits of site-based protection. While a variety of birds (Appendix 1) are dependent on cropped habitats for part of their lives, there is a need to understand the way in which this dependence functions.

Figure 1. A possible way of judging the suitability of cropped habitats for site-based designation.



The SWG has recognised the need to collate information on those bird species that rely in whole or part on cropped habitats, so as to inform discussions on their site-based conservation needs. This process is the Cropped Habitats Information Project (CHIP).

### **Current and planned activity**

At its March 2002 meeting the SWG agreed several actions relating to cropped habitats that would allow further discussion at its September 2002 meeting:

- ♦ to submit a list of possible species for consideration (Appendix 1);
- ♦ to develop a form to present information on species use of cropped habitats (Appendix 2);
- ♦ to use the Greenland White-fronted Goose as an example as to how this form may be completed (Appendix 3); and
- ♦ to report on approaches to designating cropped habitats adopted elsewhere in the EU (see separate briefing).

### **Implications for the future development of the UK SPA network**

CHIP will allow the SWG to come to informed decisions regarding its advice to the Natura Steering Group on designating cropped habitats as SPAs for a variety of species. It will also identify gaps, if any, in our knowledge of habitat use by certain species.

### **Recommendations**

The SWG is asked to:

- ♦ **Agree** a definition of the term 'cropped habitats';
- ♦ **Consider and agree** the list of species for this project, with an indication of priorities for their assessment; and
- ♦ **Discuss and agree** the format for CHIP forms for each species

On the basis of these decisions JNCC will develop a project specification and seek to initiate CHIP in the current financial year for completion in 2003. JNCC will circulate a project report for consideration by the SWG in 2003.

*Helen Baker & David Stroud, JNCC  
11 September 2002*

## APPENDIX 1

### Cropped Habitats Information Project – draft list of species for consideration within the project

Little Egret  
Bewick's Swan  
Whooper Swan  
Bean Goose (*A. f. fabalis*)  
Pink-footed Goose  
European White-fronted Goose  
Greenland White-fronted Goose  
Greylag Goose (Icelandic)  
Barnacle Goose (Greenland)  
Barnacle Goose (Svalbard)  
Dark-bellied Brent Goose  
Light-bellied Brent Goose (Canada)  
Light-bellied Brent Goose (Svalbard)  
Shelduck  
Wigeon  
Gadwall  
Teal  
Mallard  
Pintail  
Shoveler  
Pochard  
Honey Buzzard  
Red Kite  
Montagu's Harrier  
Marsh Harrier  
Hen Harrier  
Osprey  
Merlin  
Capercaillie  
Corncrake  
Coot  
Oystercatcher  
Stone Curlew  
Ringed Plover  
Golden Plover  
Lapwing  
Knot  
Dunlin  
Ruff  
Woodcock  
Snipe  
Black-tailed Godwit  
Bar-tailed Godwit  
Whimbrel  
Curlew  
Redshank  
Black-headed Gull  
Common Gull  
Lesser Black-backed Gull  
Herring Gull  
Great Black-backed Gull  
Sandwich Tern  
Short-eared Owl  
Nightjar  
Woodlark  
Ring Ouzel  
Chough  
Dartford Warbler  
Twite  
Scottish Crossbill

## **Cropped Habitats Information Project: *draft proforma***

### **Context: range and distribution**

- Brief flyway description
- UK perspective and map
- Trends in UK population
- Other important factors

### **Cropped and other habitats used in the UK**

#### **A. *Functional Unit System***

- Elements
- Scale

#### **B. *Description of habitats used for:***

- Roosting
- Feeding
- Other uses (e.g. refuges)

Historical changes of feeding behaviour to increased/decreased use of cropped habitats?  
Regularity of use of cropped habitats against other (designated) habitats

Summary of cropped habitats used

### **Current SPA provision (sites and habitats)**

- Table (from SPA review interpreted in the light of habitat use and availability)
- Interpretation in context of CHIP

### **Spatial change in availability of cropped habitats between years**

- Description of generic landscape scale changes of relevance over last 40 years
- Timescale of use of cropped habitats by species (recent innovation or longer-term use?)
- Description of regional scale changes
- Description of example local scale changes that assist in decision taking

(? Do we need generic description of seasonality of crop availability in overarching introduction? Within year availability changes?)

### **Between-year site fidelity to specific cropped habitats**

- Description - examples
- Main drivers of fidelity - to specific localities, or to specific crops at those or other localities?
- Scales of use

### **Extent of within-year/seasonal variability in use of habitats**

- Scale
- Main drivers

### **Other importance of habitat to survival of species**

### **Significance of cropped habitats and implications of change**

- Scale of land-use

### **Conclusions**

- Species use of cropped habitats (specialist or generalist)
- Permanence of habitats
- Dependency/importance of cropped habitats
- Scale
- Suitability of site

### **Next steps**

- Review of potential sites/actual sites?
- Data availability and needs?

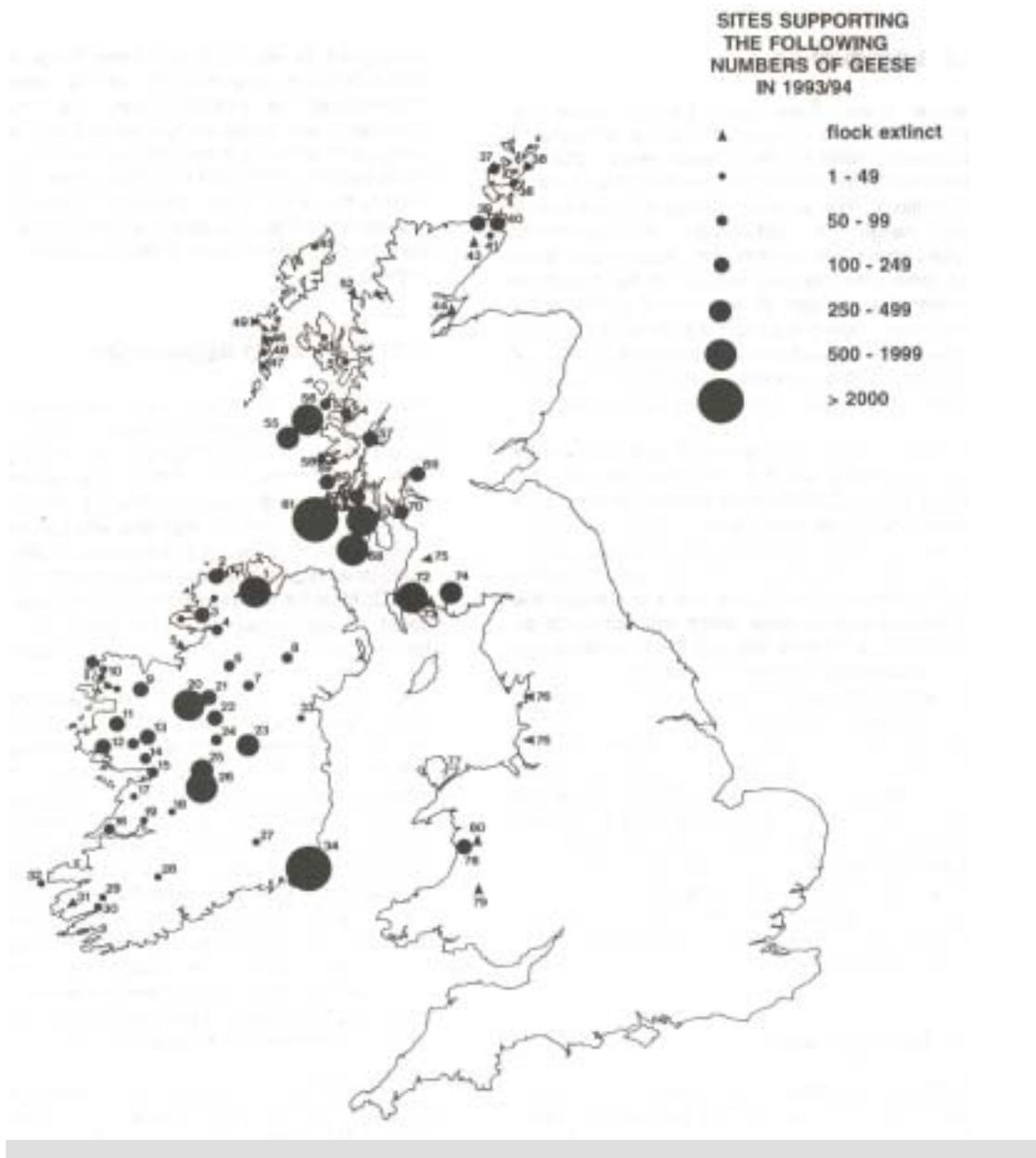
**Cropped Habitats Information Project:**

***draft proforma for Greenland White-fronted Goose***

**Context: range and distribution**

The global distribution of Greenland White-fronted Geese in the non-breeding season is restricted to a few localities in the north and west of Britain and in Ireland (mainly the south and west) (Figure 1<sup>1</sup>). Sites used are traditional between years, and the gross extent of the range has been substantially stable over at least 100 years<sup>2,3</sup>. There have, however, been a small number of new flocks established in the last 30 years and a significant number of flock extinctions, especially consequent on a major population decline between the 1950s and the late 1970s<sup>3</sup>. Notable flock extinctions have occurred at the edge of the range, in south-west Ireland, mid-Wales and north-west England<sup>4</sup>.

Figure 1. Distribution of flocks of Greenland White-fronted Geese in Britain and Ireland 1993/94. Sites with a high probability of exchange of birds within a winter, unrelated to spring or autumn migration, are linked by lines.



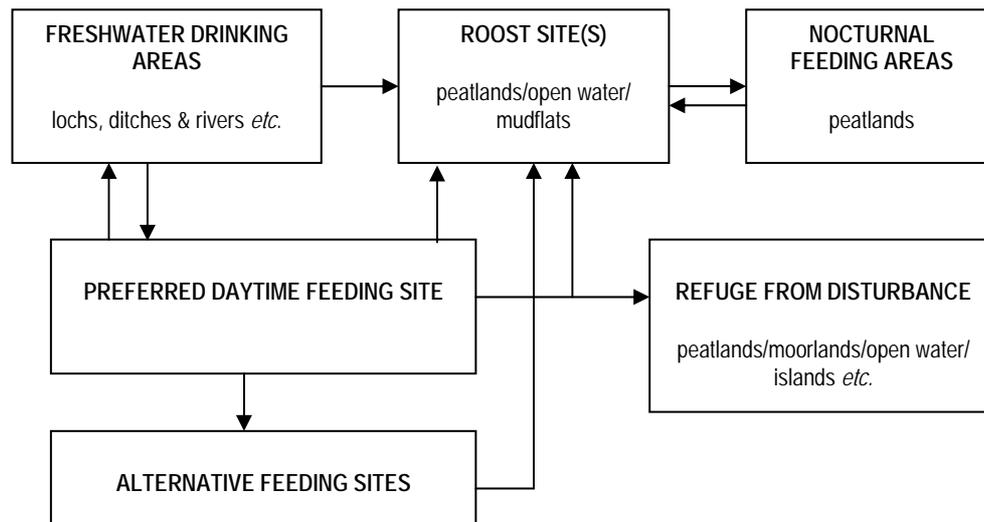
## Cropped and other habitats used in the UK

### Flock dynamics in relation to habitats - Functional Unit Systems

Typically, sites used by a flock of Greenland White-fronted Geese comprise one or more nocturnal roost sites, one or more separate feeding areas, and areas used for refuge in the event of disturbance during the day. Wilson *et al.*<sup>5</sup> described the use of traditional locations in terms of a 'Functional Unit System' (Figure 2) – a means of conceptualising the different functional components of the overall flock range.

The total area used by any one flock in winter is highly limited – often just a few tens of hectares (below).

Figure 2. Components important in the definition of Greenland White-fronted Goose functional unit systems. Arrows indicate movements between different components of flock 'home-range'.



### Habitat descriptions

Greenland White-fronted Geese roost on peatlands, open waters (including moorland and other lochs) and at a few sites, on inter-tidal sands or saltmarshes<sup>5</sup>. Historically, feeding occurred probably exclusively on peatlands (the overall extent of the range closely mirrors the geographic extent of oceanic patterned blanket, and coastal raised, mires in Britain and Ireland). Today, significant nocturnal feeding on bog plants still occurs on these areas but the main diurnal feeding has changed, first to low-intensity grasslands of permanent (and sometimes semi-natural) character, and more recently (although only at some locations) to rotational grasslands under greater intensity management.

In some localities<sup>5</sup>, flocks now feed on high intensity grassland, although without having changed locations: feeding fields formerly subject to low intensity management (and with high nature conservation value) have been reseeded and are now managed as rotational leys. The continued visitation of geese to these same fields now causes alleged damage, although on the part of the geese there has been no change in feeding location, just a change in intensity of agricultural management of areas continuously used.

The main cropped habitats used are thus grasslands. Throughout their range there is little winter cereal growing. Where autumn stubbles do occur however, (especially in Caithness, Coll, Tiree, Kintyre and Islay) they are used intensively on the arrival of geese in October, and consumption of split grain at this time is important in allowing the rapid recouping of body condition after migration from Iceland (and prior to mid-winter).

At Wexford in Ireland some use of carrots and sugar beet fields is regular<sup>7</sup>, whilst topped forage beet is sometimes taken on Islay. Generally, root crops are available at some locations only, although where they do occur they are energetically very important, being highly digestible and with high energy content (as also stubble grains)<sup>7</sup>.

## Current SPA provision (sites and habitats)

The current SPA suite is as follows:

Site name	Site total	% of GB population	FUNCTIONS PROVIDED BY SPA		
			Nocturnal roost	Diurnal roost or loafing area	Feeding (cropped habitats)
Caithness Lochs	183	1.3%	Freshwater lochs	NO	NO
Coll	789	5.7%	Moorland lochs	NO	NO (although significant feeding areas lie within the Coll (Corncrake) SPA)
Dyfi Estuary	144	1.1%	Saltings and mudflats {raised bog excluded}	Saltings	NO
Kintyre Goose Roosts	2,323	17.0	Moorland lochs and lowland wet grassland	NO	NO (some limited feeding included at grassland roost area at Rhunahaorhine Point)
Loch of Inch and Torrs Warren	534	3.9	Inter-tidal sandflats	NO	NO
Loch Ken and River Dee Marshes	350	2.6	Three freshwater lochs and marshes	NO	Grassland managed at varying intensity
Loch Lomond	237	1.7	Freshwater loch	NO	Some limited feeding areas on wet grassland and marsh included
Sleibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)	783	5.7	Freshwater and moorland lochs	NO	Semi-natural wetland in one area otherwise NO
ISLAY					
Eilean na Muice Duibhe/Duich Moss, Islay	1,300	9.5	Blanket/raised mire	NO	NO (but some birds use Laggan SPA)
Laggan, Islay	300	2.2	NO (but some birds use Eilean na Muice Duibhe SPA)	NO	Grassland managed at high intensity
Rinns of Islay	1,600	11.7	Blanket mires	Freshwater loch	NO (but some birds use Gruinart SPA)
Gruinart Flats, Islay	1,000	7.3	NO (but some birds use Rhinns SPA)	Saltings	Grassland managed at varying intensities

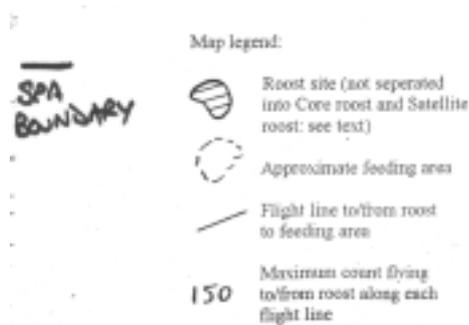
There are a number of key points regarding the SPA suite in the context of the CHIP review:

- For nearly all flocks, sites with the current SPA suite do not contain whole functional unit systems (all areas used by flocks). Generally sites just contain roosts, with feeding areas not subject to formal protection<sup>8</sup>. Some sites just contain feeding areas with no roosts.
- For two pairs of sites on Islay, there is at least partial coverage of both feeding and roosting areas. Most birds feeding on Laggan SPA probably roost on Eilean na Muice Duibhe/Duich Moss SPA (although the converse is not true). Some birds feeding at Gruinart SPA probably roost within the Rhinns SPA, although again the converse is not true, with the majority of Rhinns roosting birds feeding outwith the Rhinns and Gruinart SPAs.
- There are some sites on mainland Argyll qualifying at Stage 1<sup>9</sup> (holding numbers of European importance), which were not selected at Stage 2 of the SPA selection process. This was on the grounds that Loch Lomond contributed more to the coverage of range in the UK.

- There are other roost sites on Islay of at least national importance which were not considered by the SPA review because of lack of regular count data<sup>10</sup>.

An example is given in Figure 3, which shows the use of habitats in an area of Tiree. Whilst all main roost areas of this part of Tiree are included within the SPA, the immediately adjacent feeding areas for these birds are excluded. These feeding areas are grasslands of various types, including cultivated leys, meadows and dune grasslands.





## Spatial change in availability of cropped habitats between years

There are few changes in either gross or local availability of grassland used by Greenland White-fronted Geese between years. Patterns of land-use in western and northern Scotland tends to be generally stable. Changes to local agricultural practice typically occurs either in response to new land-owners adopting more progressive farming systems, or in response to external factors (such as the recent abandonment of dairying on Islay which will probably have long-term implications for the intensity of grassland management on the island). Thus, local availability of grasslands to particular flocks is entirely predictable year-to-year and largely unchanging over long periods<sup>12</sup>.

Within Scotland, the National Countryside Monitoring Scheme has quantified the general trend of intensification of grassland management from the 1940s to 1980s, although the extent of this change has been variable between regions<sup>13</sup>.

## Between-year site fidelity to specific cropped habitats

Greenland White-fronted Geese are highly site-faithful within and between years both on wintering areas and at areas in Iceland used on migration<sup>5, 6, 14, 15</sup>. Site-fidelity between winters has been estimated at 80% on Islay<sup>22</sup> and 85% at Wexford).

Flocks comprise groups of extended families, with long-lasting relationships between parents and offspring<sup>16, 17</sup>. Individual colour-marking<sup>18</sup> has shown that the same social groups repeatedly visit the same areas year after year. One bird is known to have used the same small number of fields on Islay every year for at least 19 years<sup>19</sup>.

## Extent of within-year/seasonal variability in use of habitats

Detailed ecological studies in Iceland<sup>20, 21</sup>, have shown that small-scale patterns of between and within-field use are related to the need to maximise nutritional intake. Such fine-scale studies have not been undertaken on the wintering areas, but intensive survey work on Islay in the 1980s showed that local use of fields was predictable on a day-to-day basis.

Radio-tracking of marked geese on Islay by WWT in the 1980s demonstrated that individuals have discrete home –ranges of limited extent<sup>22</sup>. Specific grass fields used for feeding within these home ranges are linked to regularly used roost sites in a predictable manner. Cluster analysis of resightings of individually marked birds on Islay in 1991/2 and 1992/3 indicated an average home range extent of 195.7 ha and 488.3 ha respectively. However, some 80% of resightings occurred in areas of only 13.3 ha and 20.1 ha in the two winters. The 80% utilisation level is thought to represent core areas of the home ranges, with occasional resightings elsewhere representing some limited excursive activity<sup>22</sup>.

Ridgill *et al.* (1993) concluded:

- i) *“that individual birds have a limited distribution, utilising a very small area in winter;*
- ii) *that they make only patchy use of their home range, thus proving highly selective in their choice of sites on a field-by field basis; and*
- iii) *that they show an exceptionally high level of winter site fidelity.”*

## Other importance of habitat to survival of species

Diurnal feeding areas (typically grasslands and stubbles) and nocturnal roosts/feeding areas (typically peatlands or freshwater systems) are the primary biotopes used by Greenland White-fronted Geese. Behavioural observations have shown that other areas are also of importance, in particular refuge areas used when geese are subject to high levels of disturbance. Refuge areas are of particular significance, with their loss at many sites being thought to be related to declining favourability of many sites, especially in Ireland<sup>3, 23</sup>.

Freshwater lochs are also used for loafing and drinking typically in the middle of the day<sup>24</sup>. This habitat is of particular importance, probably in physiological contexts not fully understood. Birds will regularly travel significant distance during the day to drink, and access to water can result in considerable aggression - indicating its value as a resource to individuals. Consideration of freshwater resources (pools, ditches, lochs and rivers) seem thus to be an important element in the consideration of particular functional units and the conservation provision made for the particular components.

## Significance of cropped habitats and implications of change

Analysis of patterns of changes in flock size in the last decade have shown that size, number and quality of feeding areas, level of disturbance, flock size and latitude are factors that all influence flock status<sup>25</sup>. Those flocks occurring in areas with fewest, poor quality, limited feeding ranges have shown the most serious declines and also now tend to be the smallest flocks. These national-scale findings are supported by more fine-grained analyses from Ireland<sup>26</sup>.

The implication of this is that loss of one or more feeding sites at a traditional wintering locality will reduce, in the long-term, the favourability of that locality for geese. Thus conservation measures that address just roost areas will not secure the conservation status of Greenland White-fronted Geese – additional measures addressing conservation needs on feeding sites (and other components of the function unit system at each wintering site) are also needed.

## Conclusions

The overall conclusions are that:

- analysis of trends of different local flocks over the last two decades shows that flocks with poorest status are those with fewest feeding areas associated with roost sites. By inference, loss of feeding areas at other sites will result in the quality of those areas declining (probably through mechanisms such as a lower ability of geese to maintain and acquire necessary condition crucial for successful breeding<sup>16</sup>). Thus conservation measures directed at roost sites alone will be insufficient to ensure the long-term favourable conservation status of wintering flocks; and
- given the stability of local patterns of agricultural land-use in areas used by the geese; the within and between year fidelity to sites used; and the limited extent of feeding areas exploited (*i.e.* a high degree of selectivity for just a few highly preferred areas), site-based protection measures are an appropriate means of delivering these conservation measures.

---

<sup>1</sup> From: Fox, A.D., Norriss, D.W., Stroud, D.A. & Wilson, H.J. 1994. *Greenland White-fronted Geese in Ireland and Britain 1982/83-1993/94 - the first twelve years of international conservation monitoring*. Greenland White-fronted Goose Study Research Report No. 8. GWGS, Aberystwyth & National Parks and Wildlife Service, Dublin. 55 pp.

<sup>2</sup> Gray, R. 1871. *Birds of the West of Scotland, including the Outer Hebrides*. Murray, Scotland.

<sup>3</sup> Rutledge, R.F. & Ogilvie, M.A. 1979. The past and current status of the Greenland White-fronted Goose in Ireland and Britain. *Irish Birds* 1: 293-363.

<sup>4</sup> Rutledge & Ogilvie (1979) documented 34 deserted sites in Ireland and three in Scotland up until 1979, and Fox *et al.* (1998) reported a further seven (five in Ireland) by 1994/95. Despite increase in numbers recently, a further five flocks remain close to extinction.

<sup>5</sup> Wilson, H.J., Norriss, D.W., Walsh, A., Fox, A.D. & Stroud, D.A. 1991. Winter site fidelity in Greenland White-fronted Geese: implications for conservation and management. *Ardea* 79(2): 287-294.

- 
- <sup>6</sup> Fox, A.D. & Stroud, D.A. 2002. *Anser albifrons flavirostris* Dalgety & Scott 1948, Greenland White-fronted Goose. *Birds of the Western Palearctic Update* 4(2): 1-22.
- <sup>7</sup> Mayes, E. 1991. The winter ecology of Greenland White-fronted Geese *Anser albifrons flavirostris* on semi-natural grassland and intensive farmland. *Ardea* 79: 295-304.
- <sup>8</sup> Although some feeding areas may be subject to management under ESA prescriptions, and on Islay some feeding areas have been and are within the Islay Goose Management Scheme.
- <sup>9</sup> Danna/Keills & Lismore/Benderloch
- <sup>10</sup> e.g. the roost at Loch Finlaggan - Stroud, D.A. 1985. A preliminary list of Greenland White-fronted Goose roost sites in Argyll. *The Second Argyll Bird Report*: 20-29.
- <sup>11</sup> Young, J. 1996. *Greenland White-fronted & Greenland Barnacle Goose Roost survey. Isle of Tiree, Argyll*. Contract Report 48/F2A/669 to Scottish Natural Heritage. 15 pp & maps.
- <sup>12</sup> Bignal, E.M., Curtis, D.J. & Matthews, J.L. 1988. *Islay: land types, bird habitats and nature conservation. Part 1: land use and birds on Islay*. Nature Conservancy Council Chief Scientist Directorate Report No. 809, Part 1. Peterborough.
- <sup>13</sup> Mackey, E.M., Shewry, M. & Tudor, G.J. 1998. *Land Cover Change: Scotland from the 1940s to the 1980s*. The Stationery Office, Edinburgh. 263 pp.
- <sup>14</sup> Warren, S.M., Fox, A.D., Walsh, A.J., Merne, O.J. & Wilson, H.J. 1992. Wintering site interchange among Greenland White-fronted Geese *Anser albifrons flavirostris* captured at Wexford Slobs, Ireland. *Bird Study* 39: 186-194.
- <sup>15</sup> Fox, A.D., Hilmarsson, J.Ó., Einarsson, Ó., Walsh, A.J., Boyd, H. & Kristiansen, J.N. 2002. Staging site fidelity of Greenland White-fronted Geese *Anser albifrons flavirostris* in Iceland. *Bird Study* 49: 42-49.
- <sup>16</sup> Warren, S.M., Fox, A.D., Walsh, A. & O'Sullivan, P. 1992. Age of first pairing and breeding amongst Greenland White-fronted Geese. *Condor* 94: 791-793.
- <sup>17</sup> Fox, A.D. 2002. *The Greenland White-fronted Goose Anser albifrons flavirostris: the annual cycle of a migratory herbivore on the European continental fringe*. NERI/University of Copenhagen, Thesis.
- <sup>18</sup> Greenland White-fronted Goose Study resighting database holding 50,000 resightings of individuals marked since 1979.
- <sup>19</sup> Greenland White-fronted Goose Study unpublished.
- <sup>20</sup> Nyeland, J. 2001. *Feeding behaviour and competitive interactions of the Greenland White-fronted Goose Anser albifrons flavirostris with special emphasis on spring staging areas in Iceland and moulting geese in Greenland*. PhD Thesis, Department of Population Ecology, University of Copenhagen.
- <sup>21</sup> Kristiansen, J.N., Fox, A.D., Stroud, D.A. & Boyd, H. 1998. Dietary and microtopographical selectivity of Greenland white-fronted geese feeding on Icelandic hayfields. *Ecography* 21: 480-483.
- <sup>22</sup> Ridgill, S.C., McKay, C.R. & Rees, E.C. 1994. *Greenland White-fronted Geese wintering on Islay*. Report to Scottish Natural Heritage, Wildfowl & Wetlands Trust, Slimbridge. 167 pp.
- <sup>23</sup> Norriss, D.W. & Wilson, H.J. 1988. Disturbance and flock size changes in Greenland White-fronted Geese wintering in Ireland. *Wildfowl* 39: 63-70.
- <sup>24</sup> Stroud unpublished.
- <sup>25</sup> Fox, A.D., Norriss, D.W., Stroud, D.A., Wilson, H.J. & Merne, O.J. 1998. The Greenland white-fronted goose *Anser albifrons flavirostris* in Ireland and Britain 1982/83-1994/95: Population change under conservation legislation. *Wildlife Biology* 4: 1-12.
- <sup>26</sup> Norriss, D.W. & Wilson, H.J. 1993. Seasonal and long-term changes in habitat selection by Greenland White-fronted Geese *Anser albifrons flavirostris* in Ireland. *Wildfowl* 44: 7-18.