



International Single Species Action Plan for Western Palearctic Population of Lesser White-fronted Goose *Anser erythropus*

**Second Draft, version 2.2
17 July 2006**

Compiler's note: This Second Draft of the Action Plan draws on the conclusions of the international 'Workshop on Protection of Lesser White-fronted Goose' held in Lammi, Finland, 31 March – 2 April 2005, and takes into account all inputs received in response to circulation of the First Draft for technical review. It also reflects the decision of the Scientific Council of the Convention on Migratory Species of 18 November 2005.

The following individuals commented on the first draft: Tomas AARVAK, BirdLife Norway/Norwegian LWfG Project; Åke ANDERSSON, Swedish reintroduction project; Anna-Carin ANDERSSON, University of Oulu (Finland); Luba BALYAN, Armenian Society for the Protection of Birds; Marie BJÖRKLAND, County Administrative Board of Norrbotten (Sweden); Sergey DERELIEV, AEW A Secretariat; Morten EKKER, Norwegian Directorate for Nature Management; Per HANSSON, Västerbottens Ornitologiska Förening (Sweden); Thomas HEINICKE, Germany; Baz HUGHES, The Wildfowl & Wetlands Trust (UK); Lauri KAHANPÄÄ, Friends of the Lesser White-fronted Goose (incorporating comments from Antii Haapanen and Martti Soikkeli); Elena KREUZBERG, Uzbekistan; Petri LAMPILA, Finnish LWfG Conservation Project; Torsten LARSSON, Swedish Environmental Protection Agency; Teemu LEHTINIEMI, BirdLife Finland; Szabolcs LENGYEL, University of Debrecen (Hungary); Juha MARKKOLA, Finland; Juha MERILÄ WWF Finland/Finnish LWfG Conservation Project; Johann MOOIJ, Aktion Zwerggans/Friends of the Earth (Germany); Vladimir MOROZOV, Russian Federation; Ingar J. ØIEN, BirdLife Norway/Norwegian LWfG Project; Nikolai PETKOV, Bulgarian Society for the Protection of Birds; Minna RUOKONEN, University of Oulu (Finland); Ivan RUSEV, Ukraine; Wolfgang SCHOLZE, Aktion Zwerggans/Friends of the Earth (Germany); SWEDISH ORNITHOLOGICAL SOCIETY/BirdLife Sweden; Sami TIMONEN, Finnish LWfG Conservation Project; Petteri TOLVANEN, WWF Finland/Finnish LWfG Conservation Project; Maire TOMING, Lesser White-fronted Goose Working Group, Estonia; Seppo VUOLANTO, Ministry of Environment, Finland; Sergey YEROKHOV, Kazakhstan.

Information on the EU LIFE Project for the Fennoscandian population, plus significant new observations of Lesser White-fronted Geese for the period May 2005 to

February 2006 (taken from records posted on <http://www.piskulka.net/>) has been added to the Second Draft.

A preliminary Second Draft (version 2.0) was circulated to Å. Andersson, G. Boere, B. Ebbinge, S. Nagy, Ivan Rusev and Maire Toming in February 2006. Version 2.1 was prepared in May 2006 taking into account the feedback received. The current version (2.2) includes a revised distribution map (Figure 1) and further updates to tables 6,7 and 8.

Compiled by Tim Jones, DJEnvironmental, UK, for BirdLife International, on behalf of the African-Eurasian Migratory Waterbird Agreement (AEWA) and the European Commission.

Cover page

An official cover page carrying the AEWA, EU and BirdLife International logos, as well as those of sponsors and co-organisers of the Lammi Workshop, will be added prior to publication. An imprint page will include citation details.

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Executive Summary

[To be added to final version]

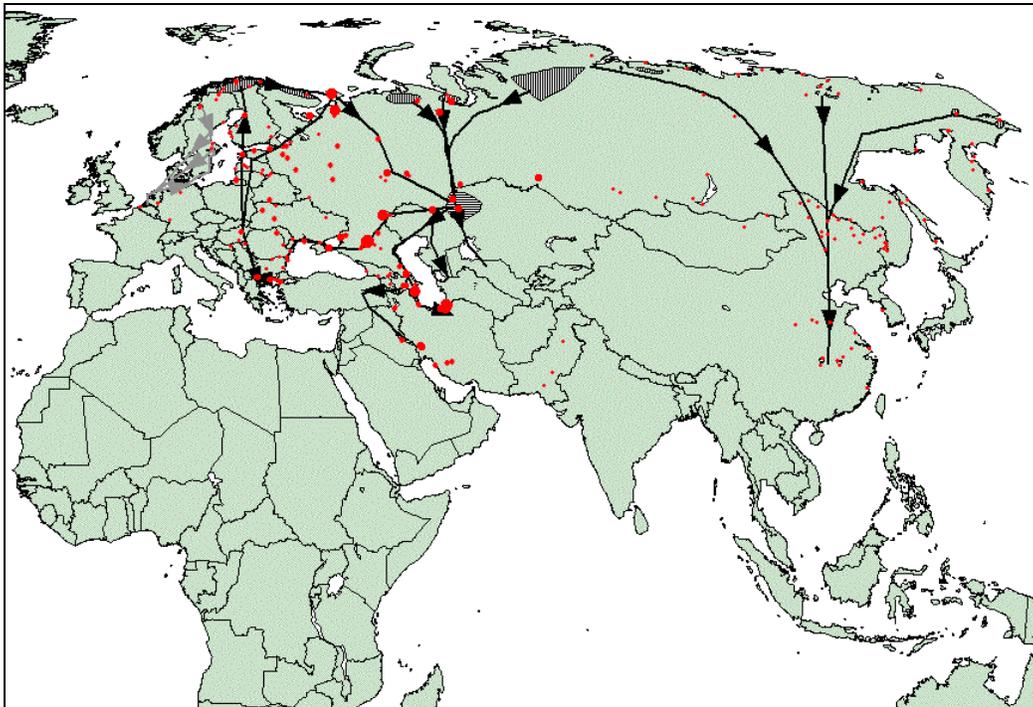
1. Biological Assessment

1.1 General Information

The Lesser White-fronted Goose *Anser erythropus* is the smallest of the geese in the genus *Anser*. The species is globally threatened, being recognised as Vulnerable by IUCN – The World Conservation Union (IUCN, 2004), and ranked by BirdLife International as ‘SPEC 1’ within Europe, denoting a European species of global conservation concern (BirdLife International, 2004). It is listed on Annex 1 of the European Union Birds Directive (79/409/EEC), in Column A of the Action Plan under the African-Eurasian Migratory Waterbird Agreement (AEWA) and in Annex II ‘Strictly protected species’ of the Bern Convention.

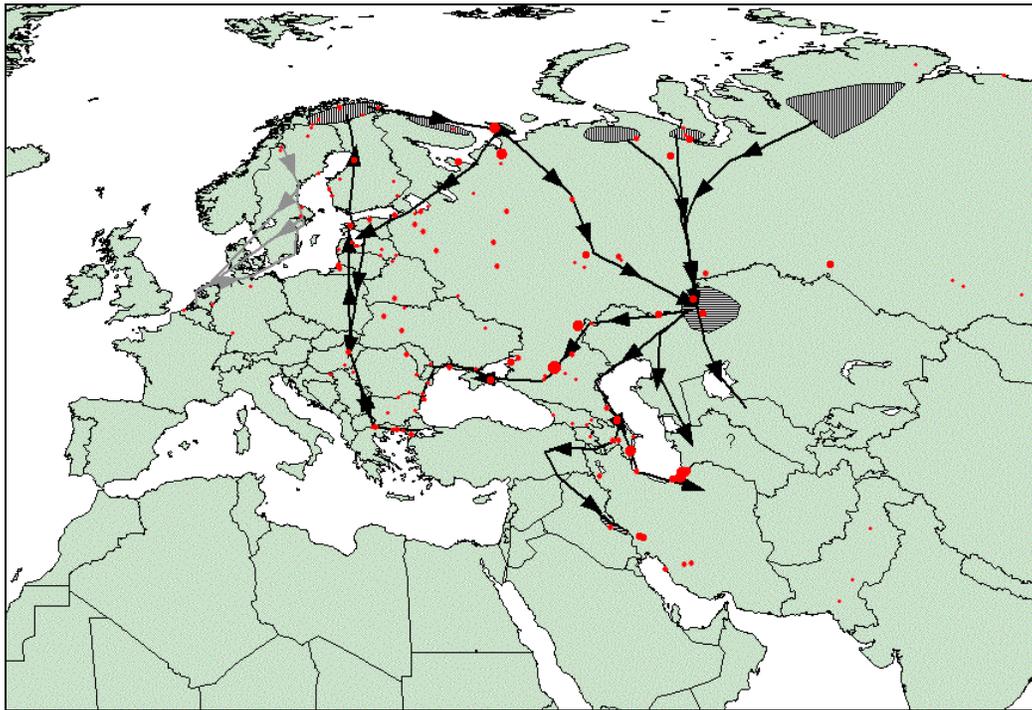
Lesser White-fronted Geese are long-distance Palearctic migrants, currently breeding discontinuously in the sub-arctic zone from northern Fennoscandia to eastern Siberia. The wintering/staging areas and migration routes are only partially known – see Figures 1a and 1b.

Figure 1a. Global Distribution of Lesser White-fronted Goose



For key, see Figure 1b, below.

Figure 1b. Western Palearctic distribution of Lesser White-fronted Goose



Important Bird Areas for Lesser White-fronted Goose are shown as red circles (size of circle is proportionate to the number of LWfG occurring). Larger regions of known importance for the species (Fennoscandian and Russian breeding grounds and staging area in NW Kazakhstan) are shaded in grey. Migration flyways are shown with black arrows (wild populations) or grey arrows (reintroduced population).

Four subpopulations can be recognised, three of which ('Fennoscandian', 'Western main' and 'Eastern main' – see section 1.2 for further explanation) are surviving components of the species' formerly more extensive breeding range. The fourth subpopulation has been created by the release of captive-bred birds within the former range of the Fennoscandian population in Sweden and by the establishment of a human-modified flyway. Two of the three wild subpopulations underwent significant declines during the twentieth century and continue to decrease, due primarily to hunting pressure and habitat loss, though a lack of systematic count data makes calculation of reliable trends difficult for the Western main subpopulation. The reintroduced population appears to be increasing slowly and shows high adult survival rates, but views differ markedly in relation to the ethical and scientific merits of captive breeding, reintroduction and flyway manipulation as conservation tools, particularly with regard to the desirable timing for applying such measures.

Among existing overview documents are the 1996 International Action Plan prepared for BirdLife International on behalf of the European Commission (Madsen 1996) and a synthesis report prepared for the Scientific Council of the Convention on Migratory Species (UNEP/WCMC 2003). Both of these documents have been fully taken into account in preparing the present Action Plan. An internet portal www.piskulka.net (operated by the Fennoscandian Lesser White-fronted Goose Conservation Project) provides regularly updated news, links and literature references for all matters concerning wild Lesser White-fronted Geese.

International meetings focusing on the conservation of the species have been held regularly, most recently in Odessa, Ukraine (March 2004), Edinburgh, UK (April 2004) and Lammi, Finland (April 2005). The technical presentations and discussions at these meetings have been drawn on in preparing this draft Action Plan.

1.2 Taxonomy

Phylum: Chordata

Class: Aves

Order: Anseriformes

Family: Anatidae

Tribe: Anserini (Vigors, 1825)

Species: *Anser erythropus* (Linnaeus 1758)

Synonym: *Anas erythropus* (additional synonyms may be found at

<http://www.worldbirdinfo.net/>)

No subspecies are recognised. However, recent genetic studies (Ruokonen et al. 2004; Ruokonen & Lumme 2000) suggest that there are three distinctive populations in the wild that can be traced back to the last ice age and which should therefore be treated as three discrete management units for conservation purposes. This position is not accepted by some other stakeholders, who argue that these three populations are artefacts, resulting from recent fragmentation – due to adverse human impacts – of a once continuous population, though there is no published scientific evidence supporting this position. In this Action Plan the three populations/subpopulations are referred to for convenience as the:

- Fennoscandian population (breeding in the Nordic countries and the Kola Peninsula of north-westernmost Russia);
- Western main population (nesting in northern Russia to the west of the Taimyr Peninsula); and
- Eastern main population (nesting from the Taimyr Peninsula eastwards and wintering in China).

This Action Plan deals only with conservation of two of the three wild populations – namely the Fennoscandian and Western main population – given that the Eastern main population does not occur within the AEW Agreement Area or the territory of Member States of the European Union. However, the Action Plan also takes into account a fourth population, derived from captive-bred birds and used for restocking in Swedish Lapland. This population migrates to winter in The Netherlands.

1.3 Population Development

Global population trend

The global population of Lesser White-fronted Goose has declined rapidly since the middle of the 20th century. The decrease in numbers has been accompanied by fragmentation of the breeding range and is continuing to affect all populations, giving rise to fears that the species will go extinct unless the downward trend is halted and reversed. Overhunting and habitat loss are considered to be the main threats (Madsen 1996; UNEP/WCMC 2003; Fox 2005).

Global population estimate

The most recent estimate of the global mid-winter population is 22,000 to 27,000 individuals, derived from combining estimates for the two western populations (Fennoscandian and Western main) = 8,000 to 13,000 individuals, and the Eastern main population = 14,000

individuals (Delany & Scott 2002). This compares with the previous global estimate of 25,000 to 30,000 individuals (Lorentsen et al. 1999), and is consistent with a continuing decline in numbers. The estimate for the Western main population is based on autumn surveys in the staging area in Kustanay region, north-west Kazakhstan (Tolvanen & Pynnönen 1998, Tolvanen & al. 2000). The estimate for the Eastern main population by Delany & Scott (2002) is an underestimate, because at the most important wintering site (East Dongting Lake nature reserve) alone, up to 16,600 individuals have been counted recently (Barter 2005).

The crash in numbers and contraction in range of the Fennoscandian population is well documented (see below), but less detailed information is available for either the Western main or Eastern main populations, which breed in Russia.

Western main population

The known breeding areas are indicated in Figure 1. The most recent population estimate for the European tundra is 500 to 800 birds. Decreasing numbers and a contracting distribution have been noted within study areas in this region, even though no significant changes/impacts have been observed on the breeding grounds (Morozov & Syroechkovskiy, 2002). However there is a fundamental lack of baseline information; for example, Syroechkovskiy et al. (2005) underline the fact that the breeding grounds of some 8,000 birds of the subpopulation have yet to be located.

Fennoscandian population

The wild Fennoscandian population in the Nordic countries (i.e. excluding the unknown number of birds nesting in the Kola Peninsula of westernmost Russia – see below) was recently estimated at only 20-30 breeding pairs and there has been a sustained, statistically significant, negative trend in the population since 1990 (Tolvanen et al. 2004b; Aarvak & Øien 2004). This continues a long-term decline, from an estimated 10,000 individuals in the early twentieth century (Norderhaug & Norderhaug 1984). There have been no recent breeding records for the wild population in Sweden, where the last confirmed breeding occurred in 1991 though the footprints of adults and young were seen at a suitable locality in 1996 (Pääläinen & Markkola 1999), and a male showing breeding behaviour was seen in the same area in 1998 (A. Andersson, M. Björkland pers. comm.). In Finland, nesting was last confirmed in 1995 (Øien et al. 2001), though birds continue to be seen in suitable breeding habitat virtually annually (P. Tolvanen pers. comm.). Figure 2 shows the overall trend in the Fennoscandian population over 25 years, but note that during the latter part of this period there was little organised searching for breeding birds in Finland and none in Sweden (P. Tolvanen pers. comm.). However, survey work in northern Sweden in 2005 generated two records for the spring migration period (end of April) and two records during the breeding season (June/July), but without any evidence of nesting (M. Björkland, pers. comm.).

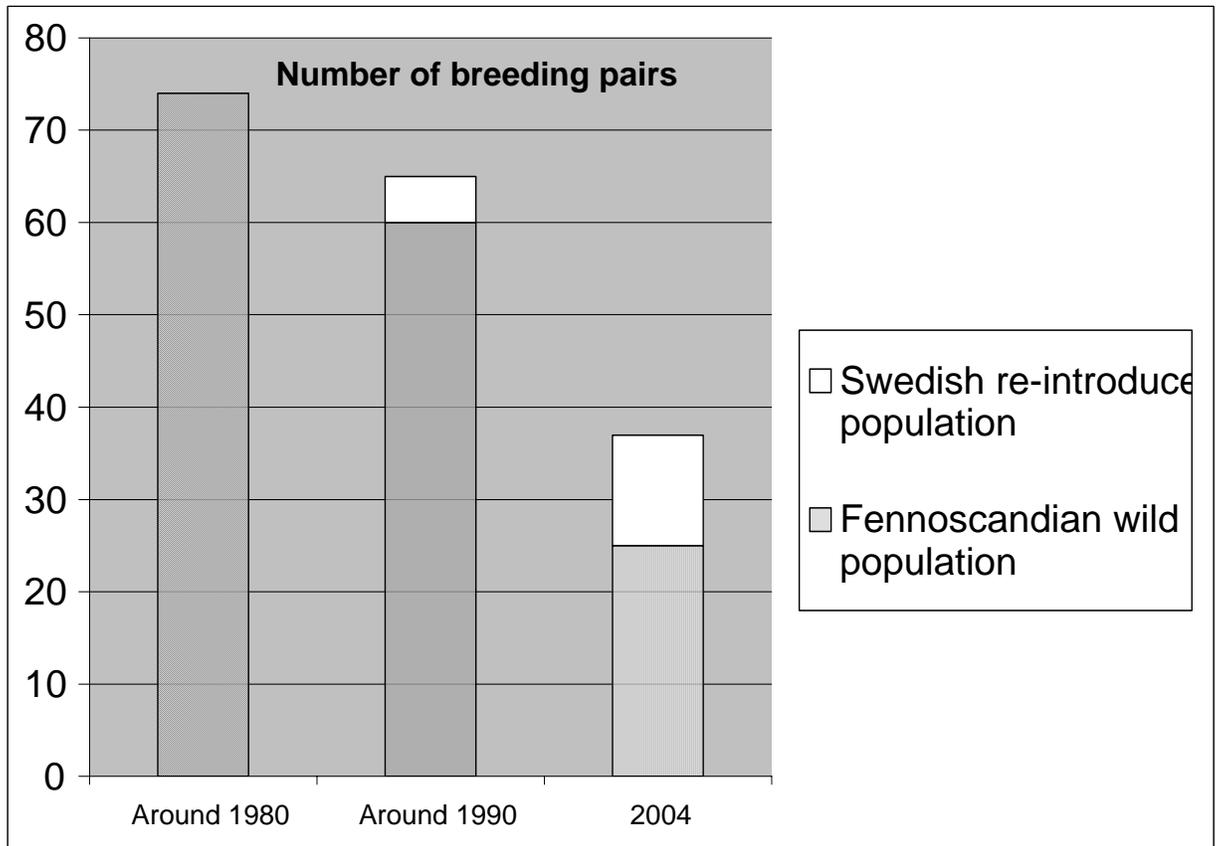


Figure 2. Trend in wild Fennoscandian Lesser White-fronted Goose numbers 1980 to 2004 (excluding birds nesting on the Kola Peninsula, Russia) and re-introduced Swedish population. Source: based on Andersson 2005, BirdLife International 2004, Norderhaug & Norderhaug 1984; updated with information provided to the Lammi workshop by I.J. Øien.

At the Valdak Marshes, northern Norway, the most important staging area in the Nordic countries, numbers of Lesser White-fronted Geese staging in spring decreased by more than one-third between 1990 and 2003 (Aarvak & Øien 2004). A decline of 65% between 2000 and 2003 was recorded at a second spring staging area, the Bothnian Bay coast of Finland (Markkola et al. 2004), though this probably also reflects changes in migration routes, as well as random effects such as weather conditions.

Aikio et al. (2000) concluded that the status (including precise breeding and moulting areas, numbers and trends) of birds nesting on the Kola Peninsula of north-westernmost Russia was unclear and that more detailed research was required. A field expedition in June 2001 gathered some additional information and the report on this work concludes: “it is still possible that the total Lesser White-fronted Goose breeding population of the whole Kola peninsula could be perhaps some tens of pairs, taking into account the huge area of potentially suitable and mostly intact breeding habitat” (Timonen & Tolvanen 2004).

Reintroduced population in Swedish Lapland

A Lesser White-fronted Goose captive-breeding programme was established in Sweden by Lambart von Essen in the late 1970s and the first releases into the wild took place in 1981 (e.g. von Essen 1996). The breeding stock was built up mainly with birds and eggs originating

from waterfowl collections in the UK and continental Europe. During the period 1981 to 1999, 348 captive-bred Lesser White-fronted Geese were released in Swedish Lapland. Barnacle Geese *Branta leucopsis* were used as foster-parents and the reintroduced Lesser White-fronted Geese followed their foster parents to wintering grounds in The Netherlands. The birds using this artificially established migration route, which avoided countries with unsustainably high hunting pressure, show a high survival rate. A total of 66 young fledged from breeding attempts in the release area up to 1999. (Tegelström et al. 2001). The number of fledglings reared between 1999 and 2003 ranged from 13 to 20 annually, with a total for the five-year period of 83 fledglings from 29 broods (Andersson 2004; Andersson 2005). Between 70 and 80 geese of the reintroduced population were recorded in The Netherlands during the winters of 2003/2004 and 2004/2005.

In 1999, 30-40 Lesser White-fronts of mostly Belgian origin were released in central Sweden and guided by ultra-light aircraft to Germany. Most were recaptured when they returned to the release site, but a few remained free-flying and have been observed in Finland. No breeding by these birds has been reported (L. Kahanpää pers. comm.).

No captive-bred geese were released during the period 2000–2004, following the discovery that some birds in the captive breeding stock were carrying genes of Greater White-fronted Goose *Anser albifrons* (Andersson 2004). Analysis of the nuclear genetic variation showed that the genetic differentiation between the wild Fennoscandian population and the captive breeding stock is three times as large as between the wild populations of Fennoscandia and Central Asia. Thus, the captive stock does not represent the original Fennoscandian population from a genetic perspective (Ruokonen and Andersson, in prep.).

Finnish captive-breeding and reintroduction programme

In 1986 a captive breeding population was established in Finland (Markkola et al. 1999). Between 1987 and 1997 about 150 captive-bred Lesser White-fronts were released in Finnish Lapland, but high mortality occurred and no breeding attempts were made by the reintroduced birds. This reintroduction programme did not aim to modify goose migration routes (Markkola et al. 1999). Releases were stopped from 1998 (Markkola et al. 1999), though Lesser White-fronted Geese continued to be bred in captivity.

In July 2004, three Lesser Whitefront goslings were released contrary to the moratorium in northern Finland (together with their Barnacle Goose foster parents, the male of which was satellite-tagged). One of the young Lesser White-fronts was sighted among Barnacle Geese in The Netherlands in December 2004, though not in the company of its foster parents, or of reintroduced Swedish birds. There were plans to release between one and three similar families in 2005, subject to the outcome of a legal challenge over the legitimacy of the 2004 release, but a lack of suitable birds for release prevented this. (L. Kahanpää pers comm; see also the website of the Friends of the Lesser White-fronted Goose www.math.jyu.fi/~kahanpaa/Kotisivut/AnserErythropus/LWfG.html).

New captive-breeding and release initiative

A new international, German-based project aims to breed up to 400 Lesser White-fronted Geese in four years and to release them in Lapland. It is intended to use ultra-light aircraft as ‘foster parents’ to guide the birds to wintering grounds in the Lower Rhine area of Germany. Intensive experimental work has already been conducted over the course of six years (source: Operation Lesser White-fronted Goose/Aktion Zwerggans, www.zwerggans.de).

On 20 October 2005 the Swedish Environmental Protection Agency decided to issue a permit to Aktion Zwerggans, subject to certain conditions being met, for: (a) the release in Västerbotten county of up to 25 Lesser White-fronted Geese in both 2006 and 2007; and (b)

implementation of a pilot project on the use of ultra-light aircraft as a means of guiding the released geese on a new flyway through Sweden (and then through Denmark and north-west Germany to the Lower Rhine). However, plans to import wild Lesser White-fronted Geese from Russia, to use as the basis for a ‘genetically clean’ breeding stock, have been suspended due to EU restrictions on bird movements in response to concerns about the spread of the H5N1 strain of avian influenza (T. Larsson pers. comm.).

In November 2005, the Scientific Council of the Convention on Migratory Species concluded, as part of its wider recommendation on Lesser White-fronted Geese (see pages 28–29), that: *“For the present, we do not support the introduction of Lesser Whitefronts into flyways where they do not occur naturally. We have borne in mind the powerful argument concerning the improved safety of birds in these flyways, as well as practical considerations, such as current proposals that could quickly be put into effect. However, we consider that modifying the natural behaviour of Lesser Whitefronts in this respect, as well as unknown ecological effects in the chosen new flyways, and other such considerations, make this technique inappropriate until such time as it may become essential, particularly when major disruption or destruction occurs of key components of the natural flyways. We do not believe that to be the case at present.”* The Swedish-German initiative described above is clearly not in conformity with this conclusion.

1.4 Distribution Throughout the Annual Cycle

The three wild subpopulations (see section 1.2 Taxonomy) and the reintroduced Swedish population have differing migration routes and wintering grounds, though there is known to be partial overlap in the case of the Fennoscandian and Western main populations. The main flyways are indicated in Figure 1.

Fennoscandian population

Satellite tracking has shown that non-breeding birds from the small Fennoscandian population undertake an autumn migration eastwards to the Kanin Peninsula, Kolgujev Island (and even as far as the Taimyr Peninsula) in northern Russia (Aarvak & Øien 2003). Successful breeders moult on the breeding grounds, but then also undertake a migration eastwards to the Kanin Peninsula. There is subsequently a migratory divide, with some birds heading south-west, presumably through western Russia (Lake Ladoga region), western Estonia, Poland and eastern Germany, and then south-east, via a major staging area in Hungary (Hortobágy) and Greece (Lake Kerkini) to wintering grounds in north-east Greece (Evros Delta), adjacent to the Turkish border. There is also evidence that these birds visit the Turkish side of the Evros Delta and/or other sites in westernmost Turkey during the winter. Other birds migrate eastwards, crossing the Ural mountains, and then turning south through the Ob valley to north-west Kazakhstan and onwards to presumed Black Sea and Caspian Sea wintering areas, thought to be shared with the Western main population (Lorentsen et al. 1998; Aarvak & Øien 2003). The Lesser White-fronts wintering on the Black Sea coast of Bulgaria and Romania, scattered among flocks of Greater White-fronts, are thought to belong to the Western main population.

Known spring and autumn staging areas around the Baltic Sea and close to the breeding/moulting grounds are now monitored on a regular basis. Important spring staging sites in the region include Matsalu, Estonia (Tolvanen 1999; Pynnönen & Tolvanen 2001; Tolvanen, Toming & Pynnönen 2004), the Bothnian Bay area, near Oulu in Central Finland (e.g. Markkola, 2001) and the Valdak Marshes, Porsangen Fjord, Norway. The major staging sites in autumn include the Valdak Marshes (Aarvak & Øien 2001).

Western main population

Ornithological field coverage is patchy at best in most of the countries used by the Western main population, while the areas and distances involved are sometimes vast and access is frequently difficult. Satellite tracking has provided vital clues, but significant gaps still remain in relation to the principal flyways/staging sites and the main wintering grounds.

Known staging areas for birds from the Western main population include parts of the Ob river valley (Russia), and the lakes and agricultural land of Kustanay Oblast, north-west Kazakhstan, where Lake Kulykol is of particular importance (Tolvanen & Pynnönen 1998; Tolvanen et al. 2001, Yerokhov et al. 2000) and the Sultan-Aksuat lakes system in the western part of neighbouring Northern-Kazakhstan Oblast, (Yerokhov et al. 2005). The main wintering areas are unknown but thought to be around the northern Black Sea coast, the southern Caspian Sea, inland wetlands of Azerbaijan, and the inland wetlands of Iran and Iraq, especially the Mesopotamian Marshes. During the winter of 2004/2005, satellite tracking of one individual ringed and satellite-tagged in the Polar Urals region, northern Russia, in August 2004, has confirmed that at least some birds continue to winter in Iraq (Morozov & Aarvak 2004, Øien & Aarvak 2005; <http://www.piskulka.net/Satellite%20tracking.htm>). Limited winter count data are available for sites in Turkmenistan and Uzbekistan that formerly held significant numbers of wintering Lesser White-fronts.

Small numbers of vagrant Lesser White-fronted Geese occur regularly in Germany, scattered among flocks of Greater White-fronts. There are indications that at least some of these birds may belong to the Western main population (Mooij & Heinicke in prep.), while satellite tracking in the 1990s showed that birds from the Fennoscandian population have occurred in East Germany.

Reintroduced population

As described above, a human-created flyway has now been established between the release area for captive-bred birds in Swedish Lapland and The Netherlands, crossing north-west Germany (see Figure 1b). There are sporadic records from other countries, often of individual birds mixing with flocks of other goose species, mostly Barnacle Geese. All released individuals have been colour-ringed, but as there have been no releases since 1999 and because the offspring of released birds are not ringed, the proportion of colour ringed birds in the population has gradually declined. Nevertheless, colour-ringing has enabled a relatively comprehensive picture of their movements to be established.

Summary by Principal Range State

Lesser White-fronted Geese occur regularly in at least 19 States within the European Union and/or AEWA Agreement Area (Table 1). These are referred to as 'Principal Range States' in the remainder of the Action Plan and have the major responsibility for its implementation. A country is listed as a Principal Range State where one or more Important Bird Area (IBA) for Lesser White-fronted Goose has been identified within its territory. IBAs have themselves been identified on the basis of internationally accepted criteria published by BirdLife International. In the case of countries where IBAs have not been formally identified, it is suggested that a Principal Range State EITHER holds one or more sites where at least 15 staging/wintering individuals are recorded regularly (e.g. Uzbekistan) OR where a combination of historical counts and recent satellite data provide strong evidence of the country's importance (e.g. Iraq). Lesser White-fronted Geese occur as vagrants or irregular visitors in many other countries. For further details, see Chapter 2 and Annex 2.

Table 1: Occurrence of Lesser White-fronted Goose in Principal Range States of the European Union and AEWA Agreement Area¹

Fennoscandian subpopulation			
Range State	Breeding	Staging	Wintering
Bulgaria	NO	YES (?)	YES (?)
Estonia	NO	YES	NO
Finland	[YES] (wild population possibly extinct)	YES	NO
Germany	NO	YES	NO
Greece	NO	YES	YES
Hungary	NO	YES	YES (occasional)
Kazakhstan	NO	YES	NO
Lithuania*	NO	YES (?)	NO
Norway	YES	YES	NO
Poland*	NO	YES (?)	YES (occasional)
Russian Federation	YES (Kola Peninsula only)	YES	NO
Sweden	FORMERLY (wild population possibly extinct)	FORMERLY (wild population probably extinct)	NO
Turkey	NO	YES (?)	YES (?)
Ukraine	NO	YES (?)	YES (?)
Reintroduced population			
The Netherlands	NO	NO	YES
Sweden	YES	YES	NO
Western main subpopulation			
Range State	Breeding	Staging	Wintering
Azerbaijan	NO	YES	YES
Bulgaria	NO	YES	YES
Germany ²	NO	YES (?)	NO (?)
Islamic Republic of Iran	NO	YES (?)	YES (?)
Iraq	NO	YES (?)	YES
Kazakhstan	NO	YES	YES (?)

¹ The available information for Lithuania and Poland makes these ‘borderline’ cases for listing as Principal Range States. They are included here on a provisional and precautionary basis, but further discussion and data are required to clarify their status in the final text of the Action Plan.

² Status unclear; though recorded annually, there is a mixture of birds from the reintroduced population (most records in western Germany), vagrants from the Western main population and perhaps regular migrants from the Fennoscandian population in eastern Germany.

Poland*	NO	YES (?)	YES (?)
Romania	NO	YES (?)	YES (?)
Russian Federation	YES	YES	NO
Turkey	NO	YES	YES (?)
Turkmenistan	NO	YES (?)	YES (?)
Ukraine	NO	YES	YES
Uzbekistan	NO	YES	YES

(?) = uncertain and/or significant shortage of information

1.5 Survival and Productivity, Life Cycle and Habitat Requirements

The following is a brief summary of the key points influencing the Action Plan.

Survival and productivity

Some limited productivity and survival data are available for the Fennoscandian population, but patchy count data and the low number of ringing recoveries means that evidence for the Western main population is essentially anecdotal.

Lampila (2001) demonstrated that low survival was the key factor determining the negative population development for Fennoscandian Lesser White-fronts.

Further research has shown that for the Fennoscandian population both productivity and adult survival is relatively high in comparison with other Arctic-breeding geese, while survival of 1st calendar year (1cy) and 2nd calendar year (2-cy) birds is relatively poor. Recent modelling work shows that increases in both adult and 1-cy/2-cy survival are required in order for the current population decline to be arrested and reversed. A very small increase in adult survival can have a greater impact on the overall population level than an apparently more significant increase in juvenile/immature survival. (J. Markkola, P. Lampila pers. comm; Markkola and Lampila 2003). Hunting pressure is considered the main cause of adult mortality.

In future productivity of Lesser White-fronted Geese could be assessed by counting the proportion of juvenile birds in autumn staging flocks at Porsanger Fjord, Norway (Fennoscandian population) and NW Kazakhstan (Western main population). However, this would require a long-term, intensive and consistent effort. Calculating survival rates would be more challenging still, since it would require counts in both spring and autumn. This is something already being done for the small Fennoscandian population, but would be a major undertaking for the Western main population.

In contrast to the poor adult survival rate in the wild Fennoscandian population, adult survival within the reintroduced/restocked Swedish population appears to be high, though further published data/analyses are required to indicate the underlying reasons for this. On the other hand, there appears to be evidence that productivity of the reintroduced population is lower than that of the wild Fennoscandian population.

Life cycle

Because Lesser White-fronted Geese are long-distance migrants, international cooperation is a prerequisite for effective conservation. Furthermore, as breeding occurs in the sub-arctic zone and wintering in semi-arid/arid zone countries, the annual life cycle is prone to the influence of weather, leading to substantial variation in productivity between years. Given that there are significant gaps in knowledge about the movements of the Western main

population, there is a corresponding lack of detail concerning important aspects of the life cycle of these birds, whereas the Fennoscandian population is relatively well known.

Habitat requirements

Breeding occurs in sub-arctic tundra and forest-tundra, which in spite of extensive land-use and the imminent threats posed by climate change (see Chapter 3), has remained relatively unaltered (i.e. adverse impacts have been localised if the entire range is taken into consideration) during the period of the species' rapid decline. Wetlands (especially freshwater or brackish lakes and marshes) semi-natural grasslands and cultivated land are used on the staging and wintering grounds and all of these are known to have undergone considerable change in Europe and Central Asia during the last fifty years.

More detailed information on these elements of the biological assessment can be found in Annex 1.

2. Available Key Knowledge

Annex 2 contains a table showing the latest quantitative and qualitative data (and corresponding sources) available for each of the 'Principal Range States' (see section 1.4 for definition) as well as a country-by-country text summarizing the current state of knowledge in both 'Principal Range States' and 'Other EU/AEWA countries'. The Annex reflects the rapid (and ongoing) increase in the quantity and quality of 'Key Knowledge' about the species during the last ten years as a direct result of concerted field research and, especially, satellite tracking programmes. The following is a brief summary for the Principal Range States only; additional references/sources are cited in Annex 2.

Azerbaijan

Formerly wintered in large numbers on the shores of the Caspian Sea (c.25,000 as recently as the late 1970s/early 1980s), but major decline since, with 1,500 to 7,000 estimated in 1996. The species' present status is unclear, owing to a lack of systematic count data. However, it seems likely that the country may remain an important wintering site for the Western main population, given that in March 2001 large staging flocks were found in the Kyzyl Agach area (565 birds) and in the Ag-Gel Zapovednik (1,800 - 2,000 birds) (Heinicke & Ryslavy 2002). A satellite-tagged bird staged in Azerbaijan for several days in November 2004 before wintering in Iraq.

Bulgaria

Occurs regularly in small numbers at goose staging and wintering sites on the Black Sea coast, notably Lakes Shabla and Durankulak, where up to 100 birds have been estimated to occur in some years (Petkov, Oien, Aarvak, 1999). The species also occurs in the Danube floodplain, notably Lake Srebarna and there are sporadic observations in other parts of the country. The fact that the species is recorded during casual birdwatching at goose wintering sites suggests its regular presence and it is thought that up to 100-150 birds may stage and over-winter when large numbers of geese reach Bulgaria. While satellite tracking has shown that birds from the Fennoscandian population migrate across Bulgaria to reach their Greek/Turkish wintering grounds, it is thought that the Lesser White-fronts wintering on the Black Sea coast, scattered among flocks of Greater White-fronted Geese, belong to the Western main population (S. Dereliev, N. Petkov, pers. comm.).

Estonia

The Matsalu Bay region and certain other sites in western Estonia (see e.g. Tolvanen et al. 2004a) are important spring staging areas for the wild Fennoscandian population. Up to 50 individuals have been counted in the region during recent springs, including colour-marked birds ringed at the Valdak Marshes in Norway. It is thought that small numbers also occur regularly in autumn (especially in the Nigula area of south-west Estonia), though more information is needed for this period of the year.

Finland

No breeding of wild Fennoscandian birds has been confirmed since 1995; the current estimate for the breeding population is 0-5 breeding pairs (P. Tolvanen and J. Merillä, pers. comm., Väisänen & Lehtiniemi, 2004). A restocking programme was implemented between 1989 and 1998, but suspended due to concerns about the genetic structure of the captive breeding population (see Markkola et al. 1999). Three Lesser Whitefront goslings were released in 2004 in contravention of the moratorium on releases. The Bothnian Bay coast, close to Oulu,

has been recognised as an important spring staging area and was formerly also an autumn staging area.

Germany

The species passes through Germany in small numbers. Niethammer (1938) stated that Lesser White-fronted Goose was a regular migrant in the northern part of Germany, but in smaller numbers than Greater White-fronted Goose. Preliminary results from recent studies show that the species is still regularly observed in the northern part of the country with a frequency of 50-100 observations per year in past decades (Mooij 2000), though these figures include both wild and reintroduced birds – see below. Data indicate that birds from more than one population migrate through Germany, with some vagrant individuals of the Western main population also wintering (Mooij & Heinicke in prep.). Birds of the wild Fennoscandian population tagged with satellite transmitters have been recorded in Mecklenburg-Vorpommern and Sachsen-Anhalt (eastern Germany) during autumn migration.

Birds from the Swedish reintroduction programme have been recorded increasingly frequently. A programme is currently being developed to modify the flyway of reintroduced birds to a wintering site in the Lower Rhine area of Nordrhein-Westfalen.

Greece

Lake Kerkini, Lake Mitrikou and the Evros Delta are key staging and/or wintering sites for the Fennoscandian population (Kazantzidis, S. & Nazirides, T. 1999). For example, 52 Lesser White-fronted Geese were recorded in the Evros Delta in early January 2004. One of these birds had been colour-ringed in northern Norway. In January 2005, eight colour-ringed individuals, ringed at the Valdak Marshes in Norway, were recorded in the Evros Delta (Didier Vangeluwe pers. comm., per T. Aarvak). Up to 40 birds have been recorded from the area in winter 2005/2006.

Hungary

Although counts are far lower than the tens of thousands of birds recorded before the 20th century crash of the Fennoscandian population, Hungary – notably Hortobágy National Park – still supports significant numbers of staging Lesser White-fronted Geese, with spring and autumn counts for 2001 and 2002 ranging from 32 to 59 individuals. However, it is thought likely that the total number of individuals occurring each year in Hungary may well be higher than these figures suggest (see Annex 2).

Iran, Islamic Republic of

Several thousand birds wintered until the late 1970s, but since then only small flocks have been recorded – though coverage has been very sporadic and limited in extent.

Iraq

Formerly a numerous winter visitor. There is anecdotal information of a substantial decline but no quantitative data. A satellite-tagged bird ringed in northern Russia in July 2004, was tracked to Iraq during the winter of 2004/2005, providing the first proof of recent years that the species continues to winter in Iraq.

Kazakhstan

The lakes and agricultural land of the Kustanay region of north-west Kazakhstan are known as a major staging area for Lesser White-fronted Geese, in both spring and autumn. During

the period 1996-2000, the highest estimates, based on random sampling of staging goose flocks, were c. 8,000 – 12,000 individuals (Tolvanen & Pynnönen 1998, Tolvanen & al. 1999). In addition, small flocks and individuals are recorded during autumn migration in central Kazakhstan (Tengiz-Kurgaldgin lakes system) and southern Kazakhstan (Syrdarya River and Aral Sea basins) – S. Yerokhov pers. comm. Colour-marking and satellite telemetry have shown that birds from both the Fennoscandian and Western main subpopulations occur in Kazakhstan.

Netherlands

The reintroduced Swedish population migrates to wintering grounds in The Netherlands. The winter population currently numbers some 90-100 individuals (E. Osieck, pers. comm.).

Norway

The most recent published estimate for the Fennoscandian population (excluding the Kola Peninsula) is 20-30 breeding pairs. The breeding areas of these birds are not known at the moment. There is one important staging area in northern Norway – the Valdaik Marshes. Another staging area is the Varangerfjord area, but the significance of this site has decreased during the last 10 years. Monitoring at both sites has shown a continued decline in numbers.

[Compiler's note: applying the criteria outlined in section 1.4, Poland and Romania are 'borderline' as Principal Range States and should probably be excluded from this section.]

Poland

Very scarce migrant, possibly less frequent recently (Tomialojc, 1990). As part of the flyway of the migrating Fennoscandian population, Poland supports a few staging Lesser White-fronted Geese. Some of the geese satellite-tagged in 1995 were tracked flying over Poland. One bird tagged in 1997 spent the winter in Poland and eastern Germany (Øien & Aarvak, 2001; Aarvak & Øien 2003), but little additional information is available.

Romania

An unknown number of Lesser White-fronted Geese, associating with Greater White-fronted Geese, pass through south-east Romania. The highest number recorded was 1,000 in 1989, though most experts have expressed serious doubt about the reliability of this figure. The Lesser White-fronts wintering on the Black Sea coast of Bulgaria and Romania, scattered among the flocks of Greater White-fronted Geese, are thought to belong to the Western main population.

Russian Federation

The part of the Fennoscandian population nesting on the Kola Peninsula of northwesternmost Russia may number some tens of pairs. The Kanin Peninsula is thought to be a key autumn staging area for the whole Fennoscandian population.

A recent estimate put the breeding population for the European tundra (part of the Western main subpopulation) at 500 to 800 birds. Low numbers, a declining trend and contracting distribution have been noted, but with little habitat change. The wintering grounds of 80% of the subpopulation are unknown. Satellite telemetry has shown the Ob river valley to be a key flyway to the staging area in Kustanay region of Kazakhstan, and some staging areas are known from the eastern shores of the Sea of Azov. There are sporadic/anecdotal data from other possible staging areas.

Sweden

Formerly bred in large numbers, but the wild population is now thought to be extinct. There have been no confirmed breeding records during the last 10 years, though there continue to be sporadic sightings (see section 1.3 for further information). Given the extent and remoteness of suitable habitat, it is possible that a few nesting pairs remain. Since 1977 a captive-breeding and reintroduction programme has resulted in the establishment of a free-flying population (breeding in Swedish Lapland and wintering in The Netherlands), currently estimated to be 80-90 birds, with 10-15 breeding pairs. No releases have occurred since 1999, following the discovery of genes of Greater White-fronted Goose among the captive stock (Ruokonen et al. 2000, Ruokonen and Andersson, in prep.). Nevertheless, the population continues to show a moderate rate of increase.

Turkey

Rare winter visitor, occurring regularly in very small numbers. A satellite-tagged bird of the Western main population ringed in northern Russia in August 2004, staged briefly in eastern Turkey in late November 2004 before wintering in Iraq. There have been four other records since 1980. Observations show that the Fennoscandian Lesser White-fronts wintering in northern Greece, especially the Greek side of the Evros Delta, also use the Turkish side of the Delta, and possibly other wetlands in westernmost Turkey.

Turkmenistan

It is thought that significant numbers of the Western main subpopulation may winter in Turkmenistan, but there is a lack of recent count data. 400 birds were recorded by the International Waterbird Census in March 1999.

Ukraine

Occurs as a migrant and winter visitor, but there is a lack of systematic counts. Almost 600 birds were counted in Crimea in winter 1999/2000 and 1,000 birds in the Dniester delta, Odessa region (in the vicinity of the Ukrainian-Moldovan border), in the winter of 2001 (I. Rusev pers. comm.)

Uzbekistan

It is thought that some Lesser White-fronted Geese migrate along the shores of the Aral Sea. Recent publications have documented wintering sites close to the Afghan and Tajikistan border areas. The exact size of the wintering population is unknown, but surveys conducted between 2001 and 2005 suggest that numbers are small – perhaps no more than several hundred (Elena Kreuzberg, pers. comm.).

3. Threats

3.1 Background to this section

The 1996 ‘International Action Plan for the Lesser White-fronted Goose’ (Madsen, 1996) states that: “Throughout its range the population has undergone a dramatic decrease within the last 50 years.... The reasons for the decline are not known, but are generally believed to be found in the staging or wintering areas”. Madsen listed the following issues under the heading of “Threats and limiting factors”:

- **Hunting** – unknown, probably high
- **Predation** – unknown, probably high
- **Disturbance and habitat loss on the breeding grounds** – unknown, probably low; helicopter disturbance locally high
- **Habitat loss on the staging/wintering grounds** – unknown

These issues are described in more detail in the body of the Action Plan, which concludes “...the combination of negative factors potentially acting on the breeding grounds is probably not sufficient to explain the rapid rate of decline that took place in the 1950s. Probably the sharp decline has been caused primarily by negative factors in the winter quarters, i.e. habitat loss and excessive hunting”.

The ‘Report on the status and perspective of the Lesser White-fronted Goose *Anser erythropus*’ (UNEP World Conservation Monitoring Centre, 2003) submitted to the 12th Meeting of the Scientific Council of the Convention on Migratory Species in April 2004 includes a section entitled ‘Actual and potential threats’. This is further sub-divided into:

- Habitat degradation/loss (with paragraphs on the situation in China – dam construction, Greece – past drainage for agriculture, Uzbekistan – shrinking of Aral Sea, and Fennoscandia – overgrazing)
- Exploitation: direct and incidental (with paragraphs on the hunting situation in Bulgaria, China, Greece, Kazakhstan and Russian Federation)
- Other threats (with paragraphs on predators, human activities and issues relating specifically to China and Norway).

The UNEP/WCMC report concludes that “Exploitation by man is the most severe threat throughout the region and affecting all flyways. Most severe is the hunting practised in Russia, China and Kazakhstan.... More than 95% of the Lesser White-fronted Goose population is being affected... These three countries are not Parties to CMS, leading to difficulties in the implementation of international action”.

The established format for AEWA International Single Species Action Plans requires a general description of the threats facing the Lesser White-fronted Goose, together with an appraisal of the relative importance of each threat to the global population and to the three wild subpopulations (see Table 2) according to the following criteria:

Critical	a factor causing or likely to cause very rapid declines (>30% over 10 years);
High	a factor causing or likely to cause rapid declines (20-30% over 10 years);
Medium	a factor causing or likely to cause relatively slow, but significant, declines (10-20% over 10 years);
Low	a factor causing or likely to cause fluctuations ;
Local	a factor causing or likely to cause negligible declines ;

Unknown a factor that is likely to affect the species but is not known to what extent.

A graphical representation – or ‘problem tree’ – of the threats affecting the species and how these threats are related to one another is also required.

The international expert ‘Workshop on the Protection of the Lesser White-fronted Goose’ held in Lammi, Finland, 31 March – 2 April 2005 reviewed the threats facing the species and provided the basis for these elements of the Action Plan.

3.2 Overview of species threat status (see also Table 3, page 25).

The global population is currently estimated at 22,000 to 27,000 individuals (Delany & Scott, 2002). The following are the current internationally recognized threat status for the species at global and European levels:

2004 IUCN Global Red List category as evaluated by BirdLife International – the official Red List Authority for birds for IUCN: Vulnerable (IUCN 2004).

2004 IUCN Global Red List justification: “This species has suffered a rapid population reduction in its key breeding population in Russia, estimated at between a c.30-49% decline in the last 10 years, which qualifies it as Vulnerable. Equivalent declines are predicted to continue over the next 10 years. The small Fennoscandian population has undergone a severe historical decline.”

At European level, the species fulfils criterion C1 (population size estimated to number fewer than 2,500 mature individuals and an estimated continuing decline of at least 20% within five years or two generations, whichever is longer) for categorisation as ‘Endangered’.

BirdLife International species status: SPEC 1 – European species of global conservation concern (BirdLife International 2004).

Tolvanen et al. 1999 argued that the conservation status of the Lesser White-fronted Goose in Europe had been underestimated as a consequence of over-optimistic population assessments, and a failure to calculate count thresholds that differentiate between the different Lesser White-front subpopulations.

3.3 Description of Threats

There is strong evidence that the most important factors driving the continued decline in numbers and fragmentation of range of the Lesser White-fronted Goose (both the Fennoscandian and Western main subpopulations) are those that cause high mortality among fully grown birds. It is also clear that these factors operate primarily on the staging and wintering grounds, given that studies in the breeding range have failed to detect any adverse impacts that are of significant magnitude to explain the population crash. Although the species is legally protected, on paper at least, across virtually its entire range, hunting is considered to be the primary cause of mortality and the single most important threat that this Action Plan has to tackle. The loss and degradation of suitable habitat is currently considered to be an important but secondary threat to survival of full-grown birds. However, its significance as a likely driver for the historical declines and range changes during the 20th century should not be underestimated.

Because of the dramatic decline of population numbers, there is a view that the species is likely to have suffered significant loss of genetic diversity, which might threaten reproductive success and ultimately viability of the wild populations. However, while there does not appear to be any published scientific evidence of such problems, Ruokkenen et al (2004) argued that

genetic diversity in the Fennoscandian population was actually increasing due to inflow of genes from the Western main population. This would be in conformity with the hypothesis that birds from the dwindling Fennoscandian population are increasingly likely to pair with birds from the Western main population where the two populations' flyways overlap.

In recent years, concern has been raised about the potential for reintroduced birds originating from captive-bred stock to introduce alien genes, notably those of Greater White-fronted Goose and Greylag Goose *Anser anser*, into the wild population. This issue is dealt with in detail on pages 28–29.

The completion of a fully comprehensive threat assessment is limited by the fact that knowledge of the species' numbers, distribution and movements is still far from complete.

Further details of each of these issues are provided below.

(a) Threat factors causing high mortality of fully grown birds

Hunting

Breeding grounds

Importance: Medium

Illegal spring hunting occurs in many areas of the Russian breeding grounds. Illegal round-ups of moulting birds also occur in Russia.

In one of the municipalities where breeding occurs in Norway, spring hunting of ducks is legal. However, both geese (probably including some Lesser White-fronts) and swans are also shot during this period, albeit illegally. Spring hunting therefore poses an additional threat to the Fennoscandian population and should be stopped (T. Aarvak, pers. comm.).

Staging/wintering grounds

Importance: Critical

Hunting has a critical impact on the species as whole; it is thought that more than 95% of the global population is affected by over-hunting. Within the AEWa area, hunting pressure is extremely high in both the Russian Federation and Kazakhstan. Over-hunting in China is also a key threat to the East Asian population (UNEP/WCMC, 2004). Hunting pressure comes from various sources, including subsistence hunters and sport hunters, the latter category also involving 'hunting tourism' whereby hunters (generally from richer western countries) pay to hunt desirable quarry species, often where hunting controls are poorly enforced. It should be underlined that Lesser White-fronted Goose is officially protected by hunting legislation throughout virtually its entire range. Illegal hunting (whether subsistence or sport) is therefore the key issue. In many cases, it must be assumed that accidental shooting is the reason for high mortality, when Lesser Whitefronts are mixed with the very similar 'look alike' species Greater White-fronted Goose *Anser albifrons*, which is an important legal quarry species, and hunters cannot distinguish between the two (when birds are in flight it is even difficult for experienced ornithologists to separate the species). Additionally there are high levels of ignorance and/or disregard of the applicable hunting laws.

High hunting pressure has been observed at many locations in Russia and Kazakhstan. The loss in Kazakhstan of birds fitted with satellite transmitters and rings has supported the anecdotal evidence that hunting pressure is especially high here (UNEP/WCMC, 2004).

Indirect pressure as a result of hunting includes disturbance caused by hunting for other species and may lead to loss of condition, thereby contributing to adult mortality. This type of disturbance has occurred, for example, at traditional autumn staging areas in Finland (UNEP/WCMC, 2004) even though the Lesser White-fronted Goose itself is strictly protected

under the Finnish Nature Conservation Act. Heavy hunting pressure is common in the coastal wetlands along the western shore of the Black Sea where Lesser White-fronted Geese winter.

There are indications that Lesser White-fronts are being accidentally shot by goose hunters at Porsangen Fjord in Norway during the birds' autumn staging period. *A. albifrons* does not occur in this area (only *A. anser*, *A. erythropus* and *A. fabalis*), and only *A. anser* is legal quarry. Nevertheless, it appears that two juveniles were killed in autumn 2005.

The reintroduced Swedish/Dutch population is not subject to significant hunting pressure and this has been one of the main arguments used in favour of reintroduction/restocking and flyway modification projects.

Poisoning

Staging/wintering grounds

Importance: Local

There is anecdotal evidence from Bulgaria of both Lesser and Greater Whitefronts being killed unintentionally as a secondary impact of rodenticide use on agricultural land, though it is unclear whether the initial poisoning occurred on Bulgarian or Romanian territory. It is known that poisoned baits are used in China specifically to kill geese, including Lesser Whitefronts of the East Asian subpopulation, but there is no evidence to date of intentional poisoning of geese as a crop protection measure within the EU and/or AEW A Agreement Area. In Germany, in autumn 2004, about 300 geese (mainly Bean Geese *Anser fabalis* and Greater White-fronted Geese) were poisoned by rodenticides in Thüringen. In the same autumn it was also reported that about 40 Common Cranes *Grus grus* were found dead, poisoned by rodenticides, in Mecklenburg-Vorpommern, in the same area as used by large numbers of wintering geese. The use of such poisons is legal in Germany as long as the poison is concealed, but this is clearly difficult to enforce (J. Mooij pers. comm.)

Human disturbance

Staging/wintering grounds

Importance: Medium

This is considered to be a significant factor throughout the staging and wintering range. The deliberate scaring of birds feeding on agricultural land and natural meadows is the most widespread and serious form of human disturbance other than that associated with hunting pressure (UNEP/WCMC, 2004). Such disturbance may lead to loss of condition and increased adult mortality, with birds less able to survive winter or the rigours of long-distance migration. In Hungary, disturbance by birdwatchers and farmers is at times a problem; for example, birdwatchers looking for Lesser White-fronts or other species in the grassland feeding areas scare birds away from protected sites to surrounding arable land, where they are vulnerable to being hunted (S. Lengyel, pers. comm.).

Generic issues that may increase adult mortality (i.e. those factors that pose a potential risk to geese and other birds in general, but for which no significant adverse impacts relating specifically to Lesser White-fronted Geese are known)

- wind turbines,
- high-tension power lines
- disease

(b) Threat factors causing reduced reproductive success

Human disturbance

Breeding grounds

Importance: Local

Tourism development and increasing use of helicopters and all-terrain vehicles threaten some parts of the breeding range of the Fennoscandian population (UNEP/WCMC, 2004). The impacts of off-road vehicles, aircraft, road construction and power-line installation in the core breeding area of the Fennoscandian population are discussed by Øien & Aarvak 2004. It is also important to consider that ornithological/conservation research could be an additional potential source of disturbance on the breeding grounds, unless very strictly controlled.

Predation

Breeding grounds

Importance: Local

Studies suggest that the breeding success and juvenile production of Lesser White-fronted Goose is broadly comparable to other goose species and that predation rates cannot explain the rapid population declines recorded. The expansion of Red Fox *Vulpes vulpes* and Great Black-backed Gull *Larus marinus* may elevate the predation threat for the Fennoscandian population and reintroduced Swedish population, while (as for other geese) predation may be higher in years when small mammal prey is less abundant.

There is anecdotal evidence that disturbance by White-tailed Eagles *Haliaeetus albicilla* and Golden Eagle *Aquila chrysaetos* may be having a significant impact on the dwindling Fennoscandian population of Lesser White-fronted Goose (M. Ekker, T. Aarvak pers. comm.). American Mink *Mustela vison* have spread throughout Scandinavia and may also contribute to higher predation (T. Lehtiniemi, pers. comm.).

Generic issues that may decrease reproductive success (i.e. those factors that pose a potential threat to geese and other birds in general, but for which no significant adverse impacts relating specifically to Lesser White-fronted Geese are known; all are therefore assumed to be of ‘Low’ importance)

- Poor weather – poor weather conditions during the summer may lead to virtually complete breeding failure among tundra-nesting species. Effects may include late-lying snow delaying access to nest sites; loss of condition among breeding adults; and/or poor survival of goslings and juveniles.
- Similarly poor weather on the wintering grounds, with deep snow cover, may result in no foraging areas being available to geese, thereby leading to malnutrition, while unusually dry weather in autumn can mean that grass/cereal crops are in poor condition during the winter, again resulting in poor foraging for geese.

(c) Threat factors causing habitat loss/degradation/conversion

Agricultural intensification

Staging/wintering grounds

Importance: High

Extensive areas of grassland and wetland in the staging and wintering areas have been converted for agricultural use. In particular, there was large-scale conversion of steppe grassland to cultivation during the second half of the twentieth century in the Central Asian staging/wintering grounds, including for the production of crops such as cotton that do not provide suitable feeding for geese. Within Europe, agricultural intensification resulted in the loss and degradation of staging/wintering areas in Greece.

However the relationship between agricultural intensification and goose use is complex. For example, in recent decades new goose wintering areas have been identified in Tajikistan, Turkmenistan and Uzbekistan, where irrigated fields are used for the production of wheat and rice. These sites provide suitable goose staging/wintering habitat, but are subject to high hunting pressure (both legal and illegal). Nevertheless, there have been notable increases in goose numbers. For example, during the mid-1980s the total number of wintering geese in Uzbekistan was assessed at only 5,000 individuals, whereas the current estimate (for known sites only) is 200,000 to 300,000 individuals (E. Kreuzberg, pers. comm.). Wheat fields in Kazakhstan also provide important feeding areas (P. Tolvanen, T. Heinicke pers. comm.).

Construction of dams and other river regulation infrastructure, wetland drainage

Staging/wintering grounds

Importance: High

The environmental disaster in the Aral Sea basin, owing largely to the misguided diversion of inflow for intensive irrigation, included the destruction of former key staging areas in Uzbekistan (Madsen, 1996; UNEP/WCMC, 2004; E. Kreuzberg pers. comm.). Large areas of the Mesopotamian Marshes were deliberately drained under the former Iraqi regime, while the Tigris and Euphrates rivers (and associated wetlands) in Iraq have suffered from reduced flow due to the construction of dams in upstream countries such as Turkey. Concentration of birds into remaining wetlands is likely to make them more vulnerable to hunting. The current international programme for restoring/reflooding of large areas of the Mesopotamian Marshes is likely to benefit the species considerably. Around key staging areas in Kazakhstan, such as Lake Kulykol, much of the inflow from spring floodwater is diverted to dams that provide water for hay meadows and cattle grazing (S. Yerokhov, pers comm). A comparable situation is found in the formerly extensive coastal and inland wetlands of Azerbaijan that were drained for agriculture. The remaining wetlands cover only a small fraction of the previous area and suffer severe water management problems – e.g. lack of water, pollution by pesticides (T. Heinicke pers. comm.). In Ukraine, damming and regulation of the Dniepr and Dniester rivers has caused reduced flow to the extensive meadows in the Dniester delta and along the Lower Dnepr valley (I. Rusev pers. comm.).

Climate change

Breeding grounds

Importance: Unknown

Global warming, which is predicted to be most rapid in polar regions, is likely to have a significant impact on the sub-Arctic tundra ecosystem of the Lesser Whitefront's breeding grounds, though species breeding in the high-Arctic zone are liable to experience the more rapid and more severe impacts. Possible consequences of climate change include direct habitat loss, but also more subtle and indirect adverse impacts such as the breakdown of food chains and the expansion of the range of Red Fox *Vulpes vulpes*. The most likely effect of the increasing temperature is a change in feeding conditions through altered vegetation. Whether this would be positive or negative is unknown. Changing feeding conditions affects production and mortality directly. Earlier snow melt could lead to decreased clutch predation by predators such as foxes, since they have to search through much larger areas. In years with late snowmelt, the availability of nest sites is low, thereby increasing the predation pressure. Late snow may also be relevant for spring hunting in Russia. In such conditions, the geese have fewer feeding areas available and birds are likely to be more vulnerable to hunters.

Staging and wintering grounds

Importance: Unknown

Global warming is also likely to have impacts on the staging and wintering areas. For example, increasingly mild winters might mean that geese remain further north than usual in

some years, or have access to higher quality food items, thereby increasing survival and reproductive success. Shifting rainfall patterns could potentially lead to long-term shifts in migration routes and wintering areas (e.g. in arid zones of Central Asia global warming may favour growth of wild cereals in early winter, providing suitable staging sites in remote desert/semi-desert areas, E. Kreuzberg pers. comm. Conversely, in other cases, there might be a shift to crops that do not provide food for geese e.g. cotton, grape vines). However, the fact that the species winters largely in and around semi-arid/arid-zone wetlands, which naturally undergo both significant year-to-year fluctuations and long-term cyclic variations, may make anthropogenic climate change impacts difficult to detect.

Land abandonment

Staging and wintering grounds

Importance: Medium

Abandonment of traditional agricultural land-management practices is a strong trend in many countries of central and eastern Europe and Central Asia (e.g. Kazakhstan), and has been a significant factor in parts of Fennoscandia. In some cases, such as the decline in mowing of coastal and sub-alpine meadows at staging sites around the Baltic Sea, this may lead to deterioration and loss of key Lesser White-fronted Geese feeding habitat due to the progressive encroachment of shrubs and trees. However, the situation has improved markedly in the Baltic region over the last ten years and most actual and potential staging meadows are managed by grazing/mowing thanks to EU agri-environmental payments (J. Markkola, pers. comm.). In Kazakhstan, the period from 1955 to 1990 was one of intensive grain production and the littoral and near-littoral areas of all key lakes were regularly cultivated and sown with grain. During the last 10 to 15 years, however, much of this land has been abandoned and the distances to the main goose feeding areas have increased to 10-20 km or more (S. Yerokhov, pers comm). In Sweden, hay cutting in Norbotten county has declined from 200,000 ha in 1927 to about 1,000 ha nowadays. Most of the land formerly managed for hay was located along the river-valley migration routes once used by Lesser White-fronted Geese (M. Björkland, pers comm).

Overgrazing

Breeding grounds

Importance: Local

Over-grazing of tundra vegetation by semi-domestic Reindeer *Rangifer tarandus* may threaten the quality of breeding habitat for the Fennoscandian population, though impacts appear to vary from country to country. For example, data from the Swedish county of Norbotten do not indicate any increase in overall reindeer numbers during the period when the Lesser Whitefront population crash occurred (M. Björkland & S. Gylje, pers comm), while in Finland, reindeer numbers doubled between the 1970s and 1990s and the adverse effects on vegetation can clearly be demonstrated (T. Lehtiniemi/BirdLife Finland, pers. comm.).

Pollution of wetlands/waterbodies

Staging and wintering grounds

Importance: Local

Point-source and/or diffuse pollution of wetlands and water bodies may be a locally important cause of habitat degradation, but there are few if any documented cases that relate specifically to Lesser White-fronted Geese.

(d) Potential genetic introgression of White-fronted Goose, Barnacle Goose and/or Greylag Goose DNA into the wild Fennoscandian population from captive-bred, reintroduced birds.

Genetic studies have shown that a high proportion of individuals within the captive breeding populations used for the Finnish and Swedish reintroduction/restocking programmes are carrying DNA of other goose species, notably Greater White-fronted Goose³ (Ruokonen et al. 2000, Ruokonen 2001, Ruokonen and Andersson, in prep.). It is concluded that this arose through hybridisation in captivity because no signs of hybridisation have been found in the wild populations of Lesser or Greater White-fronts (Ruokonen et al. 2004). There is a risk that released birds carrying DNA from other goose species could pair and breed with wild Lesser White-fronts. Given that the Fennoscandian and Western main populations partially overlap outside the breeding season, contamination of Western main birds could also occur. There is not full consensus among Lesser White-fronted Goose stakeholders concerning the significance of this risk. Nevertheless, further releases of captive-bred birds are formally suspended (though one Lesser Whitefront family was released in Finland in 2004 in spite of the moratorium) and birds from the captive-breeding stock that have been confirmed as carrying alien genes have been removed, though it is not possible to identify (and therefore to remove) all birds carrying such genetic material. The expert workshop held in Lammi, Finland in March/April 2005, agreed that any future releases should only be based on genetically 'clean' stock, preferably derived from the wild due to the technical impossibility of identifying all birds carrying alien DNA.

The Swedish authorities have recently been negotiating with Russian counterparts to try to obtain wild birds to build up a new captive-bred population from which future releases can be made, though any imports from Russia to Sweden are currently banned owing to EU restrictions in response to the spread of the H5N1 strain of avian influenza.

Some experts believe that the established free-flying, reintroduced population must be caught and taken back into captivity to protect the genetic status of wild birds. There is no consensus on this point and the Swedish authorities among others, argue strongly that the free-flying reintroduced population should be maintained, noting *inter alia* that it constitutes the only genetic link with the original wild population in Sweden. This view that the reintroduced population should be maintained was strengthened by a decision of the High Administrative Court in The Netherlands, ruling that Special Protection Areas should be established for wintering birds from the reintroduced Swedish population.

The IUCN Guidelines for Reintroductions, issued in 1995 by the IUCN Species Survival Commission (SSC), have no formal legal status but are generally regarded as the most authoritative internationally published guidance on species reintroductions. It should, however be noted that the Guidelines "*are intended to act as a guide for procedures useful to re-introduction programmes and do not represent an inflexible code of conduct.....Thus the priority has been to develop guidelines that are of direct, practical assistance to those planning, approving or carrying out re-introductions. The primary audience of these guidelines is, therefore, the practitioners (usually managers or scientists), rather than decision-makers in governments. Guidelines directed towards the latter group would inevitably have to go into greater depth on legal and policy issues.*" Further details are provided in Annex 8. While conformity with the IUCN Guidelines has been cited by both proponents and opponents of Lesser White-fronted Goose reintroduction initiatives, the guidance actually doesn't extend to the more controversial aspects of the Lesser Whitefront programmes, namely the possible introgression of alien DNA into the wild population and modification of flyways.

At the Lammi Workshop the Action Plan compilers undertook to submit a dossier on the issue for review by the Scientific Council of the 'Bonn' Convention on Migratory Species (CMS)

³ Lesser White-fronted Goose individuals found to be carrying genes of Greylag Goose *Anser anser* have never been used for reintroduction in Sweden (T. Larsson, pers comm).

and asked the Council to provide an independent advisory ruling on the future of restocking/reintroduction programmes.

Taking into account the views expressed at the Lammi Workshop, as well as at earlier meetings and in relevant publications, and drawing on the first draft of this Action Plan, a dossier was transmitted by BirdLife International to the CMS Secretariat on 17 July 2005. Some stakeholders felt that the dossier was incomplete and/or did not accurately represent the actual situation. In such cases, the stakeholders concerned were encouraged to provide the Scientific Council with additional information. Thirteen such contributions were taken into account by the Scientific Council in preparing its conclusions and recommendations, finalised in November 2005 (at the 13th Meeting of the CMS Scientific Council, Nairobi, Kenya, 18 November 2005).

The following are the Scientific Council's conclusions (numbered for clarity, but otherwise quoted verbatim):

1. "It is desirable to have a wide genetic diversity among wild Lesser Whitefronts.
2. There appears to be no undisputed answer at present to the question of whether the Fennoscandian population (as represented by the birds breeding in Norway) is genetically distinct from the nearest breeding birds to the east, in northern Russia. Given the uncertainty, we take the cautious approach that there might be a potentially valuable genetic distinction, and that we should not deliberately interfere with it (for instance, by boosting the Fennoscandian population with wild birds from elsewhere), unless or until such interference may become inevitable.
3. Given the small size of the wild Fennoscandian population, if possible, a captive breeding population of birds from this source should be established and maintained as a priority. We recognise that there are risks involved in taking eggs and/or young birds from the wild population, but that careful use of a known surplus (that is, those birds that would have died or been killed in their first winter) may be a practical conservation option.
4. We consider that every effort should be made to conserve the Fennoscandian birds down their traditional migration routes into southeastern Europe and the Caspian/Central Asian region. We recognise that this is a major challenge. We endorse the current LIFE project that aims to safeguard the birds and their habitats along the western route. It is our opinion that all appropriate efforts should also be made to conserve the wild populations of the species in its other flyways.
5. We consider that doubts do remain about the genetic make-up of the existing free-flying birds, originally introduced into the wild in Fennoscandia, and which winter in the Netherlands. It does seem to us that not all, but a large part, of the scientific community will never be completely satisfied concerning the level of genetic contamination from the Greater White-fronted Goose *Anser albifrons* and other species, which many will regard as impossible to eliminate. Despite genuine efforts to improve the genetic purity of existing captive flocks we consider that these flocks are not to be regarded as potential sources for release to the wild.
6. Given the possibility that the above-mentioned free-flying birds, or their descendants, may pose a risk to the genetic make-up of the wild Fennoscandian population, the Scientific Council is of the opinion that these birds should be caught or otherwise removed from the wild. We do not say this lightly, nor underestimate the practical and other difficulties involved. We recommend that a feasibility study be undertaken as a matter of urgency.
7. We believe that there is nothing against establishing a group in captivity of purebred Lesser Whitefronts from the wild, western Russian stock, and it may well prove valuable to have such a group in the future. However, we do not believe that it is appropriate to release such birds to the wild now or in the immediate future.
8. For the present, we do not support the introduction of Lesser Whitefronts into

flyways where they do not occur naturally. We have borne in mind the powerful argument concerning the improved safety of birds in these flyways, as well as practical considerations, such as current proposals that could quickly be put into effect. However, we consider that modifying the natural behaviour of Lesser Whitefronts in this respect, as well as unknown ecological effects in the chosen new flyways, and other such considerations, make this technique inappropriate until such time as it may become essential, particularly when major disruption or destruction occurs of key components of the natural flyways. We do not believe that to be the case at present. We give due weight to arguments about the continuing decline of the very small Fennoscandian population, and to the estimates of how long it may continue to be viable, but we are not persuaded that such a fact alone is enough to justify radical action.

9. We consider that it would be appropriate to re-examine the issues once more in five years.”

(e) Knowledge limitations

Current knowledge of Lesser White-fronted Goose is limited in several areas that have crucial relevance for the successful implementation of comprehensive conservation measures.

Among the key factors where current information is inadequate are:

- Locations of key staging and wintering sites for the Western main population (identifying new sites but also filling data gaps for known Lesser White-front sites – including IBAs – where recent information is lacking or fragmentary).
- Current status of the species in several key countries, including, *inter alia* Azerbaijan, Belarus, Iran, Iraq, Lithuania, Poland, Russia (Ob valley and Dagestan), Turkmenistan, Ukraine, and Uzbekistan.
- Extent of hunting and poaching at different staging/wintering sites
- Extent and effectiveness of protected area management at nationally and/or internationally designated sites of importance for Lesser White-fronted Goose (this restriction applies to significant parts of the range beyond Europe).
- Extent and effectiveness of enforcement of hunting regulations at key sites, whether or not they are formally designated as protected areas.
- Location of breeding sites of remaining wild Fennoscandian population.
- Degree of exchange between populations.
- PVA analyses needed urgently for both the Swedish and Norwegian population.
- Impacts of land/habitat management on Lesser White-fronted Goose and identification of desirable management practices.

Table 2a. Relative importance of threats to wild subpopulations of Lesser White-fronted Goose.

Threat	Fennoscandian population	Western main population	Eastern main population ⁴
(a) Factors causing increased adult mortality			
Hunting	Critical	Critical	Critical
Poisoning	Unknown	Local	High
Human disturbance	Medium	Medium	?
(b) Factors causing reduced reproductive success			
Human disturbance	Local?	Local	Local
Predation	Local?	Local	Local
Genetic impoverishment	Unknown; possibly high in future	Unknown	Unknown
(c) Factors causing habitat loss/degradation/conversion			
Agricultural intensification	High formerly; now probably Low	High	High
Construction of dams and other river regulation infrastructure, wetland drainage	Medium?	High	High
Climate Change	Unknown	Unknown	Unknown
Over-grazing	Local	Unknown?	Unknown?
Land abandonment (incl. declining grain production, loss of hay meadows, scrub/forest encroachment)	Locally high	High	Unknown?
Overgrazing	Local	Unknown?	Unknown?

⁴This Action Plan focuses on Lesser White-fronted Goose in the AEW Agreement Area and the territory of Member States of the European Union (i.e. the Fennoscandian and Western main subpopulations) and is not giving detailed consideration to the East Asian subpopulation. However, threats to the latter population are shown here for the sake of completeness and to underline that certain key threats are applicable to all subpopulations.

Pollution of wetlands/waterbodies	Unknown?	Unknown?	Unknown?
(d) Potential genetic introgression of DNA from other goose species into wild population	Potential risk exists	Potential risk exists	?
(e) Knowledge limitations	Fundamental gaps	Fundamental gaps	Fundamental gaps

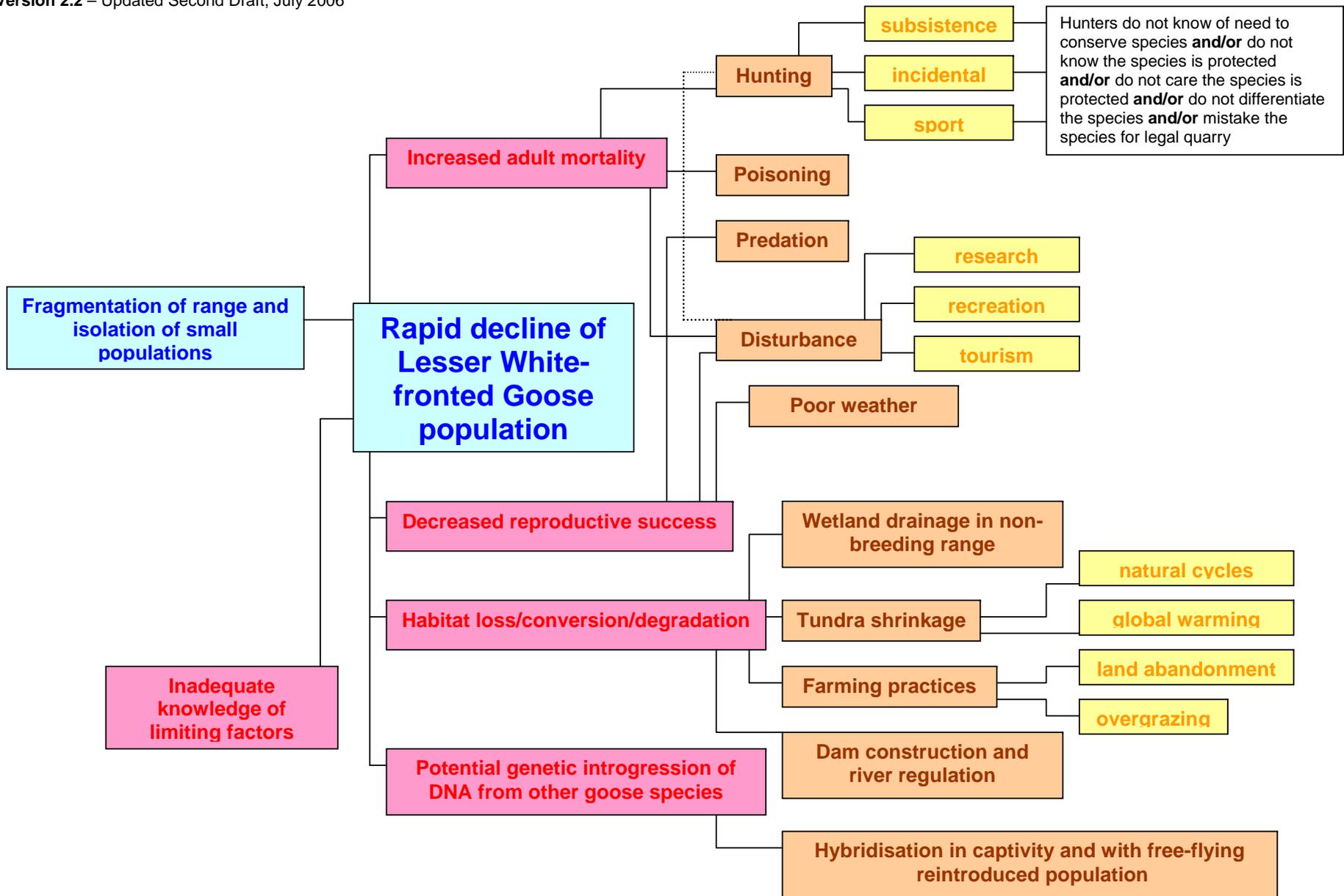
Table 2b. Relative importance of threats to reintroduced population of Lesser White-fronted Goose⁵.

Threat	Reintroduced population (Sweden/The Netherlands)
(a) Factors causing increased adult mortality	
Hunting	Low
Poisoning	Low
Human disturbance	Local
(b) Factors causing reduced reproductive success	
Human disturbance	Unknown
Predation	Local
(c) Factors causing habitat loss/degradation/conversion	
Agricultural intensification and wetland drainage	Low
Construction of dams and other river regulation infrastructure	Low

⁵ It should be noted that the Scientific Council of the Convention on Migratory Species concluded (in its recommendation of 8 November 2005) that a precautionary approach should be applied to conserving the integrity of the wild populations and that the reintroduced population should be removed.

Climate Change	High
Over-grazing	Unknown
Land abandonment	Local
Pollution of wetlands/waterbodies	Low
(d) Genetic introgression of DNA from other goose species into reintroduced population and potential for entry into wild population	Theoretical risk exists
(e) Knowledge limitations	Fundamental gaps

Overleaf is a 'problem tree' diagrammatic representation of the key threat factors described above.



4. Policies and legislation relevant for management

4.1. International Conservation and Legal Status

Table 3 (see page 25) shows the international conservation and legal status of Lesser White-fronted Goose under both European and global instruments/mechanisms.

4.2. Member States/Contracting Parties Obligations

Table 4 (page 26) summarises the applicability of EU and intergovernmental instruments to the Principal Range States (see section 1.4 for definition) for Lesser White-fronted Goose, as of 17 July 2006⁶. It is notable that in several of these Range States (Iran, Iraq, Kazakhstan, Russian Federation, Turkmenistan) rather few of the instruments are currently applicable. Details of the relevant provisions of these instruments and policies are provided in Annex 8.

⁶ As per information posted on the websites of the relevant treaty secretariats on this date.

Table 3. Summary of the international conservation and legal status of Lesser White-fronted Goose *Anser erythropus*.

Global Status ⁷	European Status	SPEC ⁸ category	EU Birds Directive ⁹	Bern Convention ¹⁰	Bonn Convention ¹¹	AEWA ¹²	CITES ¹³
Vulnerable	Endangered ¹⁴	SPEC 1	Annex I	Appendix II	Appendix I	N Europe & W Siberia/Black Sea & Caspian A 1a 1b 2	Not listed in CITES Appendices

⁷ Source: 2004 IUCN Red List of Threatened Species (criteria A2bcd+3bcd – see <http://www.redlist.org/>)

⁸ Species of European Conservation Concern

⁹ Directive on the Conservation of Wild Birds, 79/409/EEC

¹⁰ Convention on the Conservation of European Wildlife and Natural Habitats, Bern, 1979

¹¹ Convention on Migratory Species, Bonn, 1979

¹² Agreement on the Conservation of African-Eurasian Migratory Waterbirds

¹³ Convention on International Trade in Endangered Species of Wild Flora and Fauna, 1973

¹⁴ Source: application of IUCN Red List criteria (2001 version), criterion C1

Table 4. Summary of applicability of major international conservation instruments to Principal Ranges States for Lesser White-fronted Goose *Anser erythropus*¹⁵. Note: the EU/European Community is also a party to AEWA, CMS, Bern and CBD (see foot of table).

Principal Range State for Lesser White-fronted Goose	Member State bound by EU Directives and policies	Beneficiary of EU European Neighbourhood Policy	Party to AEWA	Party to CMS	Party to Bern	Party to CBD	Party to Ramsar
Azerbaijan	No	No	No	No	Yes	Yes	Yes
Bulgaria	Accession	No	Yes	Yes	Yes	Yes	Yes
Estonia	Yes	No	No	No	Yes	Yes	Yes
Finland	Yes	No	Yes	Yes	Yes	Yes	Yes
Germany	Yes	No	Yes	Yes	Yes	Yes	Yes
Greece	Yes	No	Yes	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	Yes	Yes	Yes	Yes
Iran, Islamic Republic of	No	No	No	No	No	Yes	Yes
Iraq	No	No	No	No	No	No	No
Kazakhstan	No	No	No	Yes	No	Yes	No
Netherlands	Yes	No	Yes	Yes	Yes	Yes	Yes
Norway	No	No	No	Yes	Yes	Yes	Yes
Poland	Yes	No	No	Yes	Yes	Yes	Yes
Romania	Accession	No	Yes	Yes	Yes	Yes	Yes
Russian Federation	No	Strategic Partner	No	No	No	Yes	Yes
Sweden	Yes	No	Yes	Yes	Yes	Yes	Yes
Turkey	Candidate	No	No	No	Yes	Yes	Yes
Turkmenistan	No	No	No	No	No	Yes	No
Ukraine	No	Yes	Yes	Yes	Yes	Yes	Yes
Uzbekistan	No	No	Yes	Yes	No	Yes	Yes
EU/European Community	N/A	N/A	Yes	Yes	Yes	Yes	No

¹⁵ As per information posted on the websites of the relevant treaty secretariats on 17 July 2006.

4.3. National Policies, Legislation and Ongoing Activities

Annex 5 provides a table summarising the national protection status of the species in each Range State. There are currently some gaps in the table, but the general picture is one of a high level of protection – at least on paper – in most of the key countries. This suggests that the main challenge is one of implementation and enforcement of conservation legislation.

4.4 Site and Habitat Protection and Research

Annex 3.1 provides a listing of Important Bird Areas known to be of significance for Lesser White-fronted Goose, while Annex 3.2 is a listing of additional sites, as provided by reviewers of the first draft of this Action Plan (in all cases the sites were listed by nationals of the countries concerned), but this will need further development to ensure that it includes only those sites that are of real importance for the species' conservation, rather than sites that are used only occasionally by vagrants etc.

Annex 6 provides a table, by Range State, of site protection measures. While the Fennoscandian population is well covered by site protection designations (at least along the westernmost flyway) this is not the case for the Western main population, which lacks adequate site protection in many Range States. In some cases there is insufficient information available for assessing the adequacy of site/habitat protection measures.

4.5. Recent Conservation Measures

Table 5 summarises the mechanisms and institutional arrangements for the Principal Range States (see section 1.4 for definition), while Annex 7 provides additional information concerning recent and ongoing conservation measures in each country.

Table 5. Summary of mechanisms and institutional arrangements for conservation of Lesser White-fronted Goose *Anser erythropus*.

Country	National Action Plan for Lesser White-fronted Goose?	National Working Group for Lesser White-fronted Goose?	National Monitoring Programme for Lesser White-fronted Goose?	Monitoring Programme in Protected Areas?	Routines for Informing the Responsible Authorities Regarding Nesting Areas and Nest Sites?
Azerbaijan	No	No	No	No	N/A
Belarus	No	No	No	No	N/A
Bulgaria	No	No?	Partial	No	N/A
Estonia	No	Yes	Yes	Yes	N/A
Finland	No	Yes	Yes	Yes	(Yes)
Germany	No	Yes	No	No	N/A
Greece	?	No?	Yes	Yes	N/A
Hungary	No	Yes	Yes	Yes	N/A
Iran, Islamic Republic of	No	No	No	?	N/A
Iraq	No	No	No	No	N/A
Kazakhstan	No	No	No	No	N/A
Latvia	No	No	No	Yes?	N/A
Netherlands	?	N/A	Yes	Yes	N/A
Norway	Yes, under	Yes	Yes	Yes	Yes

Country	National Action Plan for Lesser White-fronted Goose?	National Working Group for Lesser White-fronted Goose?	National Monitoring Programme for Lesser White-fronted Goose?	Monitoring Programme in Protected Areas?	Routines for Informing the Responsible Authorities Regarding Nesting Areas and Nest Sites?
	revision				
Poland	No	No	No	?	N/A
Romania	No	No	No	Yes?	N/A
Russian Federation	No	Yes	Partial	Partial	?
Sweden	In prep	Yes*	Yes*	Yes*	Yes
Turkey	No	No	No	Partial	N/A
Turkmenistan	No	No	No	No	N/A
Ukraine	No	Yes	No	No	N/A
Uzbekistan	No	No	No	No	N/A

* Applies mainly to reintroduced population

Transboundary EU LIFE Project – Fennoscandian population

An international project ‘*Conservation of the Lesser White-fronted Goose on European migration route*’, funded by the EU’s LIFE mechanism, began in April 2005 and will run until 2008. The project is led by WWF Finland, with nine additional partners in Estonia, Finland, Greece, Hungary and Norway.

The aim of the project is to improve and monitor the conservation status of the species at the most important breeding, staging and wintering sites along the European flyway by:

- Locating the most important breeding areas, and securing favourable conservation status of these areas
- Eliminating the most important threats (high mortality due to hunting and poaching, loss of feeding and roosting habitats, and human disturbance)
- Monitoring the population and effects of the project actions

The project is focusing on the following sites:

- Norway – Porsangen Fjord and Varangerfjord; breeding grounds in Finnmark
- Finland – Hailuoto/Liminganlahti area, Bothnian Bay coast, Finnish Lapland
- Estonia – Matsalu National Park, Nigula
- Hungary – Hortobágy National Park
- Greece – Evros Delta, Lake Kerkini, Nestos Delta, Lake Mitrikou

Specific project activities include:

- Catching and colour ringing Fennoscandian LWfG
- Satellite and radio transmitter tracking
- Preparing National Action Plans for LWfG in Estonia, Finland and Norway.
- Restoring and managing of LWfG habitat – Haeska Islets, Matsalu Bay, Estonia
- Providing safe feeding and roosting areas by habitat management in Hortobágy National Park, Hungary
- Raising public awareness, especially amongst hunters, landowners and farmers – Estonia, Hungary, Greece
- Monitoring the Fennoscandian population and the effect of LIFE Project actions – Norway, Finland, Estonia, Hungary, Greece

For further information see <http://www.wwf.fi/lwfg>

5. Framework for action

5.1 Lesser White-fronted Goose Action Plan Goal, Purpose, and Results

This section identifies and defines the **Goal**, the **Purpose**, and **Results** of the *Action Plan* and describes **indicators** and **means of verification** for monitoring implementation and effectiveness.

The Goal is the ultimate conservation objective to which this Action Plan contributes, namely restoration of Lesser White-fronted Goose to a favourable conservation status. The Purpose refers to the actual role of the Action Plan itself, namely to stop and reverse the current population decline. The Results are the changes required for this Purpose to be realised.

A priority has been assigned to each Result, according to the following scale:

- Essential:** a Result that is needed to prevent further large declines in the population that could lead to the species' extinction.
- High:** a Result that is needed to prevent a decline of more than 20% of the population within 20 years.
- Medium:** a Result that is needed to prevent a decline of less than 20% of the population within twenty years.
- Low:** a Result that is needed to prevent local population declines or which is likely to have only a small impact on the population across the range.

However, owing to the strongly contrasting sizes of the subpopulations, some refinement of these categories should be applied in practice. Hence, an Action may be High for a given subpopulation, even if the overall impact on the global population size would place it in the 'Low' category. Unless such considerations are taken into account, all actions for the Fennoscandian subpopulation would automatically become 'Low' priority.

Timescales are attached to each Result using the following criteria:

- Immediate:** to commence within the next year.
- Short:** to commence within the next 3 years.
- Medium:** to commence within the next 5 years.
- Long:** to commence within the next 10 years.
- Ongoing:** an action that is currently being implemented and should continue.
- Completed:** an action that was completed during preparation of the action plan.

The Results and Objectively Verifiable Indicators have been selected to address the challenges set out in Chapter 3, in particular:

- to eliminate mortality of fully grown birds due to unsustainable hunting pressure – in spite of the legal protection afforded to the species across most of its range;
- to ensure that all of the key sites, including roosting and feeding sites, used by Lesser White-fronted Geese are adequately protected and managed;
- to minimize disturbance and predation on the breeding grounds, thereby helping to maximize productivity;
- to prevent introgression of DNA from other goose species into the wild population of Lesser Whitefronts;
- to fill the still-significant knowledge gaps concerning the species' numbers and movements.

Table 6. Action Plan Goal and Purpose

	Objectively Verifiable Indicator	Means of Verification
<p>Action Plan GOAL To restore the Lesser White-fronted Goose to favourable conservation status within the Agreement Area</p>	<p>Neither of the wild populations in the Agreement Area qualifies as ‘threatened’ according to the IUCN Red List criteria because the Western Main population exceeds 25,000¹⁶ individuals, the Fennoscandian population exceeds 1,000¹⁷ individuals and neither population is declining.</p>	<p>Conservation Status Assessment of Migratory Waterbirds, Wetlands International</p>
<p>Action Plan PURPOSE To stop and reverse the current population decline and range contraction.</p>	<p>A 5-year moving average of the finite rate of population increase (λ) is above 1.0</p>	<p>For the westernmost flyway: counts of spring flocks at Matsalu Bay, Estonia, at Porsangerfjord, Norway; counts of spring and autumn flocks at Hortobágy, Hungary. For the main flyway: counts of autumn flocks in Kustanay oblast, Kazakhstan, covering a large-enough area to avoid effects of local fluctuations caused by year-to-year variations in location and extent of suitable roosting/feeding sites.</p>

¹⁶ Figure derived from the AEWAs Action Plan Table 1. This is necessary for a species being not listed as Column A species.

¹⁷ Figure derived from the IUCN Red List criterion D for small populations.

Table 7 Action Plan Results

Result	Objectively Verifiable Indicator	Means of Verification	Priority	Timescale
Result 1 Mortality rates reduced	A 5-year moving average of the percentage of 2nd calendar-year birds is above 10 % ¹⁸ .	Counts of flocks at Hortobágy, Hungary, at Matsalu Bay, Estonia, at Porsangerfjord, Norway and in Kustanay oblast Kazakhstan in spring.	Essential	Medium/long
Result 2: Further habitat loss and degradation is prevented	All Important Bird Areas and other key sites for Lesser White-fronted Goose have 'Favourable Conservation Status'.	Natura 2000 database up-dated with monitoring data. National government reports to the European Commission, CMS, CBD, AEWA, Ramsar Convention and Bern Convention. Periodic independent assessments to be carried out by national BirdLife partners as part of their IBA Monitoring Programme.	High	Long
Result 3: Reproductive success is maximised	Five-year running mean of juveniles reaches 35% for both Fennoscandian and Western main populations.	Counts of autumn flocks at Matsalu Bay, Estonia and north-west Kazakhstan in October.	Medium	Long

¹⁸ This indicator is based on the assumption that juvenile mortality correlates with adult mortality, and years with high proportion of 2nd year birds is a good year for the entire population.

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Result 4: No introgression of DNA from other goose species into the wild population occurs as a result of either further releases or already released birds from captive breeding programmes	There are no new releases of captive-bred birds. The existing free-flying introduced flock is removed from the wild.	Reports from governments.	High	Short
Result 5: Key knowledge gaps filled	Knowledge gaps filled by 2015	Monitoring reports Papers published in peer-reviewed scientific journals	Essential	Medium
Result 6: International cooperation maximised			Essential	Medium

6. Activities

Result 1: Direct mortality of adults due to hunting is prevented

The most important and most urgent activities under this Action Plan are those aimed at halting the currently unsustainable (and mostly illegal) hunting pressure on Lesser White-fronted Geese:

1. Ensure that, in principle, hunting legislation affords adequate protection to Lesser White-fronted Goose;
2. Ensure that sufficient human and financial resources are allocated for enforcement of hunting legislation and that these resources are deployed to control hunting effectively;
3. Ensure that sufficient human and financial resources are allocated for identifying the traditional flyway and stop-over sites, and making that flyway safe for the geese.
4. Ban goose hunting at all key sites for Lesser White-fronted Goose (as listed in Annex 3 to this Action Plan) during the period when Lesser White-fronts are usually present, given the difficulty of reliably distinguishing goose species in flight (especially the near impossibility of separating Greater and Lesser White-fronts, even from relatively close range and in good light);
5. Plant lure crops to direct Lesser White-fronted Goose away from areas where hunting pressure is known to be high and towards refuge zones;
6. Redirect hunting from adults to juveniles in areas where Greater White-fronts and Lesser White-fronts occur together away from key sites.

These actions are applicable in all Range States, but especially in those countries of the staging and wintering range where hunting pressure is known to be particularly high, e.g. Kazakhstan, Russian Federation, Ukraine.

In addition to these measures, it has been suggested that efforts should continue to establish a safer migration route, while giving the highest possible priority to the protection needs of the existing wild population (see Result 4 below). However, the November 2005 recommendation of the Scientific Council of the Convention on Migrator Species states clearly that: *“For the present, we do not support the introduction of Lesser Whitefronts into flyways where they do not occur naturally. We have borne in mind the powerful argument concerning the improved safety of birds in these flyways, as well as practical considerations, such as current proposals that could quickly be put into effect. However, we consider that modifying the natural behaviour of Lesser Whitefronts in this respect, as well as unknown ecological effects in the chosen new flyways, and other such considerations, make this technique inappropriate until such time as it may become essential, particularly when major disruption or destruction occurs of key components of the natural flyways. We do not believe that to be the case at present. We give due weight to arguments about the continuing decline of the very small Fennoscandian population, and to the estimates of how long it may continue to be viable, but we are not persuaded that such a fact alone is enough to justify radical action”*.

Result 2: Further habitat loss and degradation is prevented

Measures to halt and reverse habitat loss and degradation, and to maximise positive site management, will serve to underpin increased survival of full-grown birds achieved through the hunting-control measures outlined above.

1. Ensure that all key sites for Lesser White-fronted Goose (breeding, staging and wintering) are afforded appropriate protected area status at national and international levels, including classification as Special Protection Areas in EU Member States;
2. Ensure that all key sites for Lesser White-fronted Goose have a management plan that addresses the conservation requirements of Lesser White-fronted Goose and that is resourced, implemented, monitored and periodically updated;
3. Monitor habitat quality in the breeding range to ensure that any anthropogenic pressures, including the potential impacts of climate change, are identified as early as possible;
4. Take measures to restore and/or rehabilitate Lesser White-fronted Goose roosting and feeding habitat in the staging and/or wintering range.

These actions are applicable in all of the Range States.

Result 3: Reproductive success is maximised

1. Avoid infrastructure development and other sources of human disturbance, including recreation/tourism liable to have an adverse impact on the know core breeding areas;
2. Take measures to avoid overgrazing and nest trampling if/where this is known to be a problem;
3. Take measures, where feasible, to minimise predation, where this is shown to be a significant limiting factor;
4. Take measures to eliminate waterbird hunting on the breeding grounds (Russian Federation and Norway) and in all staging areas close to the breeding grounds (Fennoscandia, Russian Federation).

These actions are applicable in the few Range States that share the species' entire breeding range, namely Finland, Norway, Sweden and Russian Federation.

Result 4: No introgression of DNA from other goose species into the wild population occurs as a result of either further releases or already released birds from captive breeding programmes.

As set out in Chapter 3, there is no consensus among Lesser White-fronted Goose stakeholders on the use of captive breeding, reintroduction/restocking, and flyway modification as valid conservation tools to be integrated with measures directed at conservation of the surviving wild population. Proponents argue that all efforts to date have failed to stop or reverse the decline of the Lesser White-fronted Goose and that reintroduction/restocking is the only assured means of securing the species' survival, citing the high adult survival rates achieved through diverting the flyway through 'safe' countries. Opponents argue that introduction in areas that do not form part of the species' natural range is scientifically and ethically unsound and believe that efforts and resources should be devoted to conservation of the wild Fennoscandian population as long as it continues to exist, with reintroduction remaining an option if all other measures fail. They also highlight the risk of introgression of DNA from other goose species into the wild population, following the discovery of such DNA among the captive breeding stock.

As also detailed in Chapter 3 (pages 28–29), the Scientific Council of the Convention on Migratory Species presented a series of conclusions and recommendations on these issues in November 2005. The full text of the Scientific Council's findings can be found on pages nn–nn. The key implications for this Action Plan are that:

- existing captive flocks are not to be regarded as potential sources for release to the wild;

- existing free-flying birds of captive-bred origin and their descendants should be caught or otherwise removed from the wild, with a feasibility study undertaken as a matter of urgency;
- if a captive group of purebred Lesser White-fronts from the wild is established, such birds should not be released to the wild now or in the immediate future;
- Lesser White-fronts should not be introduced into flyways where they do not occur naturally;
- these recommendations should be reviewed after five years.

Result 5: Key knowledge gaps filled

Knowledge gaps represent a significant constraint. The following activities are priorities for further research:

1. Locate sources of possible financial support for further conservation-oriented research;
2. Use a combination of satellite tracking and field surveys to locate the key breeding grounds for the bulk of the Western main population;
3. Assess the hunting pressure at key sites;
4. Use a combination of satellite tracking and field surveys to locate the key breeding, staging and wintering sites for the Fennoscandian population;
5. Conduct a Population Viability Assessment (PVA) for the remaining wild Fennoscandian population;
6. Use a combination of satellite tracking and field surveys to locate the key staging and wintering grounds for the bulk of the Central Asian population;
7. Undertake further field surveys of suitable breeding habitat and staging areas on the Kola Peninsula to update the estimate for the Fennoscandian subpopulation;
8. Establish an effective network of coordinated counts in the wintering grounds (or main staging areas if wintering areas are not known), to monitor overall population trends as accurately as possible;
9. Evaluate spatial use patterns at the habitat level to identify areas where hunting directly threatens Lesser White-fronts and to direct local conservation efforts (e.g. planting of 'lure' crops) to hunting-free refuges and corridors;
10. Continue to refine genetic knowledge and techniques for genetic testing;
11. Develop a strategy for genetic management of the species both in the wild and in captivity based on the findings of the CMS Scientific Council;
12. Assess the current status of key sites for Lesser White-fronted Goose with regard to the species' ecological requirements, taking into account protected area status, habitat quality, conservation management and active threats.
13. Increase knowledge of breeding site fidelity for males and females and exchange with other populations;
14. Undertake studies on predation by White-tailed Eagle;
15. Investigate the importance of small mammal cycles on reproduction of Lesser White-fronted Goose.

These activities apply to all Range States and non-Range States, since international cooperation, including financial and technical support, will not be limited to the countries where additional research is actually conducted.

Result 6: International cooperation maximised

Table 4 shows the current applicability of key international cooperation instruments to Lesser Whitefront Range States. There are currently significant gaps. These gaps should be rectified

in order to maximise international cooperation for the effective implementation of this Action Plan and wider measures that are likely to benefit Lesser Whitefront conservation.

This activity is addressed to the following Range States:

- **AEWA:** Armenia, Azerbaijan, Estonia, Islamic Republic of Iran, Iraq, Kazakhstan, Russian Federation, Turkey, Turkmenistan
- **CMS:** Armenia, Azerbaijan, Estonia, Islamic Republic of Iran, Iraq, Russian Federation, Turkey, Turkmenistan
- **Bern Convention:** Armenia, Russian Federation
- **CBD:** Iraq
- **Ramsar Convention:** Iraq, Kazakhstan and Turkmenistan (Note: under the current provisions of this convention, there is no mechanism for the EU/EC to become a Contracting Party)

Table 8. National activities by Range States required to deliver each Action Plan Result

Result	National activities and applicable Principal Range States ¹⁹	Responsibility for implementation
Result 1: Mortality rates reduced	<ul style="list-style-type: none"> • Ensure by 2010 that, in principle, hunting legislation affords adequate protection to Lesser White-fronted Goose (ALL²⁰); • Ensure that sufficient human and financial resources are allocated for enforcement of hunting legislation and that these resources are deployed to control hunting effectively (ALL); • Ensure that sufficient human and financial resources are allocated for identifying the traditional flyway and stop-over sites, and making that flyway safe for the geese (ALL); • By 2010, ban goose hunting at all key sites for Lesser White-fronted Goose (as listed in Annex 3 to this Action Plan) during the period when Lesser White-fronts are usually present, given the difficulty of reliably distinguishing goose species in flight (ALL); • By 2010 establish no hunting zones (covering both roosting and feeding sites) at all Lesser White-fronted Goose IBAs, SPAs and Ramsar sites (ALL); • Plant lure crops to direct Lesser White-fronted Goose away from areas where hunting pressure is known to be high and towards refuge zones (ALL); • Redirect hunting from adults to juveniles in areas where Greater White-fronts and Lesser White-fronts occur together away from key sites (Russia, Kazakhstan). 	Column to be completed by Range States
Result 2: Further habitat loss and degradation is prevented	<ul style="list-style-type: none"> • Ensure that all key sites for Lesser White-fronted Goose (breeding, staging and wintering) are afforded appropriate protected area status at national and international levels, including classification as Special Protection Areas in EU Member States (ALL); • Ensure that all key sites for Lesser White-fronted Goose have a management plan that: (a) addresses the conservation requirements of Lesser White-fronted Goose and (b) is resourced, implemented, monitored and periodically updated (ALL); • Monitor habitat quality in the breeding range to ensure that any anthropogenic pressures, including the potential impacts of climate change, are identified as early as possible (Finland, Norway, Russia, Sweden); • Take measures to restore and/or rehabilitate Lesser White-fronted Goose roosting and feeding habitat in the staging and/or wintering range (ALL). 	

¹⁹ Defined in Chapter 1.4

²⁰ This indicates that the corresponding Activity needs to be implemented by all Range States.

<p>Result 3: Reproductive success is maximised</p>	<ul style="list-style-type: none"> • Avoid infrastructure development and other sources of human disturbance, including recreation/tourism liable to have an adverse impact on the known core breeding areas (Finland²¹, Norway, Russia, Sweden); • Take measures to avoid overgrazing and nest trampling if/where this is known to be a problem (Finland, Norway, Russia, Sweden); • Take measures, where feasible, to minimise predation, where this is shown to be a significant limiting factor (Finland, Norway, Russia, Sweden); • Take measures to eliminate waterbird hunting on the breeding grounds (Russia, Norway) and in all staging areas close to the breeding grounds (Finland, Norway, Russia, Sweden). 	
<p>Result 4: No introgression of DNA from other goose species into the wild population occurs as a result of either further releases or already released birds from captive breeding programmes</p>	<ul style="list-style-type: none"> • Existing captive flocks are not to be regarded as potential sources for release to the wild (Finland, Sweden); • Existing free-flying birds of captive-bred origin and their descendants should be caught or otherwise removed from the wild, with a feasibility study undertaken as a matter of urgency (Sweden, The Netherlands); • If a captive group of purebred Lesser White-fronts from the wild is established, such birds should not be released to the wild now or in the immediate future (Sweden/ALL); • Lesser White-fronts should not be introduced into flyways where they do not occur naturally (ALL); • The CMS SC recommendation should be reviewed after five years (CMS). 	

²¹ Finland and Sweden are included as there remains a possibility that the wild population is not extinct and/or habitat could be recolonised.

<p>Result 5: Key knowledge gaps filled</p>	<ul style="list-style-type: none"> • Locate sources of possible financial support for further conservation-oriented research; • Use a combination of satellite tracking and field surveys to locate the key breeding grounds for the bulk of the Western main population; • Assess the hunting pressure at key sites; • Use a combination of satellite tracking and field surveys to locate the key breeding, staging and wintering sites for the Fennoscandian population; • Conduct a Population Viability Assessment (PVA) for the remaining wild Fennoscandian population; • Use a combination of satellite tracking and field surveys to locate the key staging and wintering grounds for the bulk of the Central Asian population; • Undertake further field surveys of suitable breeding habitat and staging areas on the Kola Peninsula to update the estimate for the Fennoscandian subpopulation; • Establish an effective network of coordinated counts in the wintering grounds (or main staging areas if wintering areas are not known), to monitor overall population trends as accurately as possible; • Evaluate spatial use patterns at the habitat level to identify areas where hunting directly threatens Lesser White-fronts and to direct local conservation efforts (e.g. planting of 'lure' crops) to hunting-free refuges and corridors; • Continue to refine genetic knowledge and techniques for genetic testing; • Develop a strategy for genetic management of the species both in the wild and in captivity based on the findings of the CMS Scientific Council; • Assess the current status of key sites for Lesser White-fronted Goose with regard to the species' ecological requirements, taking into account protected area status, habitat quality, conservation management and active threats. • Increase knowledge of breeding site fidelity for males and females and exchange with other populations; • Undertake studies on predation by White-tailed Eagle; • Investigate the importance of small mammal cycles on reproduction of Lesser White-fronted Goose. 	
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<p>Result 6: International cooperation maximised</p>	<p>Achieving this result requires action (as of 17 July 2006²²) by the following Range States:</p> <ul style="list-style-type: none"> • AEWA: Armenia, Azerbaijan, Estonia, Islamic Republic of IRan, Iraq, Kazakhstan, Russian Federation, Turkey, Turkmenistan • CMS: Armenia, Azerbaijan, Estonia, Islamic Republic of Iran, Iraq, Russian Federation, Turkey, Turkmenistan • Bern Convention: Armenia, Russian Federation • CBD: Iraq • Ramsar Convention: Iraq, Kazakhstan and Turkmenistan (Note: under the current provisions of this convention there is no mechanism for the EU/EC to become a Contracting Party) 	
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²² Derived from lists of parties posted on the websites of the relevant treaty secretariats on 17 July 2006.

7. Implementation

International Working Group

This implementation of this International Single Species Action Plan should be coordinated by an International Working Group set up under the auspices of AEWA, which includes government delegates from the Principal Lesser White-fronted Goose Range States and experts invited by the AEWA Secretariat in consultation with the AEWA Technical Committee.

The International Working Group shall:

- Review the progress in the implementation of the action plan;
- Coordinate conservation, research and monitoring activities of the range states;
- Facilitate transboundary conservation projects along the flyway;
- To seek to secure the resources required for implementation of the Action Plan through allocations by Range States and other interested parties
- Assess available information with particular attention to the indicators set by this action plan;
- Review this action plan based on the experience after 5 years.

8. References

The following is a listing of those publications cited in the text of this *Action Plan*. For a more comprehensive species bibliography, comprising some 250 references in all, see:

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[www.piskulka.net/General publications.htm](http://www.piskulka.net/General%20publications.htm) ('grey' literature)

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9. Annexes

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Annex 1

Additional biological information

Survival and productivity	Life cycle	Habitat requirements
<p>Almost half of the 15 wild Fennoscandian geese tagged or ringed in Finland/Norway in 1995 and 1996 were shot or probably shot (Markkola, 2005; Aarvak et al. 1997). The major known causes of death of released captive-bred birds 1980-1998 were shooting and predation (by mink, Goshawk <i>Accipiter gentilis</i>, Golden Eagle <i>Aquila chrysaetos</i>, White-tailed Eagle <i>Haliaeetus albicilla</i>, fox and dogs). Collision with power lines was also recorded (Markkola, 2005).</p> <p>An analysis by Lampila (2001), underlined that adult mortality and changes in the rate of adult mortality are key factors determining population trends for Lesser White-fronted Goose.</p> <p>Mean brood size observed at Valdak Marshes (first autumn staging site for the Fennoscandian population) between 1994 and 2000 was 3.2 juveniles (Aarvak & Øien, 2001).</p>	<p><u>Breeding</u></p> <p>Generally arrives on breeding grounds from early May to late June and departs between mid-August and September (Madsen 1996). Breeding behaviour and pre-nesting activity little studied (Fox 2005). Single brood, clutch size 4-6 (exceptionally 1-8), incubation by female for 25-28 days in the wild, starting mostly during early June. Pairs form in 2nd or 3rd year. (Fox 2005).</p> <p><u>Moulting</u></p> <p>Non-breeding Fennoscandian and Russian birds undertake moult migration, while breeding birds moult on the breeding grounds. Syroechovskiy (1996) found that breeding birds in Taimyr moulted during the first week of August, while non-breeding birds moulted during the last 10 days of July. In the Polar Urals and Yamal Peninsula (Western Siberia) breeding birds moult on the breeding grounds from mid-July until the first 10 days of August (V. Morozov, pers. comm.)</p> <p>In 1997 a satellite-tracked bird of the Fennoscandian population left the breeding</p>	<p><u>Breeding</u></p> <p>Breeds in the forest tundra and southern tundra belts of northern Eurasia, with a preference for bush tundra interspersed with bogs and lakes (UNEP/WCMC 2003). Breeding habitat requirements are different in different parts of the distribution range.</p> <p>A wetland system on the mountain plateau of Finnmark (northern Norway) constitutes the core known breeding area for the species in Fennoscandia (Øien et al. 2001). A field survey of part of the Kola Peninsula, north-westernmost Russia, in June 2001 found small numbers of Lesser White-fronts in an area of mainly treeless tundra with many lakes, ponds, rivers and streams and no permanent human settlement (Timonen & Tolvanen 2004).</p> <p>In the basins of the Velt and Neruta rivers, in the Malozemelskaya Tundra region of Arctic northern Russia, nest sites were located on river banks with herb vegetation, mosses, willow (<i>Salix</i>) shrubs and dwarf birch (<i>Betula nana</i>) sometimes with large mounds and sand-clay outcrops. The river bottom</p>

	<p>grounds in the first half of July and arrived on Kolguev Island, north-west Russia in mid-July, where it remained for about one month, presumably to moult. Of two other individuals in this study that undertook moult migration, one went as far as the Taimyr Peninsula in Russia. (Aarvak & Øien 2003).</p> <p><u>Staging</u></p> <p>Autumn migration is more protracted than spring migration. Birds may remain at autumn staging sites into early winter in mild seasons. Spring migration typically appears to last from the second half of February until the end of May, but there are again significant annual variations related to weather conditions.</p> <p><u>Wintering</u></p> <p>Satellite tracking and field observations suggest that birds typically reach their wintering grounds in the second half of November, remaining into late February or the first half of March, according to prevailing weather conditions.</p>	<p>was usually stony, often with a wide, sandy shallow on the opposite bank giving way to wet grassland and willow shrubs (Mineev & Mineev, 2004). In the Polar Urals and Yamal Peninsula nests were located on rocky river cliffs and in dwarf birch tundra on watershed slopes close to rivers, and sometimes in mountain foothills. (V. Morozov, pers. comm.)</p> <p>In Siberia, nests are usually sited amongst vegetation, grass or dwarf shrub heath, often on snowfree patches available early in the season, such as rock outcrop or prominent hummock; often in proximity to open water or extensive marshy area (Dementiev & Gladkov 1952, reported by Fox 2005).</p> <p><u>Moulting</u></p> <p>In August 2000, a brief field survey was conducted of the area of Kolguev Island, north-west Russia, used in 1997 by a presumably moulting satellite-tracked goose of the Fennoscandian population. The area was characterised by low-lying, flat tundra, dissected by ponds and small river valleys with slow-flowing streams. Vegetation was dominated by shrub (dwarf birch <i>Betula</i> and willows <i>Salix</i>) and tussock tundra with palsa mires (Strøm et al. 2001). According to studies in the Bolshezemelskaya tundra and Yamal Peninsula, moulting areas occur on riverine areas with flood-</p>
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		<p>plain meadows and dense bushes/shrubs (Morozov, 1999).</p> <p><u>Staging</u></p> <p>The Valdak Marshes in northern Norway, which constitute the most important known staging area for the Fennoscandian population, consist of extensive salt and brackish marshes (Aarvak & Øien 2001). In the Varangerfjord area, the other known staging site in northern Norway, the favoured feeding habitat is low-growth coastal meadow (Tolvanen et al. 1998). Coastal meadows are also used in Estonia (especially Matsalu) and Finland (Bothnian Bay). Research in the latter area showed that 90% of the diet was composed of grasses and that <i>Phragmites australis</i> and <i>Festuca rubra</i> were preferred. The species also selected large, natural meadows. Continued mowing and grazing of these meadows therefore benefits conservation of the species (Markkola et al. 2003).</p> <p>Staging birds in Hortobágy, Hungary, between 1996 and 2000, were found to use mainly short, grazed grassland and stubble of wheat and maize fields (Tar 2001). Fishponds are used by these birds for roosting (Tar 2004).</p> <p>The major autumn staging grounds in the Kustanay region of north-west Kazakhstan include freshwater lakes and other wetlands and surrounding grasslands. Lake Kulykol is the most</p>
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		<p>important known roosting lake (e.g. Yerokhov et al. 2000; Tolvanen et al. 2004). During periods when key lakes such as Kulykol have little or no fresh water, migrating Lesser White-fronts are concentrated on small freshwater reservoirs (e.g. Batpackol), with fringing reed marshes and surrounding grain and vegetable cultivation. In some autumns (e.g. 2003) significant numbers of Lesser White-fronts stop on the saline lake Khack, northern Kazakhstan, which has extensive, shallow aquatic zones (S. Yerokhov, pers comm).</p> <p>Autumn staging areas on the north-west Black Sea coast of Ukraine include freshwater, salt and brackish lakes and other wetlands and surrounding grasslands and winter wheat fields. Shagani, Alibay and Burnas lakes, in the Dniester delta, form the most important known roosting area (e.g. Rusev et al. 2002).</p> <p><u>Wintering</u></p> <p>The wintering grounds are only partially known, but include shallow bays, lakes and wetland complexes (freshwater, brackish water and saltwater wetland types) and surrounding cultivated land and semi-natural grassland in Azerbaijan, Bulgaria, Greece, Iran, Iraq Romania, Ukraine, Uzbekistan.</p>
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Annex 2

Listing by Range State of the most recent data available concerning status, numbers and trends of Lesser White-fronted Goose (source: see References column)

Range State	Breeding Season						Passage and Wintering					Baseline Population ³	References
	No. of breeding pairs	Quality ¹	Year(s) of Estimate	Trend ²	Quality ¹	Year(s) of Estimate	No. of individuals staging (S) or wintering (W)	Quality ¹	Year(s) of Estimate	Trend ²	Quality ¹		
Armenia	0	GO	1987-2005	N/A	N/A	N/A	1-26	MI	1995	N/A	N/A	1	
Azerbaijan													
Bulgaria							10 -120	GE	1998; 2005	F	G E		Petkov, Oien, Aarvak, 1999; National Ornithological database BSPB/BirdLife Bulgaria, N. Petkov, pers. comm.
Estonia							50 (S)	GO	1998-2004		G O	10,000	Baseline population of birds estimated in the middle of 1960s (Onno, 1965)
Finland	0-5												
Germany	x	x	x	x	x	x	20-50	±	1990-2005	±	±		Mooij 2000, Mooij & Heinicke 2005
Georgia													
Greece													
Hungary							40-60 (S)	GO	2000-2004	1	G E		Tar 2001, Tar 2004
Iran, Islamic Republic of													
Iraq													
Kazakhstan							6910	GE	1999	0	G E	6389	Yerokhov et all, 2000
Lithuania													
Netherlands ⁴													

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Range State	Breeding Season						Passage and Wintering					Baseline Population ³	References
	No. of breeding pairs	Quality ¹	Year(s) of Estimate	Trend ²	Quality ¹	Year(s) of Estimate	No. of individuals staging (S) or wintering (W)	Quality ¹	Year(s) of Estimate	Trend ²	Quality ¹		
Norway	20-30	GE	2005	-1	GE	1990 - 2005							Aarvak & Øien in Fennoscandian Cons. Proj. report 2001-2003 + I.J. Øien and T. Aarvak pers comm.. 2005
Poland													
Romania													
Russian Federation Note: data for Western main population only	3000	ME	2004	F	ME	2004	8000-11000	MI	2000-2004	F	M E	10000-15000	Morozov, Syroechkovski, 2002; Morozov, Syroechkovski, in press)
Sweden ⁴	10-15	GO	2004	+1	GO	2004	70-90 (S)	GO	2004	+1	G O	Not known	Andersson 2004, von Essen 1996
Sweden ⁴													
Turkey													
Ukraine							2000-5000	ME	1994-2004	F			Rusev et al. 2002; Rusev 2004. Andryushenko Yu.A. et al. Distribution and number of bird species wintering in the coastal areas of Lake Syvash and the Azov Sea. Wintering bird census on Azov-Black Sea coast of Ukraine. pp3-13

Notes to Table:

¹ **Quality:** **GO = Good (Observed)**
GE = Good (Estimated)
ME = Medium (Estimated)
MI = Medium (Inferred)
P = Poor/suspected
U = Unknown

based on reliable or representative quantitative data derived from complete counts or comprehensive measurements.
based on reliable or representative quantitative data derived from sampling or interpolation.
based on incomplete quantitative data derived from sampling or interpolation.
based on incomplete quantitative data derived from indirect evidence.
not based on quantitative data, but reflects 'best guess' derived from circumstantial evidence.
no information on quality available.

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² **Trend** in the last 10 years: **+2** Large increase of at least 50%; **+1** Small increase of 20-49%; **0** Stable, with overall change less than 20%; **-1** Small decrease of 20-49%; **-2** Large decrease of at least 50%; and **F** Fluctuating with changes of at least 20%, but no clear trend.

³ **Baseline population**: earliest population figure available for breeding or non-breeding populations.

⁴ Reintroduced birds.

Supporting information to use in conjunction with the table.

The following is a summary of the most up-to-date information available on the status and trends of Lesser White-fronted Goose in each country, divided into Principal Range States (i.e. those countries that are known regularly to support breeding, moulting, staging or wintering Lesser White-fronted Geese) and other countries of the AEWA Agreement Area and European Union (i.e. where the species is currently a rare visitor or vagrant).

(a) Principal Range States

Azerbaijan

Vernacular name: Ahgash gaz

UNEP/WCMC 2004 summarised the species status as: “A winter visitor recorded from the coast, Kizil Agach and the Kura River lowlands (Lorentsen *et al.*, 1999; Shelton, 2001). A total of 1,085 individuals were counted in a survey conducted in 1996 and it was suggested that the wintering population varied between 1,500 and 7,000 (Aarvak *et al.*, 1996; Paynter, 1996). About 25,000 birds were reported in 1978, 1980 and 1982/83 but the numbers steadily declined in subsequent winters (Morozov and Poyarkov, 1997; Tkachenko, 1997)”.

The species' present status is unclear, owing to a lack of systematic count data. However, it seems likely that the country may remain an important wintering site for the Western main population, given that in March 2001 large staging flocks were found in the Kyzyl Agach area (565 birds) and in the Ag-Gel Zapovednik (1,800 - 2,000 birds). In both cases the Lesser White-fronts were observed in mixed flocks with Greater White-fronted and Greylag Goose feeding on meadow vegetation. A calling bird was heard at Lake Shorgel and 6 individuals were seen at Divichi Lima, indicating that these areas may also be important sites for that species (Heinicke & Ryslavý 2002).

A satellite-tagged bird of the Western main subpopulation, ringed in the Polar Ural region of northern Russia in August 2004, staged in Azerbaijan for several days in November 2004 before continuing its migration, via eastern Turkey, to winter in Iraq. (source: www.piskulka.net/Satellite_tracking.htm)

Bulgaria

Vernacular name: Malka belochema gaska

A 1996 survey estimated the total number of Lesser Whitefronts in Bulgaria as 30-40 (Aarvak *et al.* 1996), whereas Petkov *et al.* (1999) estimated a total of 100 birds.

Lesser Whitefronts occur regularly in small numbers at traditional goose staging and wintering sites on the Black Sea coast, notably at Lake Shabla and Lake Durankulak, both of which are Ramsar Sites and Important Bird Areas. However, recent count data are inadequate for these sites to qualify as IBAs for Lesser White-fronted Goose (S. Nagy/BirdLife International, pers comm), hence they are not listed in Annex 3. The last adequate count (was conducted in 1998 by a BirdLife Bulgaria/BirdLife Norway team, which estimated some 100 birds present in the area of Shabla and Durankulak Lakes. In recent years there has been no targeted count or research for this species. Goose counts are made only during the morning when the birds leave roosting sites and this does not allow identification of LWfG among the tens of thousands Greater White-fronts. However, casual birdwatchers regularly report the species (e.g. in February/March 2005, some 3 to 5 birds were identified in a flock of 1,200 Greater White-fronts at Durankulak Lake), suggesting that over 100 may occur when flocks

of over 50-60 000 Greater White-fronts occur in the Shabla/Durankulak region (N. Petkov, pers.comm).

Lake Srebarna in the Danube floodplain is an important autumn staging site for Greater White-fronted Goose, but small numbers of Lessers probably occur regularly among them. In 2003, three Lesser White-fronted Geese were found dead at Srebarna among 123 dead Greater White-fronted Geese; it is thought the birds had been poisoned by rodenticides, either in Bulgaria or neighbouring Romania. Other potentially important sites include Mandra-Poda, Lake Burgas and Lake Atanasovo – all close to the southern coastal city of Burgas and all Ramsar sites and listed by BirdLife International as Important Bird Areas. Up to 120,000 Greater White-fronted Geese occur in this area in winter (though such high numbers are exceptional) and there are occasional records of Lessers, though the difficulties of close observation mean that many could be missed. Small numbers of Lessers have been recorded among Greater White-fronted Geese in Pyasachnik Reservoir (an IBA) located in the Maritza floodplain (Evros in Greek). This site might be a staging area for birds of the Fennoscandian subpopulation wintering in the Evros delta. Some observations were during the migration period. (S. Dereliev pers comm).

Estonia

Vernacular name: Väike-laukhani (Estonian)

Before the 20th century crash of the Fennoscandian population, a major migration route passed through north-western Estonia. The species used to be a regular passage migrant until the 1970s. However, during the period 1970-1984 there were no verified observations. Since 1985, small numbers, including some birds from the reintroduced Swedish population, have again been recorded and for a time it was presumed that all these birds derived from the Swedish reintroduction programme. However, since 1996 it has become clear that the Matsalu Bay region of western Estonia remains an important spring staging area for the wild Fennoscandian population and it is thought that small numbers also occur regularly in autumn, though more information is needed for the autumn period (Tolvanen et al. 2004). Most recently, in late September and early October 2005, two or three LWfG were seen in coastal meadows at Haeska, Ridala, while up to 14 were seen together at the same site during spring migration in May 2005 (reported by multiple observers on <http://www.piskulka.net/>).

Finland

Vernacular names: Kiljuhanhi (Finnish); Gilljobás (Lappish/Sami)

WCMC/UNEP 2004 states: “No breeding of wild Fennoscandian birds has been confirmed since 1995, and the current breeding population is estimated at 0 – 5 pairs (Pääläinen and Timonen, 2000; Øien *et al.*, 2001). However, single birds have been observed in the former breeding areas almost annually. A restocking programme was under way between 1989-1998. More than 150 geese were released in northern Finland (von Essen *et al.*, 1996; Tolvanen *et al.*; 1997; Markkola *et al.*; 1999; Kellomäki and Kahanpää, 2003). Due to the danger of interbreeding between the introduced stock and the genetically distinct wild population, the Finnish Ministry for the Environment and the Finnish Lesser White-fronted Goose Project, led by WWF Finland, decided to stop the restocking programme in 1998 (Tolvanen *et al.*, 2000c; Tegelström *et al.*, 2001).”

The Bothnian Bay coast, close to Oulu, is recognised as an important spring staging area, though a decline of 65% was recorded between 2000 and 2003 was recorded, possibly reflecting changing migration routes as well as a further decrease in the overall wild Fennoscandian population (Markkola & Luukkonen 2004).

Germany

Vernacular name: Zwerggans

The species regularly passes through Germany in small numbers. Since 1990, 30-100 observations of Lesser White-fronted Geese have been reported annually. The great majority of birds were observed in the northern part of Germany. Important sites are listed in Section 4.4. Birds of the wild Fennoscandian population tagged with satellite transmitters have been recorded in Mecklenburg-Vorpommern and Brandenburg during autumn migration (Lorentsen *et al.* 1998, Aarvak & Øien 2003). At most German sites, Lesser White-fronted Geese are observed in the company of Greater White-fronted Geese *Anser albifrons* and are thought most likely to belong to one of the wild populations. Data indicate that birds from more than one subpopulation migrate through Germany, with some individuals of the Western main population also wintering, especially in Brandenburg, Sachsen, Sachsen-Anhalt and Nordrhein-Westfalen (Mooij & Heinicke in prep.). Birds from the Swedish reintroduction programme, typically associating with Barnacle Geese, have been recorded increasingly frequently in Niedersachsen and Schleswig-Holstein (a total of 29 individuals was recorded in mid-November 1999; van den Bergh 2000), and there is a handful records for Brandenburg and Mecklenburg-Vorpommern. There is one record of a bird from the Finnish reintroduction project in Mecklenburg-Vorpommern (Mooij & Heinicke in prep).

Under the title of ‘Operation Lesser White-fronted Goose’ (*Aktion Zwerggans*) a programme is currently being developed to lead reintroduced birds, using microlight aircraft, from a former breeding site in Swedish Lapland to a traditional wintering area in the Lower Rhine area of Nordrhein-Westfalen.

The species is fully protected in Germany but Greater White-fronted Geese are still hunted in places and both species occur in mixed groups (Lorentsen *et al.*, 1998).

Greece

Vernacular name: Navdchva (transliteration)

Lake Kerkini, Lake Mitrikou (also known as Lake Ismaris) and the Evros Delta (all listed as Special Protection Areas, Ramsar Sites and Important Bird Areas) are key staging and wintering sites for the Fennoscandian population. Though 1,630 were counted in the Evros Delta in 1963 (Handrinos 1991), numbers are now far lower. Between 1980 and 1990 counts varied between 30 and 150 individuals (Aarvak *et al.*, 1996, 1997), while a maximum of 71 individuals (for Lake Kerkini, Lake Mitrikou and the Evros Delta combined) was recorded in the winter of 1998/1999 (Lorentsen *et al.* 1998). More recently, 30 LWfGs were seen at Lake Kerkini in November 2005.

52 Lesser White-fronted Geese were recorded using the saltmarshes around the Drana Lagoon in the Evros Delta of north-east Greece, in early January 2004. One of these birds had been colour-ringed in northern Norway in May 2004 (Vangeluwe, 2004). This indication that the Evros Delta is a key wintering area for the wild Fennoscandian population was confirmed when eight Lesser White-fronts ringed at the Valdak Marshes (Norway) were seen in the Evros Delta in January 2005 (D. Vangeluwe per T. Aarvak, pers. comm.). Between November 2005 and January 2006, up to 40 Lesser White-fronts were seen in the same area of the Evros Delta as in 2005. At least five of these birds carried colour rings (Y. Tsouygrakis & D. Vangeluwe/LWfG LIFE Project, reported on <http://www.pikulska.net/>)

Hungary

Vernacular name: Kis lilik

Although counts are far lower than the tens of thousands of birds recorded before the 20th century crash of the Fennoscandian population, Hungary – notably Hortobágy National Park – continues to support significant numbers of staging Lesser White-fronted Geese. In autumn, the first birds arrive at Hortobágy fishponds in the first half of September and numbers usually peak in the second half of October, after which there tends to be a slow decrease, with Lesser White-fronts dispersing with flocks of White-fronted Geese *Anser albifrons*. Most have generally left for their wintering grounds by mid-November, but departure may be delayed in mild seasons and a few individuals occasionally over-winter successfully, as was the case in the winter of 2000/2001, when four colour-ringed individuals, first observed in September 2000, were still present on 24 January 2001. The highest autumn counts for the years 2001 and 2002 were 59 and 49 respectively. Similar numbers occur during spring migration, typically from mid-February to the second half of March. In 2001 and 2002 the peak spring counts were 32 and 54 individuals (Tar 2004). However, unlike in Estonia, Finland and Norway, birds have not been recorded and identified individually in Hungary, and annual numbers of individuals are based mostly on the largest direct simultaneous counts from one site. This suggests that the total number of individuals occurring each year in Hungary may well be higher than the above figures indicate.

Iran, Islamic Republic of

Vernacular name: Ghaze pishani sepide Kuchak

WCMC/UNEP 2004 states: “In the early 1970s, between 4,500 and 7,500 birds wintered in Iran, mainly in Miankaleh protected region, but these disappeared suddenly in the late 1970s and, since then, only small flocks have been observed in the country (Scott and Rose, 1996). Regular large flooding events in the area, due to the rising of the water level in the Caspian Sea, as well as hardening winters, may be leading to a redistribution of the wintering population in this country and Azerbaijan (Lorentsen *et al.*, 1999).”

The Iranian portion of the Mesopotamian marshes (see Iraq) is also a potentially important wintering area, but there is no direct evidence to support this.

Iraq

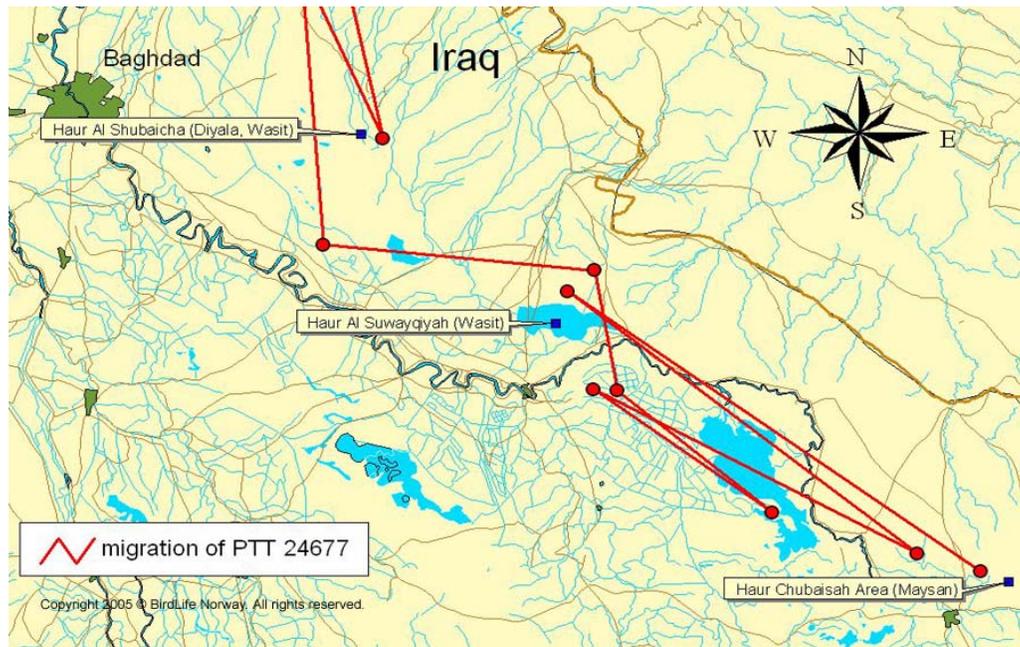
Vernacular name: [to be added]

Evans 1994 records the species as formerly widespread and numerous, but currently the species is only present in small numbers.

A satellite-tagged bird of the Western main subpopulation, ringed in the Polar Ural region of northern Russia in August 2004, was tracked to Iraq during the winter of 2004/2005, providing the first proof of recent years that the species continues to winter in Iraq and the first detailed evidence of the sites used. The bird stayed in the country from at least 24 November until the last transmission from Iraq on 15 March. Spring migration began sometime soon after this date, as the next transmission, on 26 March, was from Dagestan, in southernmost Russia. During its stay of almost four months in Iraq the bird was recorded primarily from the lakes/wetlands and lowlands of the Tigris river basin (see Map 2).

Map 2. Locations of satellite-tracked Lesser White-fronted Goose in Iraq, November 2004 to March 2005. The three locations marked Haur Al Shubaicha, Haur Al Suwayqiyah and Haur Chubaisah are all listed by BirdLife International as Important Bird Areas, refs. IQ017, IQ020 and IQ030, respectively. This map was last updated on 10 March; by 15 March the bird had returned to Haur Al Suwayqiyah, the

location of the last data transmission from Iraq. Source: *World BirdWatch* magazine, ©BirdLife International. See also: www.piskulka.net/Satellite_tracking.htm



Kazakhstan

Vernacular name: Shikyldak kaz

The lakes and agricultural land of the Kustanay region of north-west Kazakhstan are known as a major staging area for Lesser White-fronted Geese, in both spring and autumn. During the period 1997-2000, spring migration in this region lasted for 35-45 days and usually occurred in the second half of April and May. Autumn migration was more protracted, lasting 70-75 days between late August/early September and the beginning of November. Birds roost on lakes and disperse over cultivated land during the day to feed. (Yerokhov et al. 2001). Lake Kulykol is the most important roosting lake during autumn migration. About 5,000 individuals were estimated (based on sample counts over five days) in the area in late September/early October 2002. During the period 1996-2000, the highest estimates, based on random sampling of the staging goose flocks, were c. 8,000 – 12,000 individuals (Tolvanen & Pynnönen 1997, Tolvanen & al. 1999). The highest direct count was 1,050 individuals. Significantly lower numbers were observed in autumn 2003, most likely reflecting the very low water level in the lake that year. Smaller, but still remarkable numbers (c. 1,000 individuals) were counted in the Kurgaldzhino–Tengiz area in the autumn of 1998 (Tolvanen & al. 1999). Colour-marked individuals ringed in northern Norway and northern Russia were recorded at Kulykol in autumn 2002 and autumn 2003, respectively, showing that birds from both the Fennoscandian and Western main subpopulations occur in Kazakhstan (Aarvak et al. 2004a). This has also been confirmed by satellite telemetry (Lorentsen et al 1998; Øien et al 1999; Karvonen & Markkola 1997). There is also a staging area further east in Kazakhstan: the lake areas surrounding the huge lake Tengiz, as indicated by the movements of a Lesser White-front satellite tagged in the Taymyr peninsula in 1998 (Øien et. al. 1999).

Three individuals were recorded in south-east Kazakhstan (about 100km west of Almaty) in March 2003, indicating possible spring staging in this region of birds arriving from wintering

areas further south (Yerokhov 2004), though it appears unclear which breeding population was involved.

The species is included in the national Red Data Book and legally protected.

Netherlands

Vernacular name: Dwerggans

The reintroduced Swedish population migrates to wintering grounds in The Netherlands. Birds have been recorded regularly from sites in Friesland, Noord-Holland, Zuid-Holland and Zeeland (e.g. van Roomen et al 2003). The Dutch Government has recently commissioned a study of the distribution and numbers of Lesser White-fronted Geese in The Netherlands. It is expected that this review will be published during 2005 (E. Osieck pers comm). The population currently numbers some 90–100 individuals (T. Larsson pers comm).

Norway

Vernacular name: Dverggås (Norwegian); Gilljobás (Lappish/Sami)

The current estimate for the Fennoscandian population (excluding the Kola Peninsula) is 20–30 pairs (Tolvanen et al. 2004b). The breeding areas of these birds are not known at present, and some these birds may breed in Finnish and/or Swedish Lapland. Northern Norway also has a key spring and autumn staging area for Lesser White-fronted Goose, namely the Valdak Marshes (e.g. Aarvak & Øien 2004). Other important Norwegian sites include the Varangarfjord area, the Tana River valley and Høyholmen. Statistical analysis of data from monitoring in the Valdak Marshes indicate that numbers of geese utilising the area in spring decreased by between 3% and 4% annually from 1993 to 2003. The estimated overall decrease since monitoring began in 1990, up to and including 2003, was 36% (Aarvak & Øien 2004), showing the precarious situation of the population.

Birds from the Swedish restocked population are regularly observed in Nordland county, where wild Fennoscandian White-fronts used to breed.

The maximum count at the Valdak Marshes during the spring migration of 2005 was 29 birds. During autumn migration a total of 32 Lesser White-fronts staged at the site, of which 16 were juveniles. This confirms that breeding success in 2005 was relatively poor (BirdLife Norway/Norwegian LWfG Project, reported on <http://www.piskula.net/>).

Poland

Very scarce migrant and winter visitor, possibly less frequent recently (Tomialojc, 1990). As part of the flyway of the migrating Fennoscandian population, Poland supports a few staging Lesser White-fronted Geese. Some of the geese satellite-tagged in 1995 were tracked flying over Poland. One bird tagged in 1997 spent the winter in Poland and eastern Germany (Øien & Aarvak, 2001; Aarvak & Øien 2003), but little additional information is available. The wetland areas and fishponds are likely of higher importance than the areas in eastern Germany. However, resources to begin monitoring and survey work have been lacking (T. Aarvak & I.J. Øien, pers. comm.). The Odra valley (between Küstrin and Gartz) and the Warthe valley hold important night-time roost sites for geese, including Lesser White-fronts, which feed on German territory during the day (T. Heinicke, pers. comm.).

On 14 January 2006, two wintering Lesser White-fronted Geese were watched at close range near Rus (Biebrza Valley) (T. Kulakowski *per* Y. Tsougrakis/LWfG LIFE Project, reported on <http://www.piskulka.net/>).

Romania

Vernacular name: Gârliia mica

WCMC/UNEP 2004 states: “An unknown number of Lesser White-fronted Geese, associated with Greater White-fronted Geese, annually pass through Romania in the Dobrogea area in the south-east. Confusion with *A. albifrons* is likely. For the same reason, similar records have been deleted in Bulgaria. A survey on 1-2 December 1996 failed to locate any Lesser White-fronted Geese (Aarvak *et al.*, 1997). The birds that pass through are part of the flocks that remain in eastern Bulgaria in the winter, and the percentage of Lesser White-fronted Geese is supposed to be similar to that in Bulgaria. Since Greater White-fronted Geese are intensively hunted it is likely that Lesser White-fronted Geese are also shot annually. It is classified as rare according to the Red List issued by Biosphere Reserve Danube Delta 2000 (Romania country report to CMS, 2002)”

Several experts have indicated that they doubt the 1989 figure of 1,000 quoted above.

Russian Federation

Vernacular name: Piskulka (transliteration from Russian); Gilljobás (Lappish/Sami)

The following section is based on information presented in UNEP/WCMC 2004, updated by V. Morozov in 2005 (pers. comm.)

Aikio *et al.* (2000) concluded that the status (precise breeding and moulting areas, numbers and trends) of birds nesting on the Kola Peninsula of north-westernmost Russia was unclear and that more detailed research was required. A field expedition to the Lake Enozero area in June 2001 gathered some additional information and the report on this work concludes: “it is still possible that the total Lesser White-fronted Goose breeding population of the whole Kola peninsula could be perhaps some tens of pairs, taking into account the huge area of potentially suitable and mostly intact breeding habitat” (Timonen & Tolvanen 2004). Satellite telemetry and marking programmes and field surveys (Tolvanen 1998) suggest that the Kanin Peninsula may be a key autumn moulting/staging area for the whole Fennoscandian breeding population (Lorentsen *et al.*, 1998)

Within European Russia the population was estimated to be about 500 to 1,000 birds in 1990 (Morozov 1995). A more recent review summarised the population for the European tundra at the same level (Morozov & Syroechkovski, 2002). Low numbers and a declining trend have been noted for the Bolshezemelskaya tundra, though little habitat change has been observed over 15 years (Morozov, 1999). European Russia still holds a viable population of Lesser White-fronted Geese, although the distribution area has contracted, particularly in the Polar Ural region (Morozov, 1999). The most recent data suggest that the Polar Ural population has fluctuated in line with the decreases noted in other parts of the European tundra. Despite a viable breeding population and no obvious changes in the condition of the breeding area the population of European Russia has decreased in size and range (Morozov 2003). Although satellite telemetry has recently tracked one bird to Iraq the wintering grounds of 80% of the Western main population are unknown. Satellite tracking has also reconfirmed the importance of the Samur Delta (Syroechkovskiy 2005). The Taimyr Peninsula is one of the key breeding areas for the Western main population.

Satellite telemetry has shown the Ob river valley to be a key flyway. A network of waterbodies within the Kuma-Manych Basin are used as stopover sites both in spring and autumn, with a maximum of 13,800 birds recorded in 1995 (Bliznyuk, 2000). In the Nizheneye Dvuobye, within Yamalo-Nenets and Khanty-Mansi Autonomous Districts, the

birds use the flooded meadows, floodplains and scrub along the Ob River during autumn. Many thousands of individuals have occurred in the east of Chelyabinsk region during autumn migration (Zakharov and Migun, 1997; Gordienko, 2001), while in spring hundreds of birds have been observed with a maximum of 500-800 recorded (Korovin, 1997). Some staging areas are also known from the eastern shores of the Sea of Azov. (Lorentsen *et al.*, 1999; Morozov & Syroechkovski, 2002). Artiukhov (2003) noted that the Lesser White-fronted Goose comprised 0.5% of all geese migrating through the Bryansk Oblast in spring, but there have been no records in autumn since about 1980. Bulgakov and Grishanov (2000) recorded 100 Lesser White-fronted Geese migrating through Kaliningrad in spring 2000. Some individuals were recorded in spring between 1987 and 2002 in the north of European Russia: on the Faustovo floodplain, Moscow Oblast; on Oka river flood-plain in Ryazan' Oblast; at the Rybinsk reservoir in Yaroslavl Oblast; near to St. Petersburg in Leningrad Oblast; in Kargopol District in Arkhangelsk Oblast; and on Olonets fields in the Republic of Karelia (Morozov & Syroechkovski, 2002).

The species is listed in the Russian Red Data Book

Sweden

Vernacular name: Fjällgås (Swedish); Gilljobás (Lappish/Sami)

Formerly bred in large numbers, but wild population now thought to be extinct and there have been no breeding records during the last 10 years. However, the historical spring flyway was probably from Finland across the Baltic Sea/ Bay of Bothnia and along the Swedish coastline. There were important staging areas at some places along the coast in northern Sweden and the flyways then followed the river valleys into the country's interior and the breeding areas in the mountains (fjällen). There are still occasional observations of Lesser Whitefronts along the northern Swedish coastline and along the rivers of northernmost Sweden, as shown by spring/summer records of five individuals in Norbotten county in 2005. These birds almost certainly originate from the Fennoscandian population and not from the reintroduced population, though, as yet, there are no studies to confirm this. The reintroduced birds use more southerly flyways in Sweden. The possibility that a few pairs from the wild Fennoscandian population still breed in Sweden cannot be excluded (M. Björkland, pers comm).

Since 1977 a captive-breeding and reintroduction programme has resulted in the establishment of a free-flying population in Swedish Lapland. These birds migrate to The Netherlands, following the flyway of Barnacle Goose (*Branta leucopsis*) foster parents. The reintroduced population stages on the Swedish coast of the Gulf of Bothnia at additional inland areas in southern Sweden. The population is currently estimated to be 90-100 birds, with 10-15 breeding pairs (T. Larsson/Swedish Environmental Protection Agency, pers. comm.) No releases of birds into the wild have been made since 1999, following the discovery of introgressed genes of Greater White-fronted Goose (*Anser albifrons*) among the captive stock (Andersson, 2004).

Turkey

Vernacular name: Küçük sakarca

Rare winter visitor, occurring regularly in European Turkey in very small numbers, notably at Saros Körfezi (= 'Saros bay', recognised by BirdLife International as an Important Bird Area, ref. TR101). It is thought that some birds are overlooked owing to poor ornithological coverage of this part of the country and it is likely that the actual distribution of occurrences is wider than presently known.

A satellite-tagged bird of the Western main subpopulation, ringed in the Polar Ural region of northern Russia in August 2004, staged briefly at Haçli Lake (an Important Bird Area, ref. TR084) in eastern Turkey in late November 2004 before spending the winter in Iraq. (source: www.piskulka.net/Satellite%20tracking.htm#results).

Other records since 1980 as follows:

- Three birds at Bafa Gölü, Aegean coast (IBA ref. TR021) on 24 December 1986.
- Twelve birds at Seyfe Gölü, Inner Anatolia (IBA ref. TR053) on 6 April 1990; it is though that the species is likely to occur regularly at this site and at the adjacent Tuz Gölü, where tens of thousands of geese winter regularly but there are no regular surveys in place to identify and count them at roost sites.
- A single bird at the Büyükçekmece Istanbul (IBA ref. TR003) on 23 January 1993
- Three birds at the Göksu Delta, on the Mediterranean coast (IBA ref. TR073) on 24 January 1993, with two birds present there on 29 December 1997
- On 1 March 1997, a flock of 63 arrived on the Greek side of the Evros Delta from Turkey (Lampila 1998).

Source: BirdLife Turkey, pers. comm.

Turkmenistan

Vernacular name: [To be added]

[This paragraph, reproduced from UNEP/WCMC 2004, requires checking and updating]

“The species stages through in small numbers but is regarded as nearly extinct (Vasiliev and Gauzer, 2001a). Scott and Rose (1996) mapped two minor wintering sites (< 1% of flyway population) on the Iranian border but no further details have been traced. In March 1999, about 400 individuals were recorded in the International Waterbird Census (Markkola, 2000).”

Ukraine

Vernacular name: Mala guska

Little has been known about the status of migrating or wintering Lesser White-fronted Geese in Ukraine. Indeed the first recent record was in 1995 (Rusev et al. 1996). Between 1998 and 2005, more detailed counts were conducted in the Azov-Black Sea region, with a peak number of 579 birds in winter 1999/2000 in Crimea and 1,000 in winter 2000-2001 in the vicinity of the Ukrainian-Moldovan border around the Dniester delta and Dniestrovsky liman (Rusev, 2004). Between 1998 and 2000, more detailed counts were conducted in Crimea, with a peak number of 579 birds in winter 1999/2000. A survey was planned for the whole Crimean peninsula in January/February 2002, but this period immediately followed a spell of severe weather, with heavy snowfall and temperatures as low as -28C; consequently only a few Lesser white-fronted Geese were observed. Aarvak et al. 2004b.

Uzbekistan

Vernacular names: Chinqiroc G'oz, Korag'oz

This paragraph based on UNEP/WCMC 2004 has been updated with new information from Elena Kreuzberg-Mukhina (pers. comm.).

Some Lesser White-fronted Geese migrate along the shores of the Aral Sea; Uzbekistan is therefore of importance for migrating/staging birds from the Western main subpopulation. Taking together the southern Aral region and lakes Dengizkul and Aydarkul, the migrating and wintering population has previously been estimated at 200 to 2,000 individuals (Red Data Book of Uzbekistan, 2003). However, recent publications have also documented important wintering sites close to the Afghan and Tajikistan border areas in the provinces of Kashkadarya and Surkhandarya (Kreuzberg-Mukhina & Markkola, 2000; Kreuzberg-Mukhina & Lanovenko, 2003). From assessments made by hunters, numbers of small geese in Surkhandarya were estimated to be approximately 2,000 to 4,000, though there are doubts about the reliability of these statistics because of confusion between Lesser and Greater White-fronts (Kreuzberg-Mukhina & Markkola, 2000). Actual winter counts from Kashkadarya and Surkhandarya have been as follows: 144 birds during the winter of 2001, none in 2002, 63 in 2003 and 30 at lake Karakyr in January 2005, while the overall wintering population is estimated as being between several hundreds and several thousands*, based on responses from local hunting inspectorates and hunters themselves during winter 2004/2005 (E. Kreuzberg-Mukhina pers comm). The species is listed in the 2003 Red Data Book of Uzbekistan as ‘Vulnerable, declining’ in view of its global status (Kreuzberg-Mukhina 2003).

[Compiler’s note: Sergey Yerokhov, Kazakhstan, has questioned the upper population estimate of several thousands and says:

“Please, note, hunters on South of Kazakhstan and Uzbekistan all small size geese with black spots on the breast, are call "piskulka" If all before Information was gathered from hunters and hunting Inspection - this Is mistake, I think.

For the comparison - On period 2002-2005 spring migration, the Hunting Inspectors from Chimkent - South Kazakhstan oblast, regularly visited the main geese lakes - Schochkakol system and observed there 70-450 An. albifrons only. On spring 2003, early April, one local people showed them the head of the shooting LWFG - Just one registration for the four seasons.”]

The expansion of irrigation has led to the creation of artificial wetlands (e.g. water storage reservoirs, waste-water discharge areas), several of which, including lake Karakyr, are of importance for Lesser Whitefronts. On the other hand, it is highly likely that the collapse of the Aral Sea ecosystem, due to massive water diversions for irrigated agriculture, has led to the complete loss and/or severe degradation of former staging and wintering grounds.

(b) Status in other AEWA/EU countries

The following is a summary of the information provided in UNEP/WCMC 2004, which should be consulted for references to original sources. In the case of AEWA/EU countries not listed in either section (a) or (b) there are no known records of Lesser White-fronted Goose.

Afghanistan

The only information available is for neighbouring regions of Turkmenistan and Uzbekistan (E. Kreuzberg, pers comm).

Albania

Very common in 1940s, but very rare by 1960s. No recent observations.

Armenia

The species was first documented in Armenia in 1987, when a wounded individual was collected by V. Hakobyan and kept at Yerevan Zoo for almost a year. Data supplied in the Handbook of the Birds of Armenia (M.S. Adamian, D. Klem, Jr. 1999), including records of 50 individuals in 1984 and 16 individuals in 1986, are unproven (V. Ananian, N. Margaryan, M. Ghasabyan, pers comm.) The species is a migrant and winter visitor (?), occurring mostly at Lake Sevan and wetlands of the Ararat Plains. Records of this bird were made at Lake Sevan in 1995: 1 bird observed in November and 1 observed in December. There have been no records since 1995 (V. Ananian, N. Margaryan, pers. comm.).

Given that satellite telemetry has recently confirmed autumn staging at sites in eastern Turkey and Azerbaijan, further research might also demonstrate regular migration through Armenia, including at Lake Sevan, where 26 birds were recorded in 1995.

Austria

Irregular passage migrant with three records 1980–1999, including six birds at roost in the Lake Neusiedl area in early November 1999 (van den Bergh, 2000). On 14 January 2006 six adults were seen among Greater White-fronts, also in the Lake Neusiedl region (Source: Dr. J. Laber *per* P. Tolvanen, reported on <http://www.piskulka.net/>).

Belarus

250 migrants recorded using the Pripyat floodplain in 1995.

Belgium

Almost annual observations of birds from the Swedish reintroduction programme.

Bosnia & Herzegovina

Rare winter visitor.

Croatia

Rare and irregular winter visitor.

Czech Republic

Rare and irregular stop-over migrant on the lakes of southern Moravia, with wintering records from the same area in late 1950s/early 1960s.

Cyprus

One recent record (2003) of three birds at one site.

Denmark

Rare migrant, with 55 individuals recorded between 1950 and 1998; records since the 1980s are most likely of birds from the reintroduced Swedish population.

Egypt

Vagrant. Formerly a rare winter visitor, but no recent records.

France

Rare vagrant.

Georgia

Vagrant or very rare and irregular migrant and/or wintering species occurring in small numbers. Since 1972, 26 records involving a minimum of 102 individuals at 12 sites, mostly lakes in the eastern part of the country. 19 of the 26 records were during January or February. (Abuladze 2004).

Ireland

Rare vagrant, with just one record.

Israel

Vagrant; four records 1927–1994.

Italy

Irregular winter visitor and passage migrant.

Jordan

One record of 2–3 birds at one site during winter 1993/1994.

Kuwait

Vagrant.

Latvia

The species is a rare migrant in Latvia, with single individuals seen on migration. A flock of 90 was observed in September 1958 and, more recently, a flock of 43 was seen on 4 October 1996 (Aarvak et al., 1997).

Lithuania

There is a lack of information on the species' status, but it can be assumed that birds of the Fennoscandian population pass through Lithuania regularly during both spring and autumn migration. Flocks of up to 800 birds were recorded from the Nemunas Delta and Kurshiu Lagoon prior to the 1960s. Subsequently, only very small numbers were recorded, until 1995, when up to 230 staging birds were observed in the Nemunas Delta and small flocks were also recorded at coastal sites in the autumns of 1996 and 1997 (Stoncius and Markkola 2000).

In July 2000, Lesser White-fronted Goose was included in category 4 of the Lithuanian Red Data Book. Lack of information concerning the species' occurrence in Lithuania precluded its inclusion in a higher category. According to a 1998 Government Decision, a fine of approximately EUR86 (applying April 2005 exchange rates) is applied if a category 4 Red Data Book species is killed. There were no records in 2000. (Stoncius, 2004).

Macedonia, Former Yugoslav Republic of

Has reportedly occurred in the past, but details lacking.

Moldova

Rare passage migrant recorded from the Lower Prut Laks/Lower Dniester. During the day, geese fly from/back to roost in the Ukrainian Ramsar site Dniestrovsky liman to feeding areas in agricultural fields in Moldova. For example, in winter 2001, 150 birds were seen feeding on Moldovan winter wheat fields (I. Rusev, pers. comm.)

Oman

A single record, involving one bird, for winter 1993/1994.

Serbia & Montenegro

In 1973, reported as a rare winter visitor and passage migrant.

Spain

In recent years, small numbers of wintering/staging Lesser White-fronted Geese have been recorded, notably from the Doñana area in Andalucía but also from Villafáfila in Castilla-León. With the exception of one individual, all records in Spain fall within the period typical for wintering Norwegian Greylag Goose (*Anser anser*) and most sightings have been of birds within flocks of Greylag Geese. Two or three of these individuals originated from the Finnish reintroduction scheme, but nothing is known about the origins of the other birds, which were mainly unmarked. It is possible that they belong to the reintroduced Swedish/Dutch population, to the wild Fennoscandian population, or even from further east (Persson, 2004.) though this is considered unlikely by some other experts.

Switzerland

Vagrant, with no records since the 19th century.

Syria

Vagrant, with three records up to 1995.

United Kingdom

Vagrant, though 89 records for the period 1958 to 2000.

Annex 3.1

List of Important Bird Areas (IBAs) of significance for Lesser White-fronted Goose, alphabetically by country; note that Russian IBAs of importance for the east Siberian population are not included ([source](#): data provided by BirdLife International, March 2005)

Country	International site name	Area (ha)	Year	Location (lat/long)	Season	Min	Max
Armenia	Lake Sevan	150000	1995		unknown	0	26
Azerbaijan	Kizil Agach Bay	132500	?		non-breeding	0	1058
Belarus	Mid-Pripyat	90447	1995		passage	50	250
Estonia	Põhja-Liivimaa	23457	1997		passage	0	44
Estonia	Väinameri	279557	1998		passage	11	50
Finland	Käsivarsi fjelds	220078	1996		breeding	0	1
Finland	Oulu region wetlands	81781	1997		passage	50	50
Finland	Sammutinjäkä-Vaijoenjäkä	51750	1996		breeding	0	0
Georgia	Javakheti Plateau	200000	1996		passage	0	0
Georgia	Kolkheti	150000	1998		non-breeding	0	0
Germany	At least 18 sites SN : Sites for vagrants must be deleted				wintering/passage/non-breeding		
Greece	Evros delta	19000	1988		non-breeding	0	116
Greece	Lake Kerkini	12000	1996		passage	12	110
Greece	Lake Mitrikou (Ismarida)	6500	1997		non-breeding	20	0
Greece	Nestou delta and coastal lagoons	22000	?		non-breeding	0	26
Greece	Porto Lagos, Lake Vistonis, and coastal lagoons (Lakes of Thrace)	15300	1990		non-breeding	0	40
Hungary	Hortobágy	136300	1996		passage	70	450
Iran, Islamic Republic of	Anzali Mordab complex	15000	1977		non-breeding	32	
Iran, Islamic Republic of	Dez river marshes and plains	20000	1974		non-breeding	190	
Iran, Islamic Republic of	Gomishan marshes and Turkoman steppes	20000	1977		non-breeding	1773	
Iran, Islamic Republic of	Hilleh river delta	42600	1975		non-breeding	21	37
Iran, Islamic Republic of	Incheh Borun lake and marshes	50	1973		non-breeding	36	
Iran, Islamic Republic of	Karun river marshes	2500	1977		non-breeding	590	

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Iran, Islamic Republic of	Lake Alagol, Lake Ulmagol and Lake Ajigol	1540	1974		non-breeding	150	
Iran, Islamic Republic of	Lake Bakhtegan, Lake Tashk and Kamjan marshes	338000	1972		non-breeding	90	
Iran, Islamic Republic of	Lake Maharlu	21600	1975		non-breeding	40	102
Iran, Islamic Republic of	Miankaleh Peninsula and Gorgan Bay	97200	1977		non-breeding	4900	
Iran, Islamic Republic of	Seyed Mohalli, Zarin Kola and Larim Sara	1600	1977		non-breeding	359	
Iran, Islamic Republic of	Shur Gol, Yadegarlu and Dorgeh Sangi lakes	2500	1977		passage		175
Iran, Islamic Republic of	Shur Gol, Yadegarlu and Dorgeh Sangi lakes	2500	1977		non-breeding	70	
Iraq	Haur Al Hawizeh	250000	1965		non-breeding		
Iraq	Haur Al Suwayqiyah	50000	1973		non-breeding	70	
Iraq	Haur Chubaisah area	42500	1965		non-breeding		
Kazakhstan	Kulykol Lake	8300	1994		passage	879	5482
Kazakhstan	Koybagar –Tontegyr Lake group	160000	2002		passage	72	1440
Kazakhstan	Lebyasje Lake	2350	2002		passage	13	506
Kazakhstan	Bozshakol Lake	3500	1997		passage	45	1442
Kazakhstan	Batpakkol Lake	650	2000		passage	7	1500
Kazakhstan	Khack Lake	5520	2003		passage	41	870
Kazakhstan	Zhaksy-Zharkol Lake	1000	2004		passage	-	257
Norway	Inner part of Porsanger fjord	2000	2005		non-br (during br season)	40	60
Norway	Varangerfjord	60000	2005		passage	0	10
Romania	Vladeni fish-ponds	1200	1996		passage	30	46
Russia (European)	Arski fish-ponds	1000	1995		passage	200	300
Russia (European)	Berkubinski forest	500	1997		passage	500	1000
Russia (European)	Bulgarski	25000	1990		passage	10	20000
Russia (European)	Central Forest Biosphere Reserve and adjacent areas	63680	1994		passage	20	200
Russia (European)	Curonian (Courish) Bay	4300	1999		passage	20	0
Russia (European)	Dadynskiye lake	45000	1996		passage	10	300
Russia (European)	Delta of the River Don	53800	1997		passage	30	50
Russia (European)	Flood-plain of Kotorosl' and Ust'e rivers	4200	1997		passage	43	0
Russia (European)	Kamsko-lkski area	100000	1988		passage	10	20
Russia (European)	Kargopol' area	175000	1996		passage	1	1000
Russia (European)	Koporski Bay	6000	1997		passage	15	30
Russia (European)	Kulaksay lowland	5000	1997		passage	200	350

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Russia (European)	Kuloy river	150000	1999		passage	2000	3000
Russia (European)	Lake Ilmen' and adjoining marshy plain	250000	1993		passage	15	20
Russia (European)	Lake Manych-Gudilo	50000	1995		passage	13800	0
Russia (European)	Middle reaches of Bolshaya Rogovaya river	35000	1990		breeding	30	30
Russia (European)	Mouth of Samur river	7000	1996		passage	30	40
Russia (European)	Mouth of Svir river	65000	1996		passage	8	30
Russia (European)	Neman river Delta and the coast of the Curonian Bay	41000	1999		passage	20	0
Russia (European)	Novotroitskoye Reservoir	4000	1999		passage	0	20
Russia (European)	Petrocrepost Bay	49200	1999		passage	0	500
Russia (European)	Pinezhski Nature Reserve	51480	1995		passage	1	20
Russia (European)	Ptich'ye (Bird's) Lake	5000	1999		passage	0	20
Russia (European)	Sarpinskaya lake-system	450000	1999		passage	20	0
Russia (European)	Shalkaro-Zhetykolski lake system	81250	1996		passage	500	1500
Russia (European)	Sondugski Zakaznik and surroundings	35500	1995		passage	100	0
Russia (European)	Sources of the River Luga	49600	1997		passage	14	0
Russia (European)	Southern coast of Ladoga Lake	68000	1997		passage	15	20
Russia (European)	Sviyago-Kubninskaya forest-steppe	32000	1992		passage	0	200
Russia (European)	Torna - Shoina watershed	15000	1995		passage	1500	0
Russia (European)	Turali lake	2000	1997		passage	100	0
Russia (European)	Turalinskaya lagoon	250	1997		passage	4	15
Russia (European)	Unskaya bay	40000	1999		passage	200	0
Russia (European)	Valley of Sysola river	110000	1996		passage	50	150
Russia (European)	Yeyski salt-lakes	24000	1996	non-br (during br season)		500	500
Russia (European)	Zolotarevskaya	62000	1987		passage	35	0
Sweden	Lake Tjälmejaure-Laisdalen valley	22200	-		breeding	0	1
Sweden	River Umeälven delta	1500	2001		passage	1	5
Sweden	Sjaunja	208000	1996		breeding	0	5
Sweden	Taavavuoma	28400	-		breeding	0	1
Sweden	Vindelfjällen mountains (including Lake Tärnasjön)	550000	-		breeding	0	1
Turkey	Saros bay	1000	1986		non-breeding	25	0
Ukraine	Chauda	56000	1999		passage	580	580
Ukraine	Pivdennyj Bug river valley (Goloskiv village)	3000	1999		passage	20	70

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Ukraine	Styr' river valley (Luchytsi village)	2400	1999		passage	40	140
Ukraine	Syvash Bay	245000	1998		passage	0	1000
Ukraine	Yagorlyts'ka and Tendrivs'ka Bays	72000	1999		passage	50	1000
Ukraine	Karkinitskiy and Dzarylgatskiy bay	87000			passage	50	100
Ukraine	Dniester delta	22000		winter, autumn, early spring		10	1000
Ukraine	Shagani, Alibay, Burnas lagoon	19000		winter, autumn, early spring		10	1000

Annex 3.2

List of additional sites of possible significance for Lesser White-fronted Goose, as identified by reviewers of the first draft of this Action Plan. Compiler's note: this table needs checking and refining to ensure that only sites of true significance for the species' conservation are included. For example, sites that support vagrant Lesser White-fronts should be removed, as is the case for several of the sites listed for Germany.

Site name	Coordinates	Area	National/ international protected area status	LWfG count, month & year
Armenia				
Arماش fish ponds	Lat. N 39.75/ Lon E 44.78	2,795 ha	Not protected	0
Metsamor River System	Lat. N 40.01/ Lon. E 44.20	unknown	Not protected	1, December, 1987
Lake Arpi	Lat. N 41.06/ Lon. E 43.62	2,000 ha	Not protected	0
Finland				
Pori region fields		SW Finland	Not protected	1 (April 2001, April 2005)
Kristiinankaupunki		SW Finland	Not protected	1 (April 2003, April 2004)
Germany				
Vorpommersche Küsten- und Boddenlandschaft (Mecklenburg Vorpommern)	54.26N 012.54E	203,810 ha (only 64,380 ha land)	Partly Ramsar/SPA	0-3/year
Greifswalder Bodden (Mecklenburg)	54.13N 013.31E	103,155 ha (only 33,670 ha land)	Partly SPA	0-2/year

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Vorpommern)				
Putzarer See, Galenbecker See, Brohmer Berge (Mecklenburg Vorpommern)	53.39N 013.45E	31,510 ha	Partly Ramsar/SPA	0-11/year
Spreewald (Brabdenburg)	51.57N 013.53E	47,344 ha	completely SPA	1-4/year
Mittlere Havelniederung (Brabdenburg)	52.28N 012.40E	41,874 ha	Partly SPA	2-4/year
Unteres Odertal (Brabdenburg)	52.59N 014.09E	11,779 ha	Completely SPA, partly Ramsar	1-4/year
Märkische Schweiz (Brabdenburg)	52.33N 014.05E	17,863 ha	Completely SPA	5-20/year
Niederung der Unteren Havel, Schollener und Gülper See (Brabdenburg, Sachsen-Anhalt)	52.02N 012.16E	16,775 ha	Completely Spa, partly Ramsar	2-5/year
Niederung Rangsdorfer See/Prierowsee (Brabdenburg)	52.15N 013.27E	4,879 ha	Partly SPA	1-4/year
Nuthe-Nieplitz- Niederung (Brabdenburg)	52.15N 013.07E	5,599 ha	Completely SPA	1-4/year
Oderbruch (Brabdenburg)	52.38N 014.27E	25,993 ha	Partly SPA	5-10/year
Wulfener Bruch und Teichgebiet	51.50N 011.58E	2,171 ha	Completely SPA	1-5/year

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Osternienburg (Sachsen-Anhalt)				
Drömling (Sachsen-Anhalt)	52.28N 011.07E	15,265 ha	Completely SPA	1-2/year
Elbaue und Teichgebiete bei Torgau (Sachsen)	51.36N 013.01E	14,357 ha	Completely SPA	1-2/year
Teiche bei Zschorna (Sachsen)	51.16N 013.43E	1,131 ha	Completely SPA	0-2/year
Ostfriesisches Wattenmeer, Dollart/Rheiderlan d (Niedersachsen)	53.42N 007.21E	121,620 ha	Partly IBA/Ramsar/SPA	1-5/year
Lower Rhine area (Nordrhein- Westfalen)	51.43N 006.14E	31,000 ha	Partly IBA/Ramsar/SPA	5-10/year
Schleswig- Holsteinisches Wattenmeer (Schleswig- Holstein)	54.28N 008.42E	278,000 ha	IBA/Ramsar/SPA	Scand.re-intr. 20-50/year
Norway				
Iesjavr'ri	coordinates withheld to prevent disturbance		Not protected	c.10 breeding pairs 1995
Høyholmen	coordinates withheld to prevent disturbance		Nature reserve	1-3 pairs (c.2000)
Tana River Valley	coordinates		Not protected	1-3 pairs (c.

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	withheld to prevent disturbance			2000)
Ukraine				
Eastern Sivash		165000 ha	National, Ramsar site	last several years
Central Sivash		80,000 ha	National, Ramsar site	last several years
Yagorlitskiy bay		34,000 ha	National, Ramsar site	last several years
Karkinitskiy and Dzarylgatskiy bay		87,000 ha	National, Ramsar site	last several years
Tendrovskiy bay		38,000 ha	National, Ramsar site	last several years
Dnepr delta		26,000 ha	National, Ramsar site	last several years
Tiligulski liman		26,000 ha	National, Ramsar site	last several years
Dniester delta		22,000 ha	National, Ramsar site	last several years
Shagani, Alibay, Burnas lagoon		19,000 ha	National, Ramsar site	last several years
Lake Sasik		21,000 ha	National, Ramsar site	last several years
Kiliskiy mouth-Danube delta		32,000 ha	National, Ramsar site	last several years
Lake Kartal		500 ha	National, Ramsar site	last several years
Lake Kugurluy		7,000 ha	National, Ramsar site	last several years

Sites of importance for Swedish reintroduced population

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Sweden				
Hjälstaviken		820 ha		2000
Svensksundsviken		3,300 ha		2000
Västra Mälaren		30,481		2005
Ölands ostkust		10,490		2000

Annex 4

Level of available knowledge from principal Range States on habitat use, diet and occurrence of Lesser White-fronted Goose in Important Bird Areas and Protected Areas. Cells with dark shading represent periods when the species is assumed to be absent from the relevant Range State.

[Compiler’s note: In the Site Protection columns, ‘High’, ‘Medium’, ‘Low’, and ‘None’ refer to the level/quality of the information available in each country, NOT the proportion of the population contained within IBAs/protected areas – see key at foot of table for further explanation of the categories].

Range State	Breeding		Non-breeding		Site Protection - Breeding			Site Protection – Non-breeding		
	Habitat Use ¹	Diet ¹	Habitat Use ¹	Diet ¹	No. IBAs with Lesser White-fronted Goose ²	% of Pop. in IBAs ²	% of Pop. in Protected Areas ²	No. IBAs with Lesser White-fronted Goose ²	% of Pop. in IBAs ²	% of Pop. in Protected Areas ²
Azerbaijan			Low	Low				Low/None	Low/None	Low/None
Bulgaria			Medium	Low				Medium	Medium	Medium
Estonia			High	Medium				High	High	High
Finland	High	High	High	High	High	High	High	High	High	High
Germany			Medium	Low				High	Medium	Medium
Greece			High	Medium				High	High	High
Hungary			High	Medium				High	High	High
Iran, Islamic Republic of			Low	Low				Low/None	Low/None	Low/None
Iraq			Low	Low				Low/None	Low/None	Low/None
Kazakhstan			Medium	Low				Low/None	Medium/Low	Medium/Low

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Norway	High	High	High	High	High	High	High	High	High	High
Romania			Medium	Low				Medium	Medium	Medium
Russian Federation	High	Medium	Medium	Low	Medium/ Low	Medium/ Low	Medium/ Low	Medium/ Low	Medium/ Low	Medium/ Low
Turkey			Low/ Medium	Low				Medium/ Low	Medium/ Low	Medium/ Low
Turkmenistan			Low	Low				Low/None	Low/ None	Low/None
Ukraine			Medium	Low				Medium	Medium/ Low	Low
Uzbekistan			Low	Low				Low/None	Low/ None	Low/None

Reintroduced population

Netherlands			Medium	Low				High	High	High
Sweden	High	Medium	High	Medium	High	High	High	High	High	High

¹ **Level of available knowledge: High** – quantitative scientific studies; **Medium** - qualitative scientific studies; **Low** - anecdotal information.

² **Level of available knowledge: High** – comprehensive IBA data available, and good knowledge of Lesser White-fronted Goose status and distribution; **Medium** – IBA programme completed, and basic knowledge of Lesser White-fronted Goose status and distribution; **Low** – IBA programme completed, but poor knowledge of Lesser White-fronted Goose status and distribution; **None** – IBA programme not yet completed, and poor knowledge of Lesser White-fronted Goose.

Annex 5

Protection of Lesser White-fronted Goose under national legislation, by Range State.

Range State	Status in National Red Data Book ²³	Legal Protection from Killing	Year of Protection Status	Penalties for Illegal Killing or Nest Destruction	Opening/ Closing Dates of Hunting Season	Annual Bag Size	Highest Responsible National Authority
Armenia	Not protected ²⁴	N/A	N/A	N/A	August – February	N/A	Ministry of Nature Protection of Armenia
Azerbaijan							
Belarus							
Bulgaria	Endangered (1985) to be revised using IUCN criteria by 2007	Protected under the Biodiversity Act	Protected since 1962	none	1 October – 31 January	unknown	Ministry of Environment and Water
Estonia	No	Yes	Protected since 1994	Penalty for illegal killing 1280 euro per bird	LWfG not hunted, general goose hunting period from 20 August till 30 November	None	Ministry of Environment
Finland	Critically endangered	Yes	1969	Yes	No season	0-5	Ministry of Environment

²³ National Red List status may differ from current global Red List status, but has legal significance in many countries.

²⁴ Armenia: the Red Data Book of Armenia was published in 1987, but Lesser White-fronted Goose was first documented later that year and so is not listed. However, because the species is extremely rare in the country and classified as globally threatened by IUCN, it does not appear on the list of birds that may be hunted. Its future inclusion in the Red Data Book of Armenia is anticipated.

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Range State	Status in National Red Data Book ²³	Legal Protection from Killing	Year of Protection Status	Penalties for Illegal Killing or Nest Destruction	Opening/Closing Dates of Hunting Season	Annual Bag Size	Highest Responsible National Authority
Georgia							
Germany	None	Protected species	1979	Theoretically high, practically none	No hunting season	Unknown but several	Federal Ministries for Environment and Agriculture
Greece							
Hungary	threatened (highest status)	Strictly protected	1982	c. EUR 1,000 per individual	No hunting season	N/A	Department of Environment and Water, Nature Protection Office
Iran, Islamic Republic of							
Iraq							
Kazakhstan	Endangered	Excluded from list of waterfowl quarry species, 1999	2002	USD 1500	First Saturday in September until lakes freeze	10 per hunting season	Forest and Hunting Committee, Ministry of Environment Protection
Latvia							
Lithuania							
Moldova							
Netherlands²⁵		Full legal protection				N/A	
Norway	Directly threatened	Full legal protection	1971	Unknown (determined by judge on case-by-case basis, but so	Starts 21 August for geese in general. Closes	0-5?	Directorate for Nature Management

²⁵ Reintroduced population

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Range State	Status in National Red Data Book ²³	Legal Protection from Killing	Year of Protection Status	Penalties for Illegal Killing or Nest Destruction	Opening/ Closing Dates of Hunting Season	Annual Bag Size	Highest Responsible National Authority
				far no examples of prosecution)	23 December		
Poland							
Romania							
Russian Federation	Vulnerable	Yes	1983?	RUB 10800 (= EUR 30) for 1 individual or 1 egg. For 1 nest: RUB 10,800 x 3 + RUB 10,800 for each egg	Varies according to region	Unknown	Ministry of Nature Resources
Sweden	Critically endangered	Full legal protection	1938?	Yes	-	0	Swedish Environmental Protection Agency
Turkey							
Turkmenistan	Listed	Protected by law					Ministry of Nature Protection
Ukraine		Proposed for inclusion in Red Data Book	Proposed 2005	-	Second Saturday of August until end of January	100	Ministry of Environment
Uzbekistan	Listed	Protected by law	2003	75 minimum monthly wages	Second half of August – end of January	Five birds per day(?); no annual bag limit	State Committee for Nature Protection

¹ Reintroduced populations in France and Italy included but self-sustaining populations not yet established.

Annex 6

Site (and habitat) protection for Lesser White-fronted Goose in principal Range States. Shaded cells represent periods when the species is assumed to be absent from the relevant Range State. The breeding season includes estimates of breeding and resident bird numbers and the non-breeding season includes estimates of staging and wintering bird numbers.

[Compiler's note: the gaps in this table need completing by national experts.]

Range State	Breeding Season					Non-breeding Season				
	No. IBAs where Lesser White-fronted Goose Breeds ¹	% Pop. in IBAs ²	% Pop. in SPAs ³	% Pop. in Ramsar Sites	% Pop. in National Protected Areas ⁴	No. IBAs with Lesser White-fronted Goose	% Pop. in IBAs	% Pop. in SPAs ³	% Pop. in Ramsar Sites	% Pop. in National Protected Areas
Azerbaijan										
Bulgaria										
Estonia						2	ca 40 ind. from Fennoscandian population			
Finland	(1-2)	100	100	0	100	1	100	100	(part of 1)	100
Germany	-	-	-	-	-	9 or more	?	?	?	?
Germany										
Greece										

Range State	Breeding Season					Non-breeding Season				
	No. IBAs where Lesser White-fronted Goose Breeds ¹	% Pop. in IBAs ²	% Pop. in SPAs ³	% Pop. in Ramsar Sites	% Pop. in National Protected Areas ⁴	No. IBAs with Lesser White-fronted Goose	% Pop. in IBAs	% Pop. in SPAs ³	% Pop. in Ramsar Sites	% Pop. in National Protected Areas
Hungary	-	-	-	-	-	2	90-100	90-100	90-100	100
Iran, Islamic Republic of										
Iraq										
Kazakhstan	-	-	-	-	-	6	85	15	5-10	60
Netherlands⁵										
Norway	0	0	0	0	unknown	2	70-90%	0	20-80%	20 – 50%
Romania										
Russian Federation										
Sweden⁵	2	100	100	90	100	7	75	75	75	75
Turkey										
Turkmenistan										
Ukraine						30	80	-	50	20
Uzbekistan										

¹ Estimates of the number of IBAs where the species breeds or spends the non-breeding season were obtained from the BirdLife International World Bird Database (data extracted March 2005) and/or from national experts.

² Estimates of the % of the population present in the IBA suite of an individual country provided by national experts.

³ European Union members only.

⁴ National protected areas: Only includes areas which meet the IUCN definition of a protected area: "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means."

⁵ Reintroduced population.

Annex 7

Research and conservation efforts for Lesser White-fronted Goose over the last ten years.

Range State	Research and Conservation Efforts over the Last Ten Years
Armenia	No research or conservation efforts have been undertaken in relation to the species in Armenia.
Azerbaijan	
Belarus	
Bulgaria	<p>Research expeditions by BSPB/NOF teams in 1996 and 1998, monitoring of wintering geese in the area of Shabla and Durankulak Lakes for more than 10 years by BSPB/BirdLife Bulgaria team. Recent field observations of wintering geese have been funded by The Wildfowl & Wetlands Trust (UK) and have allowed searching for LWFG, but additional targeted research is needed to identify current numbers on staging and wintering in Bulgaria.</p> <p>A buffer zone has been proposed around foraging grounds beside Durankulak Lake, but proposal is pending in the Ministry of Environments and Waters; Public awareness activities by BSPB in wintering areas and advocacy to maintain the hunting season closing date of 31 January. There is an NGO project to buy foraging grounds around Durankulak Lake to protect them from hunting pressure and land transformation. BSPB has assisted the Ministry of Agriculture and Forestry in developing the national agri-environmental scheme with specific compensation of farmers to sustain land suitable for safe foraging by wintering geese – due to start in 2007.</p>
Estonia	Annual monitoring of staging LWfG since 1999. Constant conservation activities of coastal meadows
Estonia	
Finland	
Georgia	
Germany	Survey and efforts to influence hunting at key sites owned by ornithological societies and/or private individuals
Greece	
Hungary	regular monitoring activity (for marked birds, on space use), some habitat management actions started, awareness-raising campaign
Iran, Islamic Republic of	
Iraq	
Kazakhstan	Annual autumn migration monitoring in Kustanay Region. Implementation of two GEF projects on key Lesser White-fronted Goose sites.

Range State	Research and Conservation Efforts over the Last Ten Years
Lithuania	
Moldova	
Norway	Annual monitoring of pre-breeding numbers in spring staging grounds and annual monitoring of production in autumn staging grounds. Surveys for breeding areas, colour-ringing programme, mapping of migration and wintering sites through satellite tracking.
Poland	
Romania	
Russian Federation	Creation of Russian Goose Group and, withing this, Working Group on LWfG (1995); inventory of present breeding areas of LWfG in European Russia, Yamal, Taimyr, Yakutia and Chukotka (1995-2005); searching for breeding areas in Yakutia and Chukotka (2000-2005); monotoring breeding populations in the Polar Urals and Yamal Peninsula; organization of both Russian and international expeditions for surveys, banding and satellite tagging LWfG in Yamal (1997-1998), Taimyr (1997-1998) and the Polar Urals (1999-2002, 2004); monitoring migration population in Manych-Gudilo Lake (2000-2002); survey of spring migration in Amur Oblast (2002); start of monitoring of migration in Kurgan Oblast, Western Siberia (2005); attempts to stop spring hunting in some regions; collection of samples for genetic study (1995-2004); recomendation for changing status category in Red Data Book of Russian Federation (from Rare to Vulnerable).
Sweden	Breeding ecology, genetics, migration routes, monitoring of population & reproduction, captive breeding & reintroduction, site protection
Turkey	
Turkmenistan	
Ukraine	
Uzbekistan	Since 2000 to 2005 the regular winter censuses were conducted in Uzbekistan, but only in 2000 – aerial. The wetlands and water-reservoirs survey from the banks with modern telescopes allowed to identify the Lesser White Fronted Geese in the following sites: Aydar lake (beginning of March 2001), valley of Amudarya river near Termez town (closely to Afghanistan border), Karakyr lake and Tudakul lake – winter censuses. On the hunting bag assessment the Lesser White-fronted Geese are known from Chardara water-reservoir, Aydar lake, Karakyr lake, lakes of Karshi steppe. All observers note that the flocks of the LWFG are very small (from several individuals to several tens) and observed very rare in comparison with other geese.

Annex 8

Details of provisions on principal international legal instruments relevant to the conservation of Lesser White-fronted Goose.

(a) European Union Directive on the Conservation of Wild Birds (Council Directive 79/409/EEC, 1979)

Lesser White-fronted Goose is listed in Annex I of the Directive. According to the text of the Directive: *“The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.*

Member States shall classify in particular the most suitable territories in number and size as special protection areas for the conservation of these species, taking into account their protection requirements in the geographical sea and land area where this Directive applies.”

Article 11 may be relevant to introduction/reintroduction of Lesser White-fronted Geese since it states that:

“Member States shall see that any introduction of species of bird which do not occur naturally in the wild state in the European territory of the Member States does not prejudice the local flora and fauna”.

(b) European Union Directive on the Conservation of natural Habitats and of Wild Fauna and Flora (‘Habitats Directive’, 92/43/EEC, 1992)

Article 22(b) may be relevant to introduction/reintroduction of Lesser White-fronted Geese since it states that:

“Member States shall ensure that the deliberate introduction into the wild of any species which is not native to their territory is regulated so as not to prejudice natural habitats within their natural range or the wild native flora and fauna and, if they consider it necessary, prohibit such introduction. The results of the assessment undertaken shall be forwarded to the committee for information.”

(c) Convention on Biological Diversity (Biodiversity Convention, Rio de Janeiro, 1991)

Article 8 of the Convention on Biological Diversity (Biodiversity Convention) states that:

“Each Contracting Party shall, as far as possible and as appropriate:

- (a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;*
- (c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;*
- (d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;*
- (f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies”.*

(d) Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, 1979)

Lesser White-fronted Goose is included in Annex II ‘Strictly protected species’ of the Convention, as last revised on 1 March 2002. Article 6 of the Convention states that:

“Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. The following will in particular be prohibited for these species:

- a. all forms of deliberate capture and keeping and deliberate killing;*
- b. the deliberate damage to or destruction of breeding or resting sites;*
- c. the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention;*
- d. the deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty;*
- e. the possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognisable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article.”*

Article 8 states that:

“...in cases where, in accordance with Article 9, exceptions are applied to species specified in Appendix II, Contracting Parties shall prohibit the use of all indiscriminate means of capture and killing and the use of all means capable of causing local disappearance of, or serious disturbance to, populations of a species, and in particular, the means specified in Appendix IV.”

Articles 9.1 and 9.2 state that:

“Each Contracting Party may make exceptions from the provisions of Articles 4, 5, 6, 7 and from the prohibition of the use of the means mentioned in Article 8 provided that there is no other satisfactory solution and that the exception will not be detrimental to the survival of the population concerned:

- for the protection of flora and fauna;*
- to prevent serious damage to crops, livestock, forests, fisheries, water and other forms of property;*
- in the interests of public health and safety, air safety or other overriding public interests;*
- for the purposes of research and education, of repopulation, of reintroduction and for the necessary breeding;*
- to permit, under strictly supervised conditions, on a selective basis and to a limited extent, the taking, keeping or other judicious exploitation of certain wild animals and plants in small numbers.”*

“The Contracting Parties shall report every two years to the Standing Committee on the exceptions made under the preceding paragraph. These reports must specify:

- the populations which are or have been subject to the exceptions and, when practical, the number of specimens involved;*
- the means authorised for the killing or capture;*
- the conditions of risk and the circumstances of time and place under which such exceptions were granted;*

- *the authority empowered to declare that these conditions have been fulfilled, and to take decisions in respect of the means that may be used, their limits and the persons instructed to carry them out;*
- *the controls involved.”*

Article 10.1 provides that:

“The Contracting Parties undertake, in addition to the measures specified in Articles 4, 6, 7 and 8, to co-ordinate their efforts for the protection of the migratory species specified in Appendices II and III whose range extends into their territories.”

Article 11.2 (b) may be relevant to introduction/reintroduction of Lesser White-fronted Geese since it states that: *“each Contracting Party undertakes to strictly control the introduction of non-native species.”*

Recommendation No. 58 of the Bern Convention Standing Committee (adopted on 5 December 1997) concerns *“the reintroduction of organisms belonging to wild species and on restocking and reinforcing populations of such organisms in the environment”*. The Annex to the Recommendation contains guidelines, but these do not make explicit reference to genetic issues.

(e) Convention on Migratory Species (Bonn Convention, 1979)

As Lesser White-fronted Goose is included in Appendix I of the Convention on Migratory Species (Bonn Convention), the provisions of Articles III.4 to III.7 apply:

“III.4. Parties that are Range States of a migratory species listed in Appendix I shall endeavour:

- a) to conserve and, where feasible and appropriate, restore those habitats of the species which are of importance in removing the species from danger of extinction;*
- b) to prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species; and*
- c) to the extent feasible and appropriate, to prevent, reduce or control factors that are endangering or are likely to further endanger the species, including strictly controlling the introduction of, or controlling or eliminating, already introduced exotic species.*

III.5. Parties that are Range States of a migratory species listed in Appendix I shall prohibit the taking of animals belonging to such species. Exceptions may be made to this prohibition only if:

- a) the taking is for scientific purposes;*
- b) the taking is for the purpose of enhancing the propagation or survival of the affected species;*
- c) the taking is to accommodate the needs of traditional subsistence users of such species; or*
- d) extraordinary circumstances so require; provided that such exceptions are precise as to content and limited in space and time. Such taking should not operate to the disadvantage of the species.*

III.6. The Conferences of the Parties may recommend to the Parties that are Range States of a migratory species listed in Appendix I that they take further measures considered appropriate to benefit the species.

III.7. The Parties shall as soon as possible inform the Secretariat of any exceptions made pursuant to paragraph 5 of this Article.”

(f) African–Eurasian Migratory Waterbird Agreement (AEWA, an Agreement of the Bonn Convention)

As Lesser White-fronted Goose is listed in Column A of the Action Plan under the African-Eurasian Migratory Waterbird Agreement, Range States should:

- (a) prohibit the taking of birds and eggs of those populations occurring in their territory;
- (b) prohibit deliberate disturbance in so far as such disturbance would be significant for the conservation of the population concerned;
- (c) prohibit the possession or utilization of, and trade in, birds or eggs, or any readily recognizable parts or derivatives of such birds and their eggs,;
- (d) cooperate with a view to developing and implementing international single species action plans;
- (e) prepare and implement national single species action plans; and
- (f) phase out the use of lead shot for hunting in wetlands.

(g) Asia–Pacific Migratory Waterbird Conservation Strategy

Some of the Range States that are party to AEWA are also party to the Asia-Pacific Migratory Waterbird Conservation Strategy, which covers Lesser White-fronted Goose. Since the issues relating to conservation of the East Asian subpopulation are broadly similar to those affecting the Fennoscandian and Western main subpopulations, it is important that implementation of the two instruments is effectively coordinated in relation to Lesser Whitefronts.

(h) Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1979)

The Ramsar Convention provides for habitat conservation measures relevant to Lesser White-fronted Goose, for example according to:

Articles 2.1 and 2.2

“Each Contracting Party shall designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance, hereinafter referred to as “the List”... The boundaries of each wetland shall be precisely described and also delimited on a map and they may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands, especially where these have importance as waterfowl habitat.”

“Wetlands should be selected for the List on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology. In the first instance wetlands of international importance to waterfowl at any season should be included.”

Article 3.1

“The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory.”

Article 4.1

“Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and provide adequately for their wardening.”

Article 5.1

“The Contracting Parties shall consult with each other about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. They shall at the same time endeavour to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna.”

(i) Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES 1973)

Lesser White-fronted Goose is not included in any of the appendices to this Convention.

(j) European Union policies and instruments not specifically dealing with species/habitat conservation but offering opportunities for enhanced management of Lesser White-fronted Goose habitats

The EU’s principal nature conservation legislation is made up of the Birds and Habitats’ Directives, some provisions of which are outlined above. The development of the ‘Natura 2000’ network of Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) has been the main focus in recent years and has been supported by the EU’s financial instrument for nature conservation LIFE–Nature. Both Natura 2000 and LIFE have made important contributions to Lesser White-fronted Goose conservation. However, there other EU policies and instruments that could be used to achieve potentially more significant progress at the landscape scale. Three are highlighted below.

Common Agriculture Policy

The partial reform of the CAP, including the introduction of the Rural Development Regulation (2000-2006) offers opportunities for “a prominent role [to] be given to agri-environment instruments to support the sustainable development of rural areas and to respond to society’s increasing demand for environmental services”. Agri-environment measures represent the only compulsory rural development instrument that Member States MUST implement. ‘Less Favoured Areas’ compensation, wetland restoration, extensive farming, and reversion of arable land to grasslands are all management measures that could be targeted. The drawback to date has been the relatively small budget for the RDR in comparison with CAP market subsidies (10% versus 90%). In July 2004 the European Commission published its proposals for revision of the RDR to cover 2007 to 2013.

- the establishment of a special fund, the European Agricultural Fund for Rural Development (EAFRD), separate from the normal CAP mechanisms, with simpler financial rules;
- a requirement for European and national strategy documents;
- three priority axes for spending (I – improving the competitiveness of the agricultural and forestry sector; II – land management including animal welfare; and III – diversification of the rural economy and the quality of life in rural areas), with detailed measures under each axis;
- a requirement that a minimum of 25% of Community support for each rural development programme is spent on axis II (land management), and that a minimum of 15% is committed to each of the other two axes;
- the existing LEADER (funding for local action groups in rural communities) financial instrument to be ‘mainstreamed’ within the RDR and a minimum 7% of funding for LEADER within rural development programmes;
- a mechanism for revising the designation of Less Favoured Areas; and

- the creation of a ‘European Observatory of Rural Territories’ to collect and disseminate information and best practice.

BirdLife International, WWF and other NGOs have been scrutinizing these proposals for their potential to support conservation/environment objectives. They will be contacted in order to complete this section of the draft Action Plan.

Water Framework Directive

This requires that River Basin Management Plans be implemented for all major river basins in all Member States and, by implication, in Candidate Countries. WWF and the European Environment Bureau have produced extensive informal guidance on how conservation interests – especially wetland conservation – can be promoted through the WFD. The Common Implementation Strategy for the WFD (a joint initiative of the Commission and the Member States) provides further ‘official’ guidelines.

European Neighbourhood Policy (ENP)

This is the new policy instrument providing the framework for EU cooperation with neighbouring countries in the post-Enlargement European Union. Within the AEWA portion of the Lesser White-front range Action Plans (with sections on environment and sustainable development) have been, or are being, prepared for Moldova, Ukraine. The Russian Federation has the status of ‘special partner’ in the ENP.

(j) IUCN Guidelines for Reintroduction

These *Guidelines*, published in 1995 by the IUCN Species Survival Commission (SSC), have no legal status but are generally regarded as the most authoritative international guidance available concerning species reintroductions in general. As a component on actions being taken in response to a complex international conservation challenge, Lesser White-fronted Goose reintroductions should be compatible with IUCN/SSC guidance.

The *Guidelines* state the aims and objectives of reintroduction as follows:

“The principle aim of any re-introduction should be to establish a viable, free-ranging population in the wild, of a species, subspecies or race, which has become globally or locally extinct, or extirpated, in the wild. It should be re-introduced within the species’ former natural habitat and range and should require minimal long-term management.

The objectives of a re-introduction may include: to enhance the long-term survival of a species; to re-establish a keystone species (in the ecological or cultural sense) in an ecosystem; to maintain and/or restore natural biodiversity; to provide long-term economic benefits to the local and/or national economy; to promote conservation awareness; or a combination of these.”

Guidance is provided on Pre-project Activities (biological, socio-economic and legal); Planning, Preparation and Release Stages; and Post-release Activities.